**R3 - Interview Dean Faculty Agroindustry UTP - 29-6-2022**

00:00:01  
*Speaker 1:* Okay. Well, starting to introduce yourself, like, uh. Yeah. What? You. What you are doing your current position, so. Okay. Well, I'm sorry.

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*Speaker 2:* I'm over industrial engineering, and I have a master's degree in food science, and right now. I'm in student of the of knowledge. I working in metabolomics in in fermentation and drying specific. I'm actually acting right now. I'm the dean. The faculty and I, we. Is it's a good idea. I think that this is a good idea. This is a new faculty who came in with where we were founded in 2016. So we kind of knew. We work mainly in the value chain of coffee. Cocoa, plantation, blackberry. Oak. Forestry. And what else I'm missing. I think he's been emotional and some in the pit quarrying like pigs. They say pigs because see those fish mainly also. Okay, I'm open. The faculty is we have like two masters. We have two technological degree and two bachelors in engineering. So technological IT in horticulture and the one in forestry. We have. To talk about. The bachelor's degrees in engineering, in agri industrial processing, engineering and. It's just people. Word processing. Okay. So Canadian processors, sustainable Canadian processors, agri industrials, I hope I translated from our two masters today. One is in our industrial development. Okay. Developing and the other one is in coffee agribusiness. Okay. Yeah, the coffee agri business is new. Our director is not here. But it's interesting if you can interview with him at least via he's in Europe right now. He's in he's doing his pitch meeting in the city of twin emerge. Okay and right now he's. Just walk. But at least I. I suggest that I make an interview. Ujamaa or something like that. Because he's the director. And in the business degree we are involved. We also. Perceived material. Okay. Okay. So the agribusiness coffee degree is based in all the evaluations. So it would be interesting. Also get to know our background so we can also help show these areas. What if I don't know anything that does. Yeah.

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*Speaker 1:* Okay. Okay. And uh, yes. Uh, can you so you primarily work on cocoa.

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*Speaker 2:* I personally.

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*Speaker 1:* Working. So can you explain how the the how the university actually helps the sector? What are the projects what kind of projects you do and how do you promote develop these value chains and.

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*Speaker 2:* Well, when we when we when we built the faculty, I was one of the founders of the faculty. We we we were working in we working these seven value chains. And we did a study at the first in the beginning in 2013 to the 2015, we did a study in blackberry in cocoa in saroja laga and then long one spring. No, no, no.

00:05:08  
*Speaker 3:* The bull.

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*Speaker 2:* Just the big one, the long ones and avocado. And we found that we need a lot of technological approach to this a changed A to develop them. That was the first 30. And then in the area of research, we also found that there was some missing here in the industrial area of industrial meaning for us, not the it's not the business, the agri business world. While you see it, you know, agri industrial here is how do you develop a value add value to this material from geological region. That's how we see it. Yeah. That is immersed in the value chain. Yeah. And all they see stem of the evolution with all the actors and everything. So we identify that we have the small farmers working by themselves. The transformers of commercial is commercially.

00:06:24  
*Speaker 1:* Commercialization.

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*Speaker 2:* Commercialization also for all the way and everything was mixed up. And we are a region of of growers, agricultural and horticulture and we were missing that. That was why the faculty was born also in the university. A lot of research group did a lot of stuff by themself. So with with we say with the with the rec with the director there in rector rector of the university was the the head of these faculty. He thought about other that we need to have this approach of the agriculture and the process processing and commercialization on these areas. So that's why we have the faculty and because we start with that study with we we continue these studies. That's why we have these technological in forestry, that's technology and horticulture and the two engineers. But also we have a lot of other things that we working on. But but for me, for me, especially when I, when I decide to did my PhD, I chose Cocoa because I was immersed in that study and I was immersed in all this building. And I said, well, cocoa a it's a value chain that is that is going in parallel with coffee. And here we are not the first producer in Colombia, but most of most of the small for the small growers or producers are changing to to cocoa because we have this advantage of flavor and our own clones and all the develop of the agricultural part. We need more technological approach to both harvesting and processing.

00:08:42  
*Speaker 3:* Yeah.

00:08:42  
*Speaker 2:* So that's why. It was my decision. That's a long story, but it was my decision. Why I choose a cocoa? Because I'm an industrial engineering. I saw a weakness in the harvesting. And there is a lot of studies in fermentation and a lot of people identify what researchers identify, what is the microbiota in the fermentation. But our smallholders producers, they, they do it by by practice.

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*Speaker 1:* By yeah. Yeah.

