

# APPENDIX 3

## 1.1 Interview 1

Anverson Solar, June 16<sup>th</sup> 2014

1A: Murtaza M. Ayubali

1B: Abdul Tajeb

INT: interviewer: Ida Kirstein

NOTES: Small shop located at a roundabout in the middle of the city centre. The area is very busy with lots of people, and crowded with small shops with a counter towards the street and a small back room and storage room in the back. Shelves filled with solar lamps, panels and LED lights from different brands. Co-owner Abdul Tajeb sits at a desk in the back, his brother and co-owner Murtaza M. Ayubali with whom I have made the appointment joins in during the interview. In the front of the store, 2-3 employees are busy attending to customers, and packing up orders.

INT: So I would like you to tell me a little bit about the business and what you do.

1A: We got into the solar business, yeah? So we have started since 2008, now it's almost like six to seven years, the market actually is growing. As you know most part of Tanzania, 70 to 80 percent don't have access to electricity. So the business I think is going good. But there is a lot of competition right now. Lots of competition, because you know, when we started we were the only one, now almost there a 30-40 shops, so many shops.

INT: Okay. And how come you decided to start this kind of business?

1A: Actually, you know, we have many shops here, we have three shops we own, so we wanted to start something new, so we thought...actually at that time solar was not that much, and the market was not that much, so we were just trying and buying locally from here, and now it's going good right now. Now we're importing so..

INT: Okay, and how is the business owned, who owns the business?

1A: Uhh, it's a sole proprietary business.

INT: and how many employees do you have?

1A: uhh.. Right now we have ... [counts] ten employees.

INT: okay, that a lot ☺

1A: Actually, we have a ?? at the back, so some of them are working at the back, so..

INT: Okay, and ehh, how do you get your supplies?

1A: We're importing from China. Uhm, some of them also from Taiwan, a mix of them, but most of them from China.

INT: And, how about your distribution, you sell it through this shop?

1A: Yeah, we are selling ... right now we have only one branch, which is where we are, so we are selling from here.

INT: okay, you are thinking about...

1A: yeah of course, but then you know we need manpower and everything, so... right now, we can't manage also here, so maybe in the future.

INT: And how did you finance the start-up?

1A: Actually, we have uhh.. always struggle, we were buying locally, slowly we started to importing, and now .. no one has actually helped us .. of course my father had the boosting, but, yeah.

INT: okay, so you relied on family...

1A: on our own internal capital, yeah.

INT: And what are your goals for..

1A: of course as I said we want to open branches if possible in all the regions .. all the 27 regions which are in Tanzania, if possible yeah. And maybe after some time, we can also have our own manufacturing plant. Of course that's a very long way, because Chinese modules are very difficult compete with in the prices part, soo.. yeah, but of course it will be a good idea to have our own plant also. Maybe in the future.

INT: Okay,

1A: Not only in the solar batteries, because there are so many thing we could..

INT: so in five or ten years, what do you think the company will be like?

1A: hmm, five or ten years... maybe after ten years we can have our own manufacturing plant. Five years, yeah.. yeah maybe after ten years.

INT: so, what kind of product do you sell?

1A: Okay, we ... actually we sell photovoltaic products, all of them, we have solar modules, we have solar batteries, solar charge controllers, we have inverters, LED bulbs, almost all of them, almost, starting all the ranges, and then we have solar lanterns, we have these phone chargers also, which someone can charge their phone, because actually this is our main part, our main business depends on these phone chargers. It is a very small thing, but it's very important. Everyone needs to charge their own phone.

INT: So it's through solar..

1A: yes, because with this you don't need an inverter, I think you understand yeah? So you don't need an inverter, straight from the battery they can charge their phone. So the cost of the inverter can go out, and instead they can buy this product. And solar lanterns, some of them have charging options also phone charging options also, so they can charge their phone easily. And also for reading light, this one is for solar reading light, if you know about it, it's a very famous product actually, in the whole East Africa actually. They use it.. especially the school children use it to study. So especially for this product...

INT: Very good, and ehm, and why did you choose the solar industry?

1A: Actually, you know, the market for solar is very high right now. And if you see, the normal, also the grid power, there is a lot of shortages in it. Right now, the rationing is not that much, but sometimes you can go almost a whole day with no electricity. And this is the case in Dar es Salaam, you can.. imagine how it would be in other areas. In the rural areas.

