**R6 – Interview Lina Tami – PhD Penn state – 29-6-2022**

*Short introduction to the project.* **First, do you have any questions before we start?**

No, I am an economist, and I did a master rural sociology and now I am doing a PhD in rural sociology. And during my master I had a dual degree in agricultural development. That is my experience, well I am economist but my experience is in agriculture (agropecuario). I can tell you more about cocoa than coffee. About the project, what caught my attention is, it is for the maritime sector?

**Yes, because they emit a lot, so they need to change to a more sustainable system and they don’t have much alternatives but to use biofuels. And that is an opportunity also for areas where biomass is produced. So we look for a way in which it can be beneficial for all parts.**

Ok, let’s start.

**Can you introduce a bit more your experience in the sector of cocoa?**

I always worked in the agricultural sector, in public and private sectors. With LASAC, which is a gremium of gremiums, I worked in economic studies. And with Agremia, I also worked with farmers. I worked in the public sector, with the ministry of agriculture, on various topics, also on value chains, the phenomenon Nina, and I worked with ICA on the topic of technology transfer, I worked more than 3 years on that topic, and after that I started to study again. So I had various positions, in private and public organizations. In the sector of cocoa, my master thesis focused on the cocoa sector, and especially on socio-economic factors and technological factors that influence the technical options. I did that, especially in the regions of Santa Marta and Montes de Maria. And now, my doctoral thesis focuses more on technologies, in cocoa they plant in agroforestry systems, and those systems mean that besides cocoa, farmers also plant other crops. About 95% of the cocoa in Colombia is agroforestry. And these are in many different forms, but the majority plants plantains and cocoa. My projects focuses on understanding if diverse agroforestry systems are better for three types of risks, climate change, food security, and risks of the markets, market shocks with the prices of cocoa. That is what I am working on now. And I am also working a bit on a very different project, on laboratory meat. We are working as well on a topic, water-food-energy nexus approach, an approach that is getting more attention, to analyse more complex problems, and we are working from Penn State to do some more projects on these topics in Colombia. But my main experience is in cocoa in Colombia. And my experience in coffee is based on my experiences with private companies in the sector.

**Ok, and based on your experience, what are the main challenges in the cocoa sector?**

First, what I have seen in my study, almost always the alternatives that they promote at the cocoa farmers are based on either increasing productivity or to increase quality, to receive a better price. So, everything is focused on increasing income, to improve the quality of life for the farmers. I think, that the first challenges is to change that mentality, that to improve the quality of life of farmers, you need to increase their incomes. Because there are many other things that are important for these farmers. And I think it is important to think in alternatives, for example the agroforestry system, I think that is a third way. Not to think only in increasing productivity or quality, but also diversify, to improve the capacities of those farmers to resist these risks, climate change, food security and market risks. So the first one is to move away from this black-and-white vision, or it is productivity, or quality. Agroforestry systems have major opportunities for these families. That means change the mentality, of the productivity systems, and to be more inclusive in consulting these families what it is that they want from their fields. An important thing in Colombia is that 50% of the production area of cocoa in the country is replacement of illicit crops. We have 2 cocoa worlds in Colombia. One world is the traditional cocoa sector, like in Santander, Norte de Santander, Huila, Tolima. And another world that came out of the processes of replacement of illicit crops in the past few years. Where one of the alternatives for families to leave coca behind is cocoa. One of the reasons is that cocoa has a lot of opportunities in the market, it is an international market, there is more demand than supply, and there are market opportunities for specialty cocoa. So that is the discourse, we need to plant more cocoa. So that is the reason why about 50% of the areas under cocoa production are replacements of illicit crops, in regions that traditionally are not cocoa regions, like Bolivar, Cordoba, Caceta, Putumayo, although that is an original cocoa region, but those families did not necessarily replace coca for cocoa because of tradition, but more because that is an alternative that is offered to them. An interesting example is Boyaca, when I talked to the people from there, what they say is that their grandparents cultivated cocoa, later there was a boom in emeralds, then when the mines where closed, there was a boom in coca, they started to produce that, and now they are returning to cocoa. So in some regions, their ancestors cultivated cocoa, but for some it is completely new, like for example Bolivar or Cordoba. There is something that I observed and what I would like to confirm in my dissertation, is that the construction of the production model was not participatory. It was more like, the technical guides say you need to do it like this, but it was never asked if they also want to plant other crops within the same system. You can come across in for example the region of Narino, where they plant cocoa in the coastal area, that is an emblematic area, of Tucuma, I got to know there that they were a bit resistant to plant cocoa in the way that it was presented to them. Why, because they also wanted to plant other crops to keep their food security. They wanted to plant cocoa, but without removing their fruit trees for example, they prioritized to remain those trees, that provide them with fruits that are important for their daily diets, and have less space for the plantation of cocoa.