00:09:20  
*Speaker 2:* By their own context. Yeah. Yes. So I'm going to say something that terrifies me. And that's why I disabled, because I was in the field and I opened this fermentation and I saw everything in there. So I say, not this. This has to be a developed barrier. Yeah. So that's why I decided, because if you want to be the leaders and maintain our advantage of these grains, we grow here because our climbing, our clones and all the diversity we have. So we have to do it with. Just the beginning. So I'm working in in controlling fermentation. Right now, I'm controlling in the lab. I have my I made my own microbiota to ferment, to fermentation, to ferment bean the beans the cocoa beans. What I approach that I want to maintain in the drying process. So I'm controlling drying process. That's my first step. But my second step is to find the way to to do the traceability of it. That's why I'm my second objective of my research is metabolomics. So what is in there and what I can follow to to be like traceability in the process? Okay. Yeah. I don't go on to make chocolate because it will be all my life in this, but for now will be until dry. Okay.

00:11:18  
*Speaker 1:* Okay. That's nice. And from your understanding from the sector, what do you think are the major challenges and what are the improvements to be made in the in the value chain of the cocoa sector itself or the coffee sector at all?

00:11:35  
*Speaker 2:* I mean, not just technological.

00:11:38  
*Speaker 1:* Yeah. No.

00:11:39  
*Speaker 2:* For all the major challenges, I think. One of them, as well as what I say is to maintain that quality. I mean, because most of our small holder are small producers in in associate association. To maintain that association is a big challenge because. Because they have many tests. So. I'm sorry. That's right. We are on vacation. So they are building and. They are trying to make everything ready for. Classes. Yeah. Okay. So they still maintain the quality, see? Yeah. Because if you have a small, small film set here and and in different areas, they also are mixing all the cacol because I don't know if, if you are already in the fields. You did the research back then so they showed it to us. Yeah, but not nothing. Okay, we right now we are trying to change to have fermentation by clones. Okay. Because actually they do it. They mix all in the. In the field. They have two or three clones priorities. And when they ferment it. They just mix everything. So they don't have we don't have a standard of of flavor standard or of the quality of the grain the cocoa agree. So that. I think that's one of the big challenge in terms of in terms of of maintaining the same growth is because I cannot say right now, I yes, I send you this cocoa that smells like. Flowers and mold and I'm taste like a caramel or something like that. Because then so I can I can do the process of. This specific fermentation, but it's not going to be the same as the next month or the next year. So I think that's a big challenge. Yeah, we are getting there. I mean, I think when maybe we interview two Krakow. I think they talk about that. I don't I'm not sure. But we them we have make a. Pledge of that. And we are finding that if we want to be leaders and maybe to rule and maybe follow, we have to make some, some. Some of those changes. Yeah, because we are right now we have one crisis of our clones so we know we have the quality. Yeah. But we need to maintain that quality and quantity does the, the challenge of quality and quantity of material. And about social. For example, the. Sustainable is the three you see, like the three areas economic, social and environmental. Okay, so we have in the same case there. And so sure, I think to maintain these these associations unite. Okay. I think that the main. The main challenge followed by a fair trade with the transformers and commercialization. Yeah, because we can do a lot of effort with the small producers because we are focusing in. But if we if we the transformers don't pay that of the commercial commercially sales. We understand. No, but I want to say it right. Commercial commissions, commissions.

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*Speaker 3:* Come here. I'm also.

00:16:01  
*Speaker 1:* Thinking commercial.

00:16:03  
*Speaker 2:* Racialist, maybe. Merchants, not commercial. Retails. Okay. I don't know. Right now they are my words, but. Well, the ones who make the trade. Yeah, both sides. Yeah. If they don't value that effort that we're doing in the all the chains, we are not going to be. How sustainable a. Producer's. Environmentally well, we in we don't have that big problem of carnivore or we don't have it right now. But maybe we have to be prepared for that. Yeah. And also we have some projects we have trying to do some. But if you do go to. It's up there. They have the slogan. If you go to Santander, they have the program. Okay. So we have to be prepared for that. Could. Yeah. Yeah. Three and current, I think, will be the main of our current. Because my age. Yeah.

00:17:29  
*Speaker 1:* But do you, do you think they know the source that is coming from. Is it in the soil, is it.

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*Speaker 2:* From any other. No. Mainly comes from that from the water on soil. Because mine area here are artisanal. Mm hmm. So they do we make. Yeah. To separate the. The the war. The gold from. The gold mine, huh? Yeah. It comes in the water stays in the soil and the plant, because of the acidity of the soil, absorbs. Like I say, we don't have it right now, but we might. I mean, that we have discovered we don't have any that quantity. We we might be in the levels on limits, but we have to be prepared for that.

00:18:18  
*Speaker 3:* Yeah.

00:18:19  
*Speaker 2:* Yeah. Because all the climate change and everything it it's that and also have a sustainable economical. Sustainable, economical and commercialization.