INT: And what would you say is your central mission or purpose with the business?

1A: Of course the central purpose will be to... to change the life of these people. Because ehh for them, you know, for us it's normal .. electricity, like we're dealing with it every day. And you know for them even a small bulb is a very big thing. So at least all of them should have at least a lighting or something like that. Because they are almost spending how much for 15 to 20000 per month on kerosene just to light up the rooms .. everyone at least can have some of the solar lights, it will be much cheaper for them.

INT: Because they don't have to buy any fuel..

1A: yeah because, these expenses.. like you know its from here we can talk a lot.. for them, when we go out to the villages and I've visited myself some of them, the light ...

[1B joins in]

INT: So what do you think is the most important achievement with your business so far?

1A: Achievement... we can say that ehm, up to now, most of the system that we've supplied, all of them are running nicely. The supply the domestic systems is 7 to 8000 systems. Which all of them are.. more small problems are there, but almost all of them are working nicely. Yeah, the complaints are .. there are some ups and downs .. this one is not working but we can manage it..

INT: Okay, so when you started this business, did you think about the environment or about social welfare or what did you...

1A: Actually the main part was social welfare. The environment, of course, but then .. actually we are not now polluting the environment. It's not us who are polluting the environment. I think it's other countries who are polluting, so for us to take for the environment is not, because we are not manufacturing I mean industrial country or something like that, compared to other countries. So for us, the main reason is the social. Not the pollution part. Of course that is the second part, we have to after some time but, like as you know, we are not the ones who are polluting the environment.

INT: So in the way that you run this business, how do you factor this social welfare in?

1A: social welfare, a least by providing proper products to the people and everything, we're at least giving them good quality products, so that once they use it they can use it for two to three years, after that we replace some of the batteries and some of the appliances, so at least we are giving them good products, and this... almost all the products we have sold up to now, we haven't got any complaints, so we are giving them good quality products.

INT: and how about the business part of it, do you consider it important gaining a profit?

1A: as I told you, the business is going up, because the energy demands are up, everyone needs energy. Even now, the population is increasing. So.. everyone needs power, so the business is increasing. Therefore the competition is also very high, we have a lot of competitors here..

INT: which is starting up recently..

1A: yeah, because you know, if there is competition there is, then you can see there is a market.. if there is one or two, then there is nothing, ..

INT: And so do you ever experience any conflicts between your social purposes and your financial purposes?

1A: social purpose and financial purpose.. yeah of course because you know, we are trying to give them a whole system. Now, most of them cannot actually afford some of the products. If we have expensive product they cannot afford it. Then let me just give you one part of it just connect some of the components together. So the financial purpose is there actually. Because some of them can afford the whole system, all of the quality products but, most of them cannot afford it. So we have to check how, we have to check how they can afford it. So we have to bring products according to them. Financial purpose is there, because some of the products which we sell, we know that this one is mid-range product, but we have no other option than to give them that...

1B: before the financial factor was more, but now the financial factor is reduced, because now the prices are 20-40 percent less, so now because of that reason the market has gone up, and they can afford it, and now the market is good. Before, solar was not normal because of the price, now the price is.. especially the photovoltaic, when we started 7 years ago, we used to sell 1 watt for 6000 shillings, now the same watt we are selling to 2000..

INT: okay so that's good for the people..

1B: Good for the people because it is cheap. For ... they can buy system, for .. they can use phone charger, before that was not possible. Before, just to charge a phone and light, was around 400000..

INT: So what does that mean for your business?

1B: For our business it is good, our profit has gone down, but overall the business has gone up, because of the awareness. If you buy one cheaper system the neighbor will ask you where have you got this, and he will buy from us, then it goes because overall price is cheap.

1A: it's simple, when the price goes down, the market goes up.

1B: Before that was not possible, before there was only 4-5 companies in Tanzania that were supplying, the price was very, very high, but now, there are lot of activities, there are lot of people working in this business, and because of that awareness has grown, because of this the customer base has also grown. So that is a good thing ... very good thing.

INT: Okay, so can you describe the energy industry in Tanzania?

1B: Our energy industry – that is main grid – it is not that effective. Because only 10-12 percent of people are accessible to our main grid, 10-12 percent.

