



## A field study on sustainable cocoa farming in Kumasi, Ghana

### Before departure

When I started at KTH I already had the thought to do as many exchanges as possible as I love living in different countries and I soon fell for the idea to do a MFS project. Originally, I wanted to do a MFS in Laos for my Bachelor's thesis, but due to the ongoing pandemic it was not possible. I then decided to aim for a MFS for my Master's thesis and looked for projects that this could work with. I also wanted to spend some time in the UK as my partner as well as sister live there and after a lot of research I found an ongoing project in sustainable cocoa farming conducted at the University of Oxford focused in Ghana. I have previously worked a bit with sustainable coffee farming in Brazil and as the crops are similar in many ways, for example being tropical crops, I thought it would be interesting to learn more about cocoa as well. I contacted the research fellow running the project and was very lucky in that he was open to do a project with me. Since this was a project that had been running for a few years, he could help me with a contact person in Ghana at KNUST (university in Kumasi) and we decided that I would first spend two months in Oxford to do the literature study and start the modelling part of the study and then two months in Ghana to collect field data.

The process to apply for the MFS grant was quite intense as I was coordinating with my supervisor in Oxford who had contact with our contact person in Ghana while also finding a supervisor and examiner at KTH. Luckily, it all worked out as my project was approved for the grant. After this, the visa application was quite intense as I needed to send my passport to the consulate in Denmark (there is no consulate for Ghana in Sweden) and receive my visa for Ghana before travelling to the UK. Again, I was lucky and got my visa two days before departure! I also made sure to get malaria pills while still in Sweden but got the vaccination against meningitis while in the UK (other required vaccinations I had from previous travels). English is the national language in Ghana so I did not need and language courses to prepare.

I had a very dedicated supervisor in Oxford and together with him I planned how the field study would be conducted while I was based in the UK.

### Upon arrival

I arrived with my supervisor in the middle of March and we worked hard from day one. The first week we spent planning the field study and making arrangements with car rental, meeting field assistants and the contact person, construction sensor stations and so on. The second week we had a "trial" week in the field where we checked equipment and tried the experiment outlay and made necessary alterations. My supervisor then flew home and the next six weeks I was leading the field work.

### Financials

Ghana is a lot cheaper than Sweden and with my MFS grant plus CSN loan I could pay for flights, accommodation, vaccinations, visa application and food while away. However, since this was a part of a larger project I also had three field assistants joining me three days a week + a car including a driver for these days. I paid for parts of this but the majority of this cost as well as field equipment was covered by the project in Oxford. I therefore highly recommend thinking about financials when creating a MFS project and try to find already existing projects that can help contribute with

equipment and other costs. Good to also budget for gifts to participants, we gave farmers a pair of boots and a cutlass for taking part of the project! In Ghana, research projects are common and farmers often take part of different projects without seeing direct results or benefits from participating so I think it is extra important to give them something for giving us access to the land and their time.



*Car rental was necessary with all the equipment we had in the field (this photo does not even include the 40 metal sensor stations that were 6 m long metal poles that we also used in the field)*

### **Accommodation**

My accommodation in Ghana was arranged through my supervisor in Oxford with the help of the contact person which had its pros and cons. The most obvious benefit was that I did not need to spend time doing this and I could feel safe as it was a guest house (more or less a hotel) at the university grounds where most people visiting the university stayed. My supervisor had also stayed here before so he knew that it was a good stay. However, as this was more or less a hotel I spent quite a lot of money on accommodation (around 250 SEK per night) and did not have access to a kitchen which I really missed. During field days (two nights a week) we however stayed a guest house closer to the farms we were visiting which was a lot cheaper (around 100 SEK per night). Since food was cheap in Ghana it was possible to not have a kitchen and still not spend very much on money on food, but I love cooking and am also a vegetarian which made it a bit harder even if I did find good veggie options.

My recommendation is to clearly communicate with your contact person what you want in an accommodation if they are helping you but to of course also be a bit flexible!



*I saw almost no mosquitoes in the room but the net felt cozy after a while and felt reassuring considering that I often had lizard buddies visiting my room*



*Benefits with staying at a hotel!*



*Campus was beautifully green! Here are some houses professors lived in*

## **Project**

As mentioned my project was about sustainable cocoa farming. More specifically, I focused on the implementation of shade trees into cocoa farms which is done to create diversity in the systems and regulate temperatures of the cocoa. It consisted of two parts with the first being to model future climate scenarios in West Africa in order to see which shade trees would suit future climates and therefore could be recommended to be implemented into the cocoa systems. This part I mostly did in Oxford as it did not require field data, even if I did need to spend some time modelling in Ghana in order to finish on the time. The second part of the project was to examine how farms' microclimate was affected by different levels of shade trees diversity on the farms. For this, I placed sensors on farms during my field study to measure the maximum temperature and analyse how this changed depending on the farm structure and sensor placement. The project was developed together with my supervisor in Oxford and was created based on my previous skills in programming and environmental modelling together with his long terms aims with his research project.

A normal week we spent Tuesday-Thursday in the field and the rest of the week I was working on my report, analysing results, and doing modelling. During field days we usually left around 6.30 am and returned 6 pm as the sun sets early in Ghana and we wanted to start before it gets too warm. During these days we rotated the sensors between the farms but also collected other data through interviews and with a drone. Some of this was for my thesis but we also collected data for the larger project.

I will most likely not continue with the project, besides assisting in trying to publish the results. However, my supervisor is taking on two PhD positions the upcoming fall who will continue with similar projects. I am happy to think that the project will keep going and hope that my part of the project will be of help. I also shared the results with the research group in Oxford through a presentation before my official thesis presentation at KTH.



*Here is a sensor staying measuring the temperature above the cocoa canopy*



*I helped plan and collect drone data even if this was not included in my thesis, something I really enjoyed!*

## **Country**

Ghana is in many ways different to Sweden. The farmers we met were very poor and had struggles you won't have if you come from Sweden. I however found that everyone was very friendly and welcoming, even if I did spend a lot of time thinking about my role as a person coming from a Western country coming to work in Ghana. My field assistants, who were from Ghana, were a great way to learn more about the area and to hear about how everyday life was for them.

I was also happy to find some very tasty dishes that were vegetarian (such as Red Red and Fufu) even if I did need to alternate less than I usually do between dishes and was amazed by the fruit which tasted maybe a million times more than home! Especially the mango which was in season.

### **Leisure and social activities**

I will admit to not having a lot of free time as I was very busy writing my report which had a deadline right around the time I was flying home. As I was working so much I also didn't have much energy to socialize or travel the days I did have of, but I would generally say that it is hard to get to know people when travelling like this and would recommend others to do a MFS with other people as one of my main struggles was feeling quite lonely. I believe I worked more than a MFS student usually would do as my supervisor and I afterwards realised that probably half my project size would have been more reasonable timewise, so I don't want to frighten of prospective MFS students reading this as I am sure you will have more time off for activities!

### **Sustainability**

While my project was very related to SDGs in the way it worked to improve the life of farmers by making cocoa farming more sustainable I would sadly say it was hard to live and travel sustainably during my field study. I took flights to and from Ghana and we rented a large truck while in the field to carry equipment. Since I also did not have access to a kitchen I only bought restaurant food and I could only drink water from plastic bottles as the tap water was not safe to drink. I hope that my contribution to a more sustainable world was large enough to compensate for these not so sustainable activities.

### **Other recommendations and observations**

Read up well on the country you are travelling to, to decrease the risk of culture shock, and plan some activities beforehand you want to do so it will be more likely that you do it on your days off!