00:18:45  
*Speaker 1:* Trade between.

00:18:49  
*Speaker 2:* Also, big problem right now and it's not with Russia and everything and then fertilizers or that. So we have to do solutions. Of that.

00:19:00  
*Speaker 1:* And currently these fertilizer are being imported or produced in Colombia. Something.

00:19:10  
*Speaker 2:* But we have some producers. That are switching to to organic production or or approach. To that. So they use or their or they tighten up the producer. Here we have one. We have two or three. A with all the permissions of ECA and all the government is saying that that we can buy and we can where the producers can buy and can. We use them in the field. The thing is difficult. If you have all the fertilizers in the and from chemical origin to switch to biological origin. It's it's difficult stuff because you're going to have to decline. And then well, eventually, when when they. When the plants collapse, it's going to be a low and a productive. But with a if you report from the past that it's difficult for the producers to understand that. So they say it doesn't work.

00:20:31  
*Speaker 3:* Yeah.

00:20:32  
*Speaker 2:* So that's a problem. The other one and the other one is Melanesia and some point. Yes. In the root here because the humidity and the environment, that's that's a problem. And when we receive, for example, they gave us the the fruit and we have to eliminate a lot because they have that for fermentation and everything. But we cannot put it in fermentation going to be all flavors and everything.

00:21:02  
*Speaker 1:* So you think this is this cause for the post-harvest losses? When you say that first post-harvest. This is what you mean.

00:21:09  
*Speaker 2:* Yes. Yes. I mean, I'm talking about both the production and the plant. What if we go farther in the process, in the processing where we have a lot of procedures? So in the beginning, we have the in the liquid. They. Um. But we we we we do the the legal. Between we process the grey the cocoa green and to obtain the league. We have a lot of also the cities there so we have the Khadija that that covers the green and that's that's rich in legal cellulosic that by now if you not have an interview with my with my partner we both work in biomaterials using a cup of coffee and Cocoa Bowl and some and some of the avocado. So we are trying to use those materials as a biomaterial. Um, that's our other project. Not the main one, but it's another project. Yeah, my other project. The other one is because a you have to titrate the rain and pasadena's lambda. So in each one you're going to have more residues that. Have the part of the grain and part of the liver. And that's another one. What else from the economic point of view? I think a fair price. Yeah. The only valid change. I think is the main challenge. I think everything you mentioned that it's a challenge. To keep the associations united because they are currently not or how. They change a. Lot. We? Mosul in the beginning. Mosul then got together to to get some resource money from the government to use to to produce but maintain united after that after a project is difficult because they don't have enough knowledge to manage the organization. I mean, they need, they need. Skills in administration accountability because they maintain the association involves everything, you know, to manage the the money that comes in and. What is going to go out. Yeah, that's why. And to invest it better. Yeah. So they need that is stronger in that area. Area they need to be strong because they are producers, they are more financial people, more experts.

00:24:44  
*Speaker 3:* Yeah.

00:24:45  
*Speaker 2:* That's why.

00:24:46  
*Speaker 3:* So do you. They start with the project, they get money for it. But then after that.

00:24:50  
*Speaker 2:* Is is difficult to to maintain it because the money don't flow as when you have a project, then you have a project, you, you build something, but you have to maintain it. So that's I thing. Is that the difficult part.

00:25:04  
*Speaker 3:* Yeah.

00:25:05  
*Speaker 2:* Yeah. And also, if you are an association, you have to, to pay taxes lower, but you have to pay the taxes, you have to be recognized. And they come on a commercial. Commercial. Chamber of Commerce.

00:25:20  
*Speaker 1:* Chamber of.

00:25:20  
*Speaker 2:* Commerce. Chamber of Commerce. So that you have to do it every year. They are not conscience of that. That's right. Yeah.

00:25:32  
*Speaker 1:* Yeah. Yeah. In this project, yeah. We actually want to have this value chain in the concept. This bio hub, what we call it, is a win win scenario for everybody, which actually involves, you know, like as you can see here are the different communities that are present, which are the biomass producers, and then actually the residues are generated, which will be used in a common refinery by originating in this project. We are fixated. Settling on a process that no chemical process is part of hydrothermal liquefaction, which is very similar. It's called red clay, but it's very similar to hydrogen. So you get bio crude bio carbon that bio gas and also the water stream products, some of them will be recycled. But as you can see, bio carbon can be treated and then send it to. In this case, it could also be applied. To wastewater treatment to absorb heavy metals or something like that, or for electricity. And then the bio combustibles, the bio crude or it can be integrated with the chemical industry or a refinery to operate to sewer. So this is yeah, this is the chain which we are looking at. So in addition to the economy, in addition to the income, based on the residues, will we be able to get additional investment by economy?