1A: there are different data, some say 70 some say 80 percent, so actually it is very difficult to say, but according to us at least 80 percent won't have access to power, so they need other sources, like kerosene or solar now is coming up so.. especially now for domestic, so if you want to... if you have a house, you want to connect to normal grid supply, so the starting price for it is around 500.000 shilling, just to connect to the grid, because they have to bring the transformer cables and everything – so for 500.000 they can get a very small, nice system, so for them it is ok, better option. Nd you know that depends on availability also, because in some cases they have to pay the ?? and the ?? can go very much higher. So like almost all the East Africa, especially Tanzania, the demand is high. Not only solar, whatever energy is available.

INT: So renewable energy, why is that important then, is that because the main grid is not available?

1A: Yes, the main grid is not available. If it were accessible to everyone, why would someone go for it, unless the mission is something else. Actually you know, this market in Tanzania is different from other countries. Other countries are going for renewable energy because they don't have other supplies, like they'll see that after some time the coal and the oil will decline. But for us, we have not seen that other electricity, our country does not have electricity. So we, first we want to see where is the electricity, so our goal is to have electricity first. It's different from other countries, where you are having a larger mission, where we want to save that part so we can use it for something else and this we can use with the solar power – we are not experimenting anything, we are just in the trial phase. You can ehh, first world countries they can experiment, we cannot because we don't have electricity, you get my point yeah?

INT: and how about skilled employees, is it easy to get?

1A: Actually, as far as skilled employees is concerned, we don't have actually solar or PV technicians here. Most of them are either electricians, some of them have electronics, we don't have actually skilled photovoltaic technicians or something, maybe we'll be having it very soon. Most part of us don't have it. So very difficult for us to.. actually even .. the main problem we are having, we can sell a very nice system to them, but some don't

connect properly, they use undersize cables or something like that, they can after sometime they'll tell me that this is not working. It's very, very important with skilled employees.

INT: so what, do you train them?

1A: No, we are not providing any training, and the bad part is that our university, the University of Dar es Salaam, which is the main university, does not have any course on this, no course. Only course is at the vocational education training over here. It is a very basic course, but at least they are having it. But there is not actually a degree of photovoltaic or something if you want to become a photovoltaic engineer, there is no degree in Tanzania. I don't know about the other countries, I mean Kenya or Uganda, I'm not sure about that, but in Tanzania there is no... actually such course where someone can go exactly and get a degree.

INT: So how about entrepreneurship here in Tanzania, how is the environment for it?

1B: for solar business?

INT: Just in general..

1B: There are a lot of opportunities. Because our country is not industrial, the only major problem is power, power is very expensive, there are a lot of factors... I mean the hindrance to the business is there is no industries, but overall, there are a lot of opportunities.

INT: And how about if you want to become an entrepreneur, is it easy?

1B: Nothing is easy. Nothing is easy. You have to stick according to the particular business. But it is not impossible. You can say, it is not easy and it is not hard. If you have a good willpower you can manage.

INT: And then for you to become an entrepreneur, what kind of barriers did you encounter to open a business?

1B: You now here in our country.. people are not serious. We do not have that much education and skill, If I want to open a solar factory in Tanzania, the main problem is power. Our power is very expensive. Relatively because it is a third world country, power is very expensive. Plus our labor, we don't have that quality labor as Kenya. In Kenya you can find good labor, here the problem is labor. Labor is not serious, because of that the cost goes very high. So if you put industry here, you have to think sometimes, because better to import from China – then to put a factory here, but otherwise if you have, if you know all the ups and downs in the government you will be influenced very differently, you can manage it's not that it is impossible, it is manageable, but it's a risk.

INT: it's a risk especially with the employees..?

1B: The problem is, you see we have to hire experts from other countries, because our own labor is not that much strong, they are not serious, I'm not saying they're all are not serious, but the overall is.. I mean the skill is not there.

INT: Okay, and so how about with the regulatory system, is it difficult to open a business?

1B: No, if the investment is there, the capability, it's not difficult. If you can overcome those factors, then it is possible. Because as I said, there are a lot of opportunities, lot of opportunities.

INT: So how about you, when you opened the business, did you receive any support from any organizations or?