That is a second problem I see, is that the systems that are promoted, like very simplified agroforestry systems, that originate from technological studies, that say it is viable, but they have very little participation of the families about what it is that they want to plant. So, I will give you an example. In Montes de Maria, I talked with some families that before cultivated coca, and now have cocoa, they received the installation for the establishment of those crops, and later they removed a part of what they planted, and instead planted some of their traditional crops, like Name, rice, mais, beans. That is something that they did afterwards because that was important for their food security. So I think that that is an example of a process that was not participatory, they introduced a system that from a technical point of view was viable, but that did not correspond with the necessities of the families. I think that that is a second important challenge. First is to diversify the options and second, secure the participation of the producers and families, to understand what it is that they need, because their needs are diverse.

And another challenge is to work with the topic of gender. Approximately, based on data from a survey that I saw lately from Fedecacao, about 25% of the cocoa producers are female and 75% male. But there are some regions where this division is different, where it is more 50-50. But in general it is this relation. There is a lot to study about what is the role of the women in the production of cocoa, and in the study that I did, we say that there are some tasks in the cultivation of cocoa where the women are more active, and in some tasks not. For example, de cultivation of cocoa needs a lot of pruning, to control plagues and illnesses, and to maintain the structure of the tree so the tree keeps on producing. Those activities are done more by men, as well as fertilization. The women do more the harvest, pick them, bring it to the zona de beneficio, in the process of beneficio, there is a difference in the task division. There are men that do it and also women, that differs.

**Thank you, first you said that the focus is a lot on increasing the income of farmers, and it is needed to have a broader perspective. From your experience, in the wellbeing of families that produce cocoa, what needs to receive more attention?**

All the institutions that are focused on the cocoa sector, they do little to support the families in the technical assistance, extensions, help with commercialization, credit etc. related to the other crops that the families cultivate. So, when you see a process of extension, like they do in Fedecacao, the gremiums, the extension services, they are very much focused on, and the traditional production model in Colombia, which is plantains, cacao and madurables. There is a lot of focus on cocoa, and very little technical assistance for the cultivation of plaintains or madurables. They don’t pay attention to the families that also have other cultivation, like mais, beans, rice, they only focus on cocoa. So, what happens, in my concept, because we know that 95% of the cocoa production happens in an agroforestry system, because of the climate conditions. In Colombia, cocoa needs shade. In Ecuador and Peru, there are other characteristics because of geographical conditions. But here, monoculture will create a lot of problems, so the agroforestry system is better here. But what is needed is that the institutionalisation around the sector is also focused on this agroforestry system, and not only in cocoa. That is also a discussion that we had with CECIC, that we need to focus on an agroforestry system, that is diverse. There are thousands of possible combinations of cultivations, but there are some tendencies. For example, in Narino, there are systems of cocoa, with banana and fruit trees. In another region, they have citrus fruits. In Montes de Maria they have yucca, name and avocado. So there are regions where the systems are much more diverse, and so the institutions around it, like the government or the gremiums, should have this into account, that these are diverse systems. So when for example when the price of cocoa drops, they can put their workforce into other crops, like for example avocado. So we need to change the way we see this and acknowledge that these are diverse systems. The same with credit systems. When you will ask credit to cultivate cocoa, the banks will have a defined norm, like the national fund for agricultural finance. They have 2 types of banks, primary banks, which are commercial banks, and secondary banks, which are agricultural banks where the government dictates the regulation for the financing of agriculture, like for example the credits, or the type of support from the government. There is a lot of information that the secondary banks need to comply with if they want to provide credit. The law dictates that these banks need to provide a certain amount of specific credit, I don’t know the amount but it is a lot, but that a certain part of the credit needs to be agricultural credit. There are some banks that provide this credit, banco agrario, which is the public bank, and some other banks like la vivienda, or bancolombia, and another that I don’t remember. What happens is that they provide credit and they need to put a specific goal, for example maintenance, and then they put cacao, and sometimes they put banana, but for the producers that have cocoa and fruit trees, nobody provides credit. So these types of limitations are very important for the farmers. The same with commercialization. When the commercialization of cocoa is stimulated, but what happens is that the producer of cocoa also has a lot of other things that need attention.