00:26:56  
*Speaker 2:* Okay.

00:26:57  
*Speaker 1:* It's not fully circular, but kind of circular in certain aspects in terms of bio economy. Exactly. So this is what we call bio. And it can use a lot of multiple feedstocks.

00:27:08  
*Speaker 2:* You call it what.

00:27:10  
*Speaker 1:* Bio hops? Like a cluster where.

00:27:14  
*Speaker 3:* Okay, organizations.

00:27:15  
*Speaker 2:* Come together or represent. Oh, okay. Just organizational. So that besides his main production.

00:27:23  
*Speaker 3:* Yeah. Yeah.

00:27:24  
*Speaker 2:* Doing together they have for example, if I understood we have the a cocoa and the coffee producers, they. Produced chocolate and fruits. And with that. Bill, this cluster that you are talking about with the seeds. Yeah. Yes, but it's parallel. Yeah. Okay.

00:27:48  
*Speaker 1:* Okay. Yeah, it's.

00:27:50  
*Speaker 2:* Okay.

00:27:51  
*Speaker 1:* Okay. Let's say, for example, this could be one association. This could be one association which has multiple farmers, this could be one association. And then they collect and generate or give all the residues. So in this case, as you can see, this could each individual could be small scale associations.

00:28:07  
*Speaker 2:* Okay.

00:28:08  
*Speaker 1:* But when you put them together and feed it to this refinery, it's a big scale. Okay, let's envision. And then we can we still have to work out how to distribute the benefits equally among all the people. But they are these are this is the this is the concept. Top of the pile. So. Yeah. Yeah. If you can get this person.

00:28:34  
*Speaker 3:* Yeah. So you want to understand if it's possible a system like this in this context and also what type what type of benefits could it bring to this region?

00:28:49  
*Speaker 2:* Okay. So we had a small region, so it will be possible if we get all together. Yeah.

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*Speaker 3:* So. So according to you, what, what kind of opportunities could it bring or do you think is needed in this sector at this. A new value chain could bring here.

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*Speaker 2:* I think he's pretty new. I mean, all this concept and and everything. But I think it's it could be a big challenge, but it's I think it could work because right now we are more conscious that we the receiver we have. And also, we know that we can take advantage of the receivers. I think the most the the benefit of these would be more representative in terms of energy maybe they use. Yeah. And also like we talk about the bio combo, bio carbon and everything, I think that we can be prepared for that. What I told you about the the big the heavy metals and methane. So it could help us to be prepared that we can study if that really works or not. Yeah. And also it can involve in all the fields. Yeah. For me, I think it would be good for water. But here because we have a lot of water, we have the challenge is bigger because we have to be conscious of these people that we can use this bio carbon as a clean end of the world and everything. We don't even clean it with active carbon because we have on the sea and we are on the river, we have it everywhere. And if, like you say in this moment, every half an hour is raining and we we don't even collect that one. So I think here before this, you have to be conscious more of of collecting water, treated water. So that will be a bigger channel. Okay. So it will be better in soil. A lot of them are equations about the bio carbon in soil. Okay. But I think the other challenge is to have the factory of s of destruction of biomass. No, because it could be an easy technology. But we don't have it. We don't we don't have a of. The closest one we have with ethanol made of biomass of of sugar cane. And we have one here in Kenya. They do it. They do it with the Vegas Canyon. Yeah. Yeah. Uh huh. And they they have I mean, there is a big in Kenya and they produce sugar. They produce ethanol and they produce electricity. Oh, yeah. So they all all they have.

00:32:19  
*Speaker 3:* Yeah.

00:32:20  
*Speaker 2:* I mean, also, that's a real maybe they're more an economy, a circular economy maybe, or approach to the economy because they have the, the main product in the same factory. But they, they have the other areas and they also are doing electricity and and selling the electricity they build from the source, from the liquid that is receivers of the use. Yeah. They do it by they they treat it and make electricity about that. Okay. Yeah. So we have some of, of that knowledge and we are conscious of that. But in this value chain specific of coffee and cocoa, we don't we haven't tried it. So I think the the the challenge I mean, what we can do, I think might be clear, but how we can do it or how we make the family, we where we put it, how I'm going, what are going to be the benefits from who is going to be the actors and everything? I think that is the key point. Yeah. Yeah.

00:33:33  
*Speaker 1:* And the the company which you just mentioned which uses sugar cane, so they they extract sugar. They use sugar cane to extract the sugars or they use the buggers to extract the sugar. What is the feedstock, the sugar cane or the bagasse?

00:33:49  
*Speaker 2:* The sugar cane. But it's but but they but they the residual is the bagasse.

00:33:55  
*Speaker 1:* Yes.