1B: No ... when we started the business the price was very high. In the solar business. And the reason we started, you know there was some attraction to solar, because my profession, I'm a microbiologist, but just where I studied there was a solar water heater. So whenever I used to see the solar water system, I used to think that whenever I go to my country I have to do something with solar. When I came here, the solar was like clicking you know? It was something emerging and very few people were in that business. So we started and it was just going, because at the same time the price falling, when we started, so it clicked very easy. So the major hindrance actually, the main question becomes the premises, to hire a premises, because this is a very big area, the roads are, you can see the roads are not good, but according to this city, this is one of the biggest areas, and the price to hire in this area is very high, so to open for a new commerce, to start a business, the main thing is capital. If you don't have capital you cannot survive, the main thing is capital. We didn't have that much support from the outside, but because we had some family support, I mean we have other sources, so that was one thing that made it easy for us to start a business. But otherwise if I just say if I just .. it is difficult.

INT: okay, so do you think if you are in the renewable energy business than if you're in a more traditional business, to get support for..

1B: Support I don't know who supports... I mean there is no support. The only support is banks, I mean if you take a loan, but according to our religion we are not allowed to pay interests to the bank, because our religion does not.. so for us that option is not there. So we cannot take a loan from the bank and then pay interest or something, for us, that option is not there, so those kind of support are not there for us. Maybe if we had support from a grant or something, then we can install systems to regions which are poor, I mean there are a lot of people, if you get support, good support, if you get a certain grant, this much amount, and we're told that for this amount you go and install, then we can do it easy.

INT: Have you experienced that?

1B: Yeah, we got one or two companies, I think it's USA company [name??] Solar something, but that was just a mini one, most projects are big contracts, are taken by the big companies in Tanzania, that is .. Ensol, there is a company called Ensol, Rex, those are people who are in installation, actually we are not in installation, our main is to supply people, who are already in the installing process. So we don't get into installing, but if we get an opportunity like we get.. we can do it, but our main focus is not that, our main focus is to provide people with the goods and to those who are already installing, we supply to most companies in Tanzania. We are supplier not installer, we want to go into installation process, just not to contradict, we have so many customers to supply, we do not have time to installation.

INT: So you sell mostly to private persons or to businesses?

1B: We sell from all grades, we sell from the biggest companies in Tanzania to the end user, a farmer can come now, and we can directly supply to him at a very good, reasonable price. So we supply to anyone, because we have.. I mean we have products of all the ranges I mean we have the best quality products, we have cheap products, but which are economically good, because some, maybe you can not afford a label, this is not a label, but what are working, you see, this is a Morningstar controller, it's a very famous controller, maybe you heard of the brand Morningstar, in solar business this a very famous brand, Morningstar. This is expensive, because it's a USA product, this is a Chinese product, the price is half, but the quality.. this is working – this is working. But for big companies we cannot supply this [the cheap model], they do not accept. But a farmer will take this [the cheap model] but will not take this [the expensive model]. So there's a difference.

INT: So how do you attract customers compared to your competition?

1B: We have not gone into a lot of marketing, because we have a good distribution already. And people trust us because we are honest in business. I mean, we give them the products, and tell them, look, this price it is this quality, and this is the Morningstar, this is Suntech, they know. In that case, we are already recognizable internally in Tanzania, maybe I don't know our image outside, I don't know how you contacted me, because of internet maybe, we have put our name into internet, I mean as a company, but eh.. I don't know our image outside, when you saw here, what did you feel, may I ask you..

INT: I thought, not many solar companies have their own web pages here, so I thought that you might be a bigger company, or someone who is more established maybe?

1B: And when you, after seeing, how do you feel, I mean..

INT: It's difficult because.. It's very different from Europe..

1B: It's different from European style, because you know European.. you know the thing is you have a very good infrastructure, you have a very composed type of business, you know? And here, the system is different. You cannot expect that type of thing here, because here, the way we work is different. But yeah, there are some companies which are purely company ??, like if you go to Rex energy and Ensol, they are companies where the focus is only on tenders, so that is a different kind of business, our business is to target directly to people. So we are a little different.

INT: it seems like you have a lot of business going on..

1B: yeah, our business as I say, we have good distribution. And because of our price, I – I don't think ehm.. very few can match our quality and price, because we are one of the biggest importers in Tanzania. Our image outside may not be that big, because we are not marketing. But internally, but we are not doing that much to make others know.. you understand what I'm saying.

INT: Okay, so uhmm..

1B: And what is your aim actually... I mean from where .. so what is your target what is your goal?

INT: I am trying to see what your kind of.. renewable energy businesses..

1B: And you are from Denmark?

INT: Yes.

1B: okay, so after collecting this data, where will this data go, I mean, are you a student?

INT: I am a student, yes, it's gonna go into a big thesis that I'm writing..