From the point of view of quality of life, there are many things to be said. They are mainly smallscale producers, plots that can be up to 10 hectares, but the area under cocoa production is smaller. But they are small scale. Producers with scarce resources. The production of cocoa in Colombia happens at a very small scale. Similar to coffee, that is also an agroforestry system usually. The difference between coffee and cocoa is that coffee is planted on a higher altitude and cocoa lower. But they have very similar economic systems. Family farmers, where the majority of the income comes from these crops.

**Could you also explain a bit more about the dynamics between the farmer with an older age and the younger generation?**

Two years ago, I received the numbers of the average age of the farmers, of about 55 years old. It is a relatively old group of farmers. What happens, the producers, what I can observe in my research, there is a general tendency in Colombia, not only in cocoa, that the older producers have preferred that their children would go to the city to study. Those that were able to support the study of their children did that, and those that could not, a lot of the children went to the city to search for work. What happens, because the rural education is limited, the majority of these young people did primary school in the villages and they went to bigger towns in the area to study high school. What I can see is that in many cases, the women will join their children and live with them and the men stay behind in the villages to work on the plots. The proportion of the farmers that live on their plots in low. The majority live in municipalities between small villages and urban areas. These young people don’t want to continue in the field and also their parents don’t want that for them. The young people that do want to continue in the cocoa sector, want to do that in a different way than their parents. They want to focus on added value of cocoa and the principal idea in these communities is to make chocolate, or cocoa liquor, but there is not enough institutional support to support these young people in this development. So, they don’t look at the future the way their parents did, planting, doing the agricultural tasks, but focus more on commercialization. So we have a serious problem, because Colombia has a high percentage of very old trees, and they need to be renewed. So the majority of government programs are directed at the renewal of these cocoa trees. One way of doing that is to remove the cocoa tree and plant new ones and another is to recover the old trees that can still survive. What they do is they remove the top of the tree and they make a cut and put a new branch in it. A new tree starts to produce after 30-36 months, and those recovered that goes more fast, like 24 months. What happens, someone needs to do this work in the field. And cocoa has another problem and that is that it is not easy to mechanise, there are not many machines that can take over this work. So, the demand of workforce is very high. One thing that came out of my studies is that the scarcity of workforce is a limiting factor to the implementation of the technologies that are needed to improve the productivity and quality. Why, because most of this work is manual. The pruning, is manual. The fertilization and control of diseases, like monilia, also manual. You need to cut the ill fruits. So it is a lot of work. So if the youth doesn’t want to work in the field, who will do it? Up to now, there are no machines like in other sectors, to harvest or to fertilize or control the plagues and diseases. And in the process of beneficio, after the harvest. After removing the husk, they put the beans in big cases to ferment, and then the drying. The young people are more interested to do this part, from the fermentation and transformation. So, there is a serious problem. Because the trees need to be renewed or recovered and that work needs to be done in the field.

**I would like to show you an image of the concept we are working with. (showing and explaining the concept). How do you see this concept and what kind of benefit could it generate for the region?**

I think it makes a lot of sense, thinking about the diversification of income. What I have been reading about ecosystems, that are socio-ecological, that communities receive services from the ecosystem. In case of cocoa, it goes further than only cocoa, thinking more about the other crops, how that could be included, also for example the animals, some farmers also have chicken or pigs. So I think it makes a lot of sense to think about how can you make this agriculture more sustainable and what can be done with these residues. There is a lot of potential.