00:33:55  
*Speaker 2:* Yeah, they do. They do the the process ethanol and electricity.

00:34:01  
*Speaker 1:* So from the bagasse.

00:34:02  
*Speaker 2:* They do it'd be NASA's the bagasse is called be NASA's. When you when you do the process, you have one solid residues and one leak really good one from the label one that is that used to be a contamination because they they just throw it and they were gone. They went in the reverse. And right now they're using it.

00:34:27  
*Speaker 1:* Okay. Okay, let's, uh oh.

00:34:31  
*Speaker 2:* They have a very interesting process. Yeah.

00:34:34  
*Speaker 3:* Okay. And and you said, like, a benefit could be like the energy that farmers use, or what do you mean.

00:34:42  
*Speaker 2:* In terms of the energy? I think it would be a good one. Yeah. The bio carbon.

00:34:51  
*Speaker 3:* Okay. Yeah. Because do a lot of farmers have access to electricity and.

00:34:56  
*Speaker 2:* Energy sources, he said. Although we don't have like a lack of electricity. No. Maybe in other areas of of of Colombia. He was. But here, because we are so small.

00:35:12  
*Speaker 3:* Yeah.

00:35:14  
*Speaker 2:* And we are in the middle of the of the country. We, we. No, no. In coffee, in cocoa. Maybe not there, but not in coffee. In Kakao. I haven't at least I haven't seen it.

00:35:28  
*Speaker 3:* Okay.

00:35:30  
*Speaker 1:* So I'm also just checking because for the process here, so you work with biotechnology and the already existing company, it also uses biotechnology process. So what is the the technical skills available in like to have because this is a process which is under high pressure and high temperature. So which means you need people with technical knowledge of how to operate.

00:35:59  
*Speaker 2:* And so we have it we have it here. For example, in the in the university, we have a a well, the chemical engineer. Is he an.

00:36:12  
*Speaker 1:* Industrial.

00:36:13  
*Speaker 2:* Chemistry? Yeah, industrial chemistry. We have the agri industrial processing engineering there. Our alumnus, we also have environmental a bachelors. We have the biotechnology PhD. No, we have it. Yes. The knowledge we can have it. I think the big challenge is to unite the the legislation, how to build it, how to put everything together. Yeah. Because also because the difficult to collect the material that's that to be the very be sustainable. Yeah. Because even if we are small a our some of our competitors. Yeah. They're not in a good shape. Yeah. Some farms are far from, from one to each other so it's not like we are together like these and we collect and we know and we use the, bring it to the fabric now. So you have to do a lot of corridor to collect them and that would be really expensive.

00:37:39  
*Speaker 3:* Yeah.

00:37:40  
*Speaker 2:* We also, I mean in general in the country, we are getting an approach to collect a with a our home residents just right now why you in Europe we are doing it from ten 1520 years ago and we are here. We are implemented it right now. Yeah. So that's why my people, you know they use is and everything we are but to have the fabric with enough material to process in time and to keep it running. Yeah. With the with the sugarcane is easy because our our industrial by you change once more 150 years ago was our our first big industrial so we have an ingenious embargo in the and all most of of of our areas already have the sugar cane producers organize and everything so that to to that to to have that step was kind of easy more technological. And they have the infrastructure, they have the financial and everything. But if you're going to build this from zero and you have to consider of that.

00:39:05  
*Speaker 3:* Yeah, yeah.

00:39:08  
*Speaker 1:* Okay. So that's infrastructure and logistics is. Yes, yes, yes. You're right. I speak a lot until just two words and. Yes.

00:39:20  
*Speaker 2:* But yes. I'm sorry I talked too much. No, no, no, no. It's it's really.

00:39:26  
*Speaker 1:* Good. I mean, you're telling something which we actually we need to hear and those kind of things. And also we prepared something that yeah, like coffee, like power relations between different stakeholders. Like as you can see, you have the power from less to higher and then you have the interest for such a project in terms of sustainable by economy from low to high. And you have see like a regional government national government municipalities in future if is biorefinery. And they would be pleased. The collection, biomass collectors, the transport of animals and also the intermediate problems them. So the first question is, do you think everybody is placed correctly.

00:40:11  
*Speaker 2:* This place correctly? Yeah, let me see. I mean, from what point of view? From the point of view. All right. Let me see. From the point of view. They involved with the value change or from the point of view, I see the one change. Yeah. I think from.

00:40:42  
*Speaker 3:* How you think that their position will be in a new fighting in a new.

00:40:48  
*Speaker 2:* In a new one. Okay. I need to. Sorry. I know that. Any cafe coffee. I mean, is this stuff you? We are talking about these ones being co-operative. They don't have the power. They do. Okay. So cooperatives would be maybe right here.