1B: So you have travelled from Denmark to Tanzania just for a school, college project..

INT: well, I'm also here because the place where I work have some business here in Tanzania, so I have a few meetings, but mainly for this, yeah, to do some research.

1B: And how is solar growing in Denmark?

INT: It's.. We don't have the big solar potential that you have here, we have more wind power, which is also starting up here a little. But for solar we have lot of businesses and we have lots of.. but it's mostly on rooftops and stuff, so for private use.

1B: And the price is higher? Or the price is okay?

INT: I think the price is okay, because there are some government subsidies, so if people want to buy it, because it is renewable..

1B: The only thing I can say is, the difference between Denmark and here.. Denmark is a systemized country, and everything is systematic, here there is no system. If you want to buy solar, there is no subsidy from the government, there is nothing like that, yeah, no, one thing the government has done good is there is no duty and VAT on solar panels. So that maximum people can afford, the product is cheap, and maximum people can afford it. But it is one thing, otherwise there is no particular system as in Denmark, that government gives a subsidy or this and this, the system is not there.

INT: But howcome then do you think people choose to buy these kind of things, compared to..

1B: Because there is the problem with electricity in our country. If you go 50 kilometers outside of Dar es Salaam, you will find no electricity. If you go, this is a main city, if you just go 50 kilometers interior, you will find there is no electricity. Because access to the main grid is only 10-12 percent.

INT: People usually use kerosene lamps, so wh do you think people want to switch to something like this?

1B: Because you see, now, as I said, the price has gone down, for solar, and many people are getting to know that there is something called solar. Three to four years before, that awareness was not there. Now that awareness is there, because many people have come into this industry, so, if there are many people into this business, the awareness grows. If you buy one solar lantern, you are in a remote area, then if you have a bulb or a phone charger, then you'll never, he will ask you, he will be curious. 4C that way the business goes, and I think now is a turning point for our country. Because now the price is good. Because of that, now people are.. people want to know something which is different from kerosene, because kerosene is expensive. Everyday

300 shilling.. around one dollar, less than one dollar, just to spend on kerosene, it is too much for our country, because our country is not that rich. And people are not rich. And you may find a lot of circulation here, but in rural areas there is lot of poverty.

INT: So, I would just like to finish by asking a few questions about why you decided to start a business, ..

1B: I see, the attraction with the start-up, well you see when I was studying and there was a solar water heater, so when you go on the terrace, you find only one solar water heater. That is in India. So I decided when I go after studying, when I go home to Tanzania I have to do something in solar. At that time, solar was like emerging, you know, the price was very high, a few companies, people didn't know that much about solar. When we started, and at the same time the prices started to going down, so the prices started declining and the business started growing, and we also started growing..

INT: so it was a good time to start..

1B: it was very good time for us to start that business. And we are still growing.

INT: and what was you're.. you came directly from your studies to start this business?

1B: No, actually I worked for, after my graduation I directly came here, I worked for 10 months in one of the pharmaceutical companies, I mean I was testing the medicin if it was fit for human consumption or not, after that, I directly started this business.

INT: So do you know any other people who have their own businesses, in this industry?

1B: Well, a lot of companies, if you go on the internet there is a company called Ensol, if you want small businesses there are a lot of them, if you go this way [points] there are around 30 shops, small shops, but if you want something that is more recognized, I mean, corporate type, there is a company called Rex energy, there's Ensol, and ehh, Helvetic Solar, yeah, these are companies which are known, but smaller companies there a too many. Now you can find 100.

INT: Yeah, I noticed a few just by coming here..

1B: If you go this way, there are around 40 or 50.

INT: so what about in your family, or your friends, what did they think about you starting this business?

1B: As I said at that time, they were just hearing something solar, but there was not much interest, but now, people are curious, because now they know something solar is more, at that time it was not famous, maybe they were just thinking okay, maybe we can get something of it, but we didn't realize it would grow so much. Now when we've come after seven years, I think this was the best decision we made, to go into this business.

INT: at the right time..

1B: Yeah, at the right time.

INT: so asked also your brother, whether your purpose, whether it's social or environmental or financial, what do you think is the most important?