You should talk to Hugo, from Casa Luker, who is also very much involved in these type of projects, to utilize all the residues from cocoa. They do research there, not specifically to produce energy, but in a broader perspective. They have some analyses about various uses of the residues. The cultivation of cocoa needs part of these residues for the same cultivation, but it is inefficient to utilize all the residues for that. So we need to think especially about the uses of those residues for the quality of life of the families that produce cocoa. Of course it will benefit the environment. But from my point of view, the communities need to visualise their production system as a more diverse production system, more complete, that they can receive, well more income, but also more ecosystem services. I am thinking about for example about cultural services, like tourism, services that sometimes that are the last ones that are seen, the cultural services. Here are some important cultural services, especially in those areas where cocoa is a more traditional system like in Santander, there is a culture around cocoa, like in coffee, they have festivities like festival of cocoa, we need to think about like we have ‘paisaje cultural cafetero’, which has a certain value, that can be the same in cocoa producing areas. That they benefit from all this value that de work in the field can bring.

So, apart from looking at the production of energy, I think cleaning of water and more broadly, improving environmental sustainability. But yes, I agree fully, we need to amplify the vision on cocoa production. I think the vision of the institutions and public organizations is very limited.

**What obstacles or challenges do you see to develop a system like this?**

I think for one part, there is a technological challenge. There is a challenge in changing this focus on the production of cocoa, that apart from cocoa, we want to produce energy, or bioproducts different from cocoa. That is a big challenges to amplify this sensibilization for producers and institutions in general. We are in a comfort zone now, because now all the cocoa we produce, we sell, also the ones with less quality. That can change a bit. There are two big chocolate companies here, one is Casa Luker and the other Nacional de Chocolates, that buy almost all cocoa, and the fedecacao that is commercializing a part, and since some years, the special cocoa emerged, the fine cocoa and artisanal chocolate. There are some small buyers that buy in some regions, apart from those 2 big companies. So that is the vision that there always was, they produced cocoa to sell to the 2 big companies. I don’t know about the small artisanal chocolate companies. Well, there is an initiative cacao para el paz, they are thinking about making the packages more sustainable, from the agroforestry system. But the principal problem in this concept is that the institutions are not prepared for this. And there is a big amount of small producers, and it is difficult for them to work in associations because they are very dispersed. And to generate volume that is necessary, it will be difficult because the primary material comes from many different farms, so the logistic part is another challenge. But there are clusters, areas where there is a concentration of cocoa production, like in the areas where cocoa replaces illicit crops. I think those are the principle challenges.

**Ok, and you said that the institutions don’t have the capacity to support this system, and that they need more awareness. So, what is it that they need, to be able to play that role?**

Well, I think, in Colombia we have a problem that there are a lot of booms in projects with a lot of promises, but in the end they don’t work. So the institutions are focusing their attention on those ‘booms’ that emerge and to sustain their investments in these initiatives. For example, public resources for research on agriculture are very limited, and private companies do some research, but very limited and that serves their interests. Agrosavia, what is it that they do, the research is difficult to use public resources for projects that are explorative. So, it is complicated to justify these investments without some certainty that it will function. So there are a lot of technical studies about things that can solve a lot of issues, but it is not that easy to explain that to those institutions that do the management of these resources. So, there will be private alliances, or collaborations between universities and institutions. But institutions like Agrosavia invest research on the crop, not on other things, not on transformation. And research on transformation is focusing on traditional transformation, like the production of chocolate. So, it is needed to have a socialization about this and that the public institutions do not work individually, but that they form alliances. Or public private partnerships, but that is very politiziced, because the resources are from the regions. So it is a difficult work, on the institutions.