00:42:01  
*Speaker 3:* Okay.

00:42:01  
*Speaker 2:* Yeah. Yeah. Because they don't have that power to do all this. To build it. Yeah. No. Or to. To be part of a part of. To be right here.

00:42:16  
*Speaker 3:* Right.

00:42:17  
*Speaker 2:* Yeah. I think they need for me.

00:42:20  
*Speaker 3:* And with cooperatives. Do you also mean associations? Do you think the associations are similar?

00:42:26  
*Speaker 2:* Similar position? Yeah. So. You know. Actually we don't have these very develop the biometrics that we were talking about with. Yeah, no. So I think well, it can be a good position, but um, it depends a lot from here, from this. Yes, we have some, but no, because of the government, it's going because of the law, most of that. So if, if the like would be more flexible and we have a field to we need to be we need to have areas to, to have all these procedures.

00:43:23  
*Speaker 3:* Yeah, we don't.

00:43:24  
*Speaker 2:* We don't, we don't have it and we don't, we, we know how we, we are not clear in how to manage.

00:43:31  
*Speaker 3:* Them. Yeah.

00:43:33  
*Speaker 2:* So I came here, it will be like right here it's a higher power. Yes. Because you have to integrate it so we can help to manage to processing to everything. So internet is good, but we have a lot of power also because it's going to to determine what technology or to transfer that technology also or knowledge.

00:44:01  
*Speaker 3:* Yeah.

00:44:02  
*Speaker 2:* Just also in logistic. So how to because we, we transport this mass biomass, we are just pouring water. Yeah. Mostly. So it's, it need to be a special logistics but I mean it's very expensive. Yeah. Yeah. Mhm. What do you mean by this platform?

00:44:28  
*Speaker 1:* Like a cluster of, let's say. We also heard from others. Such a platform does not exist in Colombia. What we thought of is like there is like a biomass association, like a cluster of people who uses biomass or whose like a cluster who wants to change to a bio economy or a circular economy or, you know, sustainability people. But we also somebody told.

00:44:54  
*Speaker 2:* Us there is some in the cosine oil, there is some of them. And also they saw more of the spillers batteries.

00:45:13  
*Speaker 3:* Okay.

00:45:14  
*Speaker 2:* Yeah, the battery.

00:45:15  
*Speaker 3:* Is okay.

00:45:18  
*Speaker 2:* For me, the spectrum is different because we are here in the university and we have a sustainable campus. So we are related with all this. But if you go out, it's not the same. We live here. So for example, we have points here. When you call it the oil, you call it the batteries, then the medecine and everything, and we have all the contacts with that. So they come here and they they they take it also with plastic bottles and everything. So for me, if you ask me, this will be here because I'm immersed in this campus. But if I go to the associations and the evaluation, maybe this no will be that easy because they don't know who they are, but they exist. Yeah. So that's why I was asking about they exist. We have it.

00:46:13  
*Speaker 3:* But there's no one platform where all these organizations come together and can communicate and.

00:46:19  
*Speaker 2:* Know really well. We have it here in campus because we have a policy. We have these area section that managed all the all the procedures and everything. So here we have it together. Yeah. If we, if, if we, we mix this with, for example, we have in academy, can we try to match that. It will be maybe will be interesting.

00:46:46  
*Speaker 1:* So we will be right.

00:46:48  
*Speaker 2:* Here for.

00:46:48  
*Speaker 3:* Example. Yeah.

00:46:49  
*Speaker 2:* You'll be implementation. I see that the transformers they they are missing here. Yeah. Okay. Because I hope they have they're going to have residents like that can help like you say the charita. Yeah. Yeah. So I think that thing here. Where I put it. Because of things like.

00:47:18  
*Speaker 1:* Well who did.

00:47:20  
*Speaker 2:* I think it would put it like maybe right here or something. Okay.

00:47:24  
*Speaker 3:* So high power.

00:47:27  
*Speaker 2:* But they have more. More economic and financial.

00:47:30  
*Speaker 3:* Yeah.

00:47:32  
*Speaker 2:* Most of them. Yeah.

00:47:34  
*Speaker 3:* And how do you see the position of the. The. Farmers.

00:47:45  
*Speaker 2:* Uh, I think it's fine because they thought cafe cafes had different value chains of cocoa, coffee, the big farmers. That makes it. Yeah, instead of cocoa. Well, this is coffee. You're asking me for coffee? Yeah. Maybe it would be, like, right here a.

00:48:10  
*Speaker 3:* Little bit.

00:48:11  
*Speaker 2:* Higher. Yes. Okay. Yeah. Most of the depends will be more. More or less. Yeah, that's just.

00:48:19  
*Speaker 3:* That's right. And the position of the coffee shop.