1B: You see, every business, financing is a must, you cannot do something just for social or the environment. First thing is financing, I think that is the basic for everyone. Social – yeah. Social is very important, because even at that time, even now, people are not aware still of this thing. We have lots of power problems. And environment, is also there, because there is a lot of pollution, not .. in our country okay, you can say pollution is there, but compared to other countries, our pollution is not that much. But the main thing is, you know, we are not, our country is not accessible to energy. So we need solar. So environment I don't think is that much, but social I think is, because we don't have electricity, solar and wind and other options, are only options which can compensate our main grid. So I think social is more, environment is not that much, but social and financial is much more.

INT: So in my thesis I'm operating with the term sustainable, is that something that's important here, or what do you think?

1B: the term sustainable. Yeah sustainable energy is important, because this is solar is itself a sustainable energy.

INT: but that's not the most important thing for you, it's more about.. to have a business, and be able to sell good products to..

1B: yeah, sustainable means, you see, the reason why there is a domestic, you see for example in your country you cannot find a shop like this that supplies solar directly to a farmer. Because, it is already a rich country. Here, it is a different scenario. Because, we have no electricity if you go 50 kilometers out of Dar es Salaam, there is no electricity, so you need an environment that supplies directly to people, for example imagine if you are living in a world where you don't have electricity. So just imagine, you are not from Denmark, then how will you feel, if you don't have electricity at home, can you live one or two days without electricity, is it possible.

INT: probably difficult..

1B: yeah, difficult, so if..

1A: more difficult, once you get used to something..

1B: so we are living here in town, if we don't have electricity for three hours, we can go mad, you see, so those people who don't have electricity, if you give them just one bulb, or to charge a phone is a big thing for them, we are selling something that is.. you see.. social. Environment comes after that.

INT: Okay, so I think I have everything I need, so is there anything you want to know?

1B: so after this collecting data you will make a thesis, you will just go an African country..

INT: it's gonna be in the Tanzanian context.

1B: So how will Tanzania benefit from this thing?

INT: it's still just a thesis study, but maybe it can be used in a bigger research context.

1B: Maybe you can focus on places where there is no water, you can make solar pump systems, maybe in the future, because the main problem is here water and electricity, so anyone, our hospitals, there is no electricity, there is no water, so if such a project comes, where there is, you know, you can make a project, where solar water pumps, solar fridges, I mean if there is a hospital or clinic in a remote area. And you want to store medicines, how will you store those medicines, because there is no electricity, so you need solar fridges, you need solar pumps, solar water heaters, I mean, those are things, if you can come up to install, because we don't have that much technical, we have technical, but you see, capabilities are important, and people living here they cannot afford, so, if maybe you can, a country like USA or the Netherlands, Denmark, which are.. which have the capabilities to support those countries which are financially down, things like this, and I think it will be a great help for them.. for the remote people.. like hospital and all those things.. it will be good for them. I mean, I don't know but the remote areas.. because there is no electricity, how can they get clean water. We are used to it, but they just take it directly from the well and drink it.

## 1.2 Interview 2

Solarwave Tz Ltd, June 19<sup>th</sup> 2014

2: Maureen Ndekana

INT: interviewer: Ida Kirstein

NOTES: Solarwave Tz is a Tanzanian subsidiary of the Swedish company Solarwave, a cleantech company which implements water purification and desalination programmes by use of their solar power technology. The office in Ubungu Plaza is nice and well-organized with a display of their products. I am greeted by their sales and marketing manager, who is happy to answer questions.

INT: So I would like you to tell me a little bit about the business and what you do.

2: So we are called Solarwave Tanzania Limited, Solarwave Tanzania Limited is a subsidiary of Solarwave AB, which is a Swedish based company, based in Stockholm. Ahh.. Our business is divided into different segments: a commercial in that we sell products, and ehh, we also support cooperates in doing CSR, so we manage CSR projects for different cooperates, mostly in Europe and right now we are looking for some local cooperates as well to partner with. We also work with developmental organisations, and I'll just clarify that a little bit, ahh, so basically what we deal with is green energy in terms of solar power, we have tailor-made home solar systems, we are not really, we don't really go very deep into solar power, so we have one particular tailor-made home solar system, it's called PB1000, it's 1000 watts, it's a 1000 watt system, so basically you know if you have a home and you don't have power, or you need back-up, it is a suitable system for that. Our major business is in water purification, so we have solar powered water purification systems, so hence the name, hence the name solarwave. I know people automatically assume that we just do like green energy and solar power, but it is solar powered water purification systems, and the reason why is because, I mean, in Africa mostly the problem with water is in rural areas, and rural areas are mostly away from the grid, so yeah,