From a technical point of view, you need to strengthen the human resources, people that know about this, about bioproducts, bioenergy. The work that we are doing here, on food-water-energy nexus, to analyse these kind of issues. Because what we see is that all these institutions work in a narrow way, and do not look at it from a wider and integrated perspective. So we need to have human resources, financial instruments. And something happened, and it is important that you take that into account, which is the boom with ethanol and the production of ethanol, which in Colombia is produced by the ingenious, from sugar cane. In that moment there were problems with the price of sugar, and there were social issues as well, and they were big industries, they were the only ones that could do it because they were big and powerful. I am telling this, thinking about the democratisation of the benefits of these type of projects, it is a sector that is very small, very small producers. So that is a bigger challenge than with the ethanol, because the ingenious are bigger, they could put in investments, the government put in money. And the market was established. Here, it is very different, it is a small group of small producers, with low education, old, with important vulnerabilities, which is different from the market of energy which requires more technology, volume, and investment. So you need to see it. In coffee, that has some big advantages, for example that the federation of coffee is an organization that has a big technical capacity and an enormous extension program. So working with the fedecafe can be a bit different. They are very traditional, so that will take some effort to change their mentality to show that this is also a possibility, to produce energy with coffee, but it is more easy, because they have more capacity to think about these more strategic things. Institutions in cocoa are more modest, timid, they don’t have the resources that the coffee sector has.

**So this system, implies a change in practices for farmers. So how do you think this knowledge can be transferred to producers?**

Well of course there are important changes, for example if you use the husk of the cocoa, the process of harvest and collection will be different, there needs to be a protocol with strategies for this, how to collect the husk etc. I think it is viable if the producers see what the costs are and if the benefits are bigger, if it compensates the work. Like I said before, and this is also a problem in the coffee sector, finding workforce is an issue. So if this implies more workforce, it will be very difficult, if the extra payment is not significant. Of course, it is very interesting, all the things that you see now as waste, can have a value, in the case this system functions, and if you can show them clearly how to do it with technical assistance they will adapt. Not that you put all the machines somewhere and show them once how to do it, and then think about the women. Ah, this happened in a project in Peru, with machines for a sector that produces guinea pigs, and usually the women take care of these guinea pigs, and they developed a machine for this, but women could not use it because that was too hard. So if your beneficiary group is women, and you make a machine that weighs so much so the women cannot use it, it doesn’t benefit nobody. That happens a lot with technology. So with every technological development that requires the farmers to change their practices, we need to first do a characterization of who are the farmers, especially thinking about what is the workforce available, or if not, do we use machines. Is there some training needed, so to incorporate the characteristics of the producers. They didn’t study or finish highschool some don’t know how to read or write. It could be different with the new generation, because the younger people are more interested in technologies. So for them it is important to know the machines, the structure of the beans, etc. They are more interested in the transformation process. So you need to know the context very well, the type of technology, and accompany those people that will use them in the field.

**And in the case of cocoa, those people that do this process of separating the husk, and the process of beneficio. Are these the women that do this?**

That is more balanced. Women work a lot in the collection and ‘desgrano’, they do the cutting of the fruit until the process of fermentation. The fermentation, women can do it, but it is a bit more heavy, because you need to stir it, to move the beans. In the drying, I think this is a bit more divided, that is more easy. And the selection, to remove the beans that are bad or not suitable for commercialization, that is something also more divided, although women are usually more suited for that task. And commercialization can be both as well. But we do see an important development for women in the commercialization part. And transformation, that is principally the women who do that. The plots that do transformation, or the associations that make chocolate, in the areas I have been in Montes de Maria, they make artisanals based on the husk, they also make wine, and tea, and chocolate, butter and liquor. And chocolate de mesa, which is traditional in Colombia. These activities are usually done by the women. Men are more focused on selling their beans.

**Thank you very much, I think these were the main questions I had. I don’t know if there is anything you still would like to share or to add?**

Only that there are important problems in Colombia, that there is low capacity for technical assistance, in general. The coffee sector has a better sector, but I think if you are thinking about how to develop this new system and how to involve cocoa producers, you need to invest a lot in the system of extension (technical assistance) how to reach those farmers, knowledge, technologies. With the federation of coffee, that is much easier. They have thousands of extensionistas that can transfer this knowledge. In cocoa this is much more limited. And ultimately is, it is very important to know that there is a process in cocoa, that in the replacement of illicit crops, there is an interesting process that have to do with the associations. Because part of the promotion of the replacement of illicit crops also promote the formation of associations. There is an association of associations that is called Red cacaotera, that is the gremium recognized by the government to spend funds. They represent more than 10.000 families. And these associations are very interesting. And nothing more. I think it is key to think about a broader view, not only look at cocoa, but it is a broader system.

**Well, thank you very much!**