00:48:28  
*Speaker 2:* Hard question. Hmm. Very hard question. This is very personal. Very, very, very, very personal concept. Yeah, because of my position. Yeah. I shouldn't be saying this, but we won't. They are too close in this in research. And I think that there will be more they should be more open. Maybe they have also these develop or or start or or doing some research, but we don't know it. The Academy don't know the policies or know. So I think the interest for me will be very low because they don't share. They don't open to that. They just manage the hell to manage the business. Yeah, but that advantages. We don't see it clear in the academy, in the producers, in the Transformer. So sometimes in some meetings we have, we also have told them, well, we're going to do this. Oh, we did that already, but you did it. But we don't know it and the producers don't know it. So if they don't know it, they don't have value. I mean, good, you did it. But what you're going to keep it. They're they're changing a little bit. Okay. Maybe because we because the academy is getting more in the we have more Ph.D. we have more people interested and doing different things. So they have to open like mandatory. But but for me, I think it's low. The interest will be low because they are sending the grain, you know, in the in the basic value chain of produce, the grain, the coffee grain to have some one. Right now they have one or two cup, a special coffee, but before they didn't have it. If you wouldn't come three years ago, they didn't have it.

00:50:39  
*Speaker 3:* No. Yeah. Right now they have it. We have this.

00:50:45  
*Speaker 2:* Lapel feel this award because they have they have done that. They are very focused on that in the game. And do you know why that is and why they are so closed? I think because it was the major economy. So they want to maintain in the major economy of of of the coffee. Yeah but as soon Vietnam and and all these countries start to produce also a good coffee in Central America they have a good coffee. Not so good biology, but they did they grow really well in there. For example, Haitian everything, you know, that's more bone. And in Central America, they're getting very strong. So when they have the competition, they start to open and kind of they change in change the business. Yeah, but in the beginning because this was maintaining what we are good here. I don't have to. So I'm not sure if. We have a really interested in this. Yeah, that's why for me, this is because I right now I haven't seen that change of that I economy. We are integrated in our in our agribusiness master. But when you talk to them and still only mind their own business. Yeah. But like I say, it's very personal. I will say eating.

00:52:23  
*Speaker 3:* No, no. Okay.

00:52:27  
*Speaker 2:* So cafe will be like right here. Yes. So. So no power. They have power. They have interest. But the interest.

00:52:36  
*Speaker 3:* That's I'm not sure. So the important exercise to to involve is probably then. The associations to support for the.

00:52:49  
*Speaker 2:* That's another difficult question because the associations don't have the power. No, I mean, I if we get that united that I told you about before, it will be I mean, I didn't move from here because there are the producers. If you make up your minds, because we we we cannot do this model. No. Yeah. That's why they have the power. But they don't have the power on, on, on integrated staff. Yeah.

00:53:27  
*Speaker 3:* Because they don't have the capacity people to receive resources. They, they don't hire it. Yeah.

00:53:34  
*Speaker 2:* I mean in coffee would be more than in cocoa. Okay. Yeah. Because the producer coffee we have recently big producers but one hectare here we have a lot of hectare. Yeah. And it's.

00:53:48  
*Speaker 3:* More. Yeah.

00:53:50  
*Speaker 2:* See a in most of them are small. Small. So that's why I didn't move it because they, because in coffee specific they have the power. But I don't know how, how easy they can change the main product to the, to the residual or biomass. I don't know how easy. Yeah.

00:54:15  
*Speaker 3:* Yeah. Okay. Yeah.

00:54:19  
*Speaker 1:* Yeah. I think, uh, yeah, I smoke most of the questions. Just to closing.

00:54:24  
*Speaker 3:* I just have one, one more question because she said, um, that there's a, I was wondering because you do a lot of relevance research also for the sector and for the farmers. So how do you, how do you transfer that knowledge to the sector and to the.

00:54:40  
*Speaker 2:* Yeah, we right now we are building said the development centre technological yeah you can say in Spanish Central is a technological con invoking agro industry.

00:55:00  
*Speaker 3:* Okay.

00:55:01  
*Speaker 2:* You know our industrial technological centre.

00:55:07  
*Speaker 1:* Yeah.

00:55:07  
*Speaker 2:* Okay. It's focusing in, in transfer technology as result of that. So I did a lot of emphasis because we are in, in the focus of that. Yeah. And one of our change is not coffee right now but if cacao. Okay, uh, what it doesn't mean that we're not going to be involved in coffee or coffee is our major. We are in the coffee area. No, but because coffee have a lot of actors involve and help what we choose more or theirs. Yeah. For this this first phase. Okay. And with them, for example, in cacao, like I'm doing all this, my research in LA, but also I have a master student that is going to do it in the field. Okay. And it's going to to characterize their fermentation there. Yeah. And then and everything. So we are kind of conscious, we have to do it in lab to, to make the approach, but also we have to do it in, in the field. So we are we are working in both sides. Yeah. Okay. Thank you. Yeah, yeah, yeah. Most of the most of the.