so then we decided to make something that can be powered by solar, so basically, you know that's our core business. Yes. So like I said, we have a commercial, ehmm.. we have a commercial part, where we actually sell this product, and then we offer this product as products for CSR, so there are people, who buy them, and then donate them to schools or hospitals or villages and communities, you know out there in the rural areas, and then we manage these projects for them in two or three years, and then they sponsor this project and things like that, they pay for the maintenance of the machines, for spare parts, and things like that. They pay for awareness, creation, you know, yeah, and of course clean water goes hand in hand with several other things like, you know, washing your hands, it doesn't make sense if you drink clean water and then you don't wash your hands after you know, being to the latrine. So of course we try and incorporate all of those small things as well. Yes. And we also work with developmental organizations like NGOs, ??, water sanitation and health, and you know instead of, because most of them right now ehmm.. provide... for example this chemical it's like chlorine, for purifying the water, so we are trying to introduce something that's chemical free, you know, smell free, because normally when they do that there is a lot of stigma in terms of people saying, no it smells bad, it smells like bleach and things like that, so they are not using it. So we are providing them with this as an alternative. Yeah, so basically that's in general, that's how we work, and I think it's important to mention other water purification. We do UV water purification, so it's double filtration system, along with UV lamp to kill all the bacteria and we also do desalination, because we realize some of the areas along the coast... So if you are talking about providing clean and safe drinking water, you know, the UV will kill the bacteria, but then if it's saline, then no one is gonna drink it. Yeah, so we do desalination as well.

INT: okay, and so that works with solar power, how does that work?

2: ahh, basically, it's a normal, you know, desalination system, but then we have a solar plant beside that, so we provide it along with the solar plant, yeah. Yeah, so, you know, a solar panel, then a power box which has an inverter, and a control charger, to change the current.. the current from DC to AC, and then it powers the system. Yes.

INT: So it's mostly through the NGOs and then is it a community project, or?

2: yes, it could be anything, if it's through an NGO or through a cooperate, normally it's a community, because we have systems, because you know, for 5000 liters an hour, and a normal person drinks, say, three, three and a half liters of water, okay maybe it's very hot in Tanzania, so let's make it four, but if you have 5000 liters an hour, that's a lot of water. A lot of drinking water, so it means, you know, you can give it to a whole village. And I think for NGOs, this is very good, because per person, it becomes just very few cents of a dollar. Yeah, less than a cent of a dollar, basically, cost per person. Yeah, so it can be that, or it can be, you know, a bank waiting to, you know, they dug up a hole, because you know the water system here is crazy, it's not, it's not consistent, it's not reliable, yeah, so you know it can be a company or a bank, mostly, you know, banks are the ones who have big buildings, and many people in their.. in terms of staff, so they have a borehole and then it's saline, and they want to use it, and they don't want, because you know saline water, after some time your pipes get messed up and things like that, yeah, so then they want to pass their water through a desalination system before supplying it to.. yeah, or ehmm.. like bank of Tanzania who bought a system last year, they

wanted to use it to power their AC, they have a very big building, one of the largest buildings in Dar Es Salaam, yeah, and they have, you know, like airconditioning system, and airconditioning system uses very specific water, it shouldn't have saline, it shouldn't have calcium carbonates, which is hardness, so then we supplied that. So it could be, you know, it anything, it could be a small school, because we have really small systems, it could be an individual, you know, who wants a system in their house, they don't want to buy water anymore, they don't want to boil water anymore, you know, yeah so it could be anything.

INT: how old is the company?

2: we are three years old now.

INT: so what it's the subsidiary of a Swedish company..

2: yeah, it's a subsidiary of a Swedish company, maybe I'll give you some of our brochures.

INT: do you have like 10-15 minutes, because I have a little questionnaire, that I would like to ask you.

2: yeah that's fine.

INT: I would like to ask a few questions about how your company relates to sustainability..

2: before you start, I would just like to warn you, I'm not technical, you know, in renewable energy, so there might be some questions I might not be able to answer.. but go ahead.

INT: It's not really technical questions... So how is the ownership structure, is it fully owned Swedish subsidiary?

2: It's fully owned, yeah, it's fully owned by Solarwave AB, yeah, we are basically a marketing branch.

INT: so you work with businesses, NGOs and the private buyers..

2: yes.