00:56:29  
*Speaker 1:* Questions and yeah, maybe, maybe last one like we saw a lot of challenges with respect to, you know, the technology, the infrastructure collecting biomass, also the scale of the of the small scale because they're small holders. Do you think this is? This is something which could be realizable, like, let's say, for example, we are not going to say that the goal of this project is to not to build build. This is just to tell them the proof of concept. This is an idea. This is also a value chain which you can implement or develop. Right. Maybe the next step would be like a small pilot scale. Let's say identify one farmer who has, I don't know what a cluster of farmers who has combined hectares of 100 or 200 hectares and then collect the residues from that region and then transform it and then do all these things so we can show them proof of concept. Do you think that would be possible?

00:57:33  
*Speaker 2:* Yeah, and most I think because we are like really close behind behind Europe, for example. I mean, I think Europe in 2030 have to be so. Plus Facebook 51. Well, but plastic. You have to be 30, I think. 30. And then in carbon in 50. So so we are not far away from that because we are carbon producers. We are oil producers. So we have to do the change.

00:58:09  
*Speaker 3:* Yeah.

00:58:10  
*Speaker 2:* Yeah. And every government that is, it's coming. It's also more conscious of that. I mean, we don't contaminate as as other countries, but we know right now that we have to, to look for other options.

00:58:28  
*Speaker 3:* Yeah.

00:58:29  
*Speaker 2:* So I think it will be very important to have a star the idea here and I think if you you are trying to do it, I think as I understood you are doing different areas. So I think you are you are for the future. I mean, you are trying to to see if we what are they the difference to put it maybe here in this context on put in Europe or Britain, I think that's the approach you want to get. Yeah. And I think we need it. I think we need it because of the change I telling you about. I mean, we are also aligning with a sustainable.

00:59:22  
*Speaker 3:* Sustainable development goals.

00:59:24  
*Speaker 2:* Yeah, we have some goals there also. Yeah. So one of the goals is that.

00:59:32  
*Speaker 1:* Yeah, just the last question. You say that there are a lot of a lot of researchers in academia who actually focus on biotechnology like fermentation, building, new biomaterials, high value added products. It could be pharmaceuticals, a lot of other things, even even ethanol, methanol like platform chemicals, everything. But this is just academia. We are speaking researchers that lack scale. Are there companies which develop such a technology who are really specialists in such plants.

01:00:07  
*Speaker 2:* Except the Sugar Lands plan.

01:00:12  
*Speaker 1:* That is an are there any company who specialize or who build these kind of bioenergy projects in Colombia?

01:00:19  
*Speaker 2:* Hmm, good question. No, on the examples I have seen is mostly from Europe except sugar cane. No, I know. Okay. And maybe the the cooking oil, they're making the approach in casino, you know. Okay, maybe that but really small. But they are doing an approach to that.

01:00:50  
*Speaker 1:* Okay. What's in oil is the name of the company or a cook.

01:00:53  
*Speaker 2:* Cooking. Oh, okay. Cooking. Yeah. Sorry.

01:00:57  
*Speaker 1:* What are the, you know, quality to biodiesel or something? Yeah. Yeah. Okay. Um, do you have the name of the company? Which the.

01:01:07  
*Speaker 2:* No, but I can look it up or something.

01:01:12  
*Speaker 1:* Oh, yeah.

01:01:13  
*Speaker 2:* Okay. I can give you the name because they come here often.

01:01:20  
*Speaker 3:* Okay. Okay.

01:01:21  
*Speaker 1:* I think that would be interesting because what it is is to actually have a biodiesel because Malcolm Center can take.

01:01:27  
*Speaker 2:* Anything and everything. So there was an approach in Wildwood. There is a student data. Bio carbon made of Walla Walla. Walla Walla Walla Walla Babu. Oh, yeah. Type of combo. Okay. Okay.

01:01:52  
*Speaker 1:* And this sugar company, which you mentioned. Is it is it of Columbian origin or is it not? It's from Colombia. Okay.

01:02:02  
*Speaker 2:* Well, some of the tools are here. A companies. Like I'd say, because it was it was our first industrial. Okay. Okay. Maybe you can visit. I don't know. Yeah, I think we are going to try to try to go to the. To the plants. Yeah. To electrical plant. Yeah, it's very interesting. They have all they do pass all the businesses. They have it here, they trade it. And they do know that they are connected. To the electricity and electricity business. Okay. Thank you. You're welcome. Thank you so much.