INT: okay, and do you know why the Swedish company decided to start up this division here in Tanzania, do they have other in Africa?

2: Yes, they do. We are in Nigeria and Uganda, yes.

INT: okay, and it's mainly for business purposes, or is it mainly for developmental purposes or?

2: well, I think it's a little bit of both. But, I mean, it's important to note that Solarwave AB is a commercial company, our business is to make a profit, that's what we want to do, but of course, I mean, the fact that we have partners, who don't have interest in making a profit, their sole interest is in making development, and promoting green energy, and things like that. So yeah, but our business is.. we're in the business for making profits [laughs].

INT: okay, and can you tell me what is the central mission or the central purpose of the business?

2: basically, our aim is to increase access to safe drinking water and of course promote use of green energy. Yes. Or use of solar power.

INT: and how big is the business here in Tanzania? Is there a lot of demand?

2: yes, quite some demand. I would say a lot, I mean, a lot of demand compared to the machines we are actually selling, there's a lot of demand. And the difference is because of price. Because it is not everybody who needs this system who can necessarily afford it. Yeah, so that is where our developmental partners come in, but again there is only so much they can do, they can't give it to everybody, but yes, the demand it's a lot, it's almost overwhelming, yeah.

INT: okay, so it's a good business for you here..?

2: I agree, I mean, yeah, I think so, I think it is [laughs].

INT: and how about sustainability is that a part of the mission or..?

2: yes. It's a big part of, I mean, especially when it comes to our projects, it's a very big part of what we do, and I think it's also one of our biggest concerns. You know, in terms of... after the donor.. or you know the cooperate, is done with all that, maybe they were supporting it for three years, then what? But it's definitely something we're also very concerned about as a company. So what we do is that when we go into a community we don't o in as us, we'll take an existing women's group, or an existing youth group, and give this to them as a business. Yeah, so that they actually selling the water at a very cheap price, you know, but then they get support for a while, but then after that, they actually have some money – they get an income, but then they also have an incentive to actually maintain the system. Yes.

INT: so there is definitely a social aspect to it.

2: yes there is a social aspect to it.

INT: and what about environmental, is that important?

2: oh yes. I mean, it's one of our key... ehmm.. I mean, when you look at this product, maybe I'll just explain a little bit... in rural Tanzania, to purify your water you need to boil it. People don't have gas stoves. I mean, a few have, a few elite people in the rural areas, they use a charcoal stove, but, like 85 percent use a three stone firewood stove. I dunno if you've seen how that looks like..

INT: I haven't seen it, no.

2: I think I have a picture somewhere, maybe I'll find it after we're done. 4C it's a three stone firewood stove, it's basically just three stones, one, two, three, then you put your saucepan or whatever onto the stones, and then you have your firewood, and then you light it, so in terms of energy it is a lot of wastage, in terms of, you know, the amount of wood, that someone actually needs, to bring that water to boil, is massive. So there is a lot of wastage going on as well. You know, it's not an efficient way to do anything, this three stone firewood, yeah. But that's what 85 percent of them use. So you can imagine the amount of wood harvest that goes on.

And you know what happens with wood harvest, and, you know, and the ozone, and the climate change, so, environment is one of our biggest, I think, yeah, yeah, one of our biggest motivators, and one of the biggest motivators for this product. Apart from providing clean water, and you know, technical health, you know, people are getting sick, it's the fact that if someone gives out a system, and a thousand families now don't have to boil their water, they can collect it directly and drink it, then we are saving that much firewood per day. So then what are we doing in one year – our system is, you know, can stay up to ten years, they are very, yeah 10-20 years, they are very robust systems. So in 20 years, how much.. you know, how many carbon points.. and you know, yeah, environment is very big for us, it's huge.

INT: so you measure this?

2: yes, we measure, we do. We do measure.

INT: so... and I assume, since it's a Swedish company, the technology which has been developed...

2: it's Swedish technology, yes.

INT: do you import the products, or is it..

2: we import the products, sometimes we import the parts, and assemble, when it's, you know, some of the larger systems, but the small systems a plug and play, we import them as they are.

INT: and so just briefly about the industry here, how is the competition in this industry?

2: uhhh.. for our particular, you know.. in terms of solar powered purification systems, we are the only ones in Tanzania. You know, we are basically the only ones in East Africa, but in terms of water purification systems, there are other players in the market, you know, there are Indian companies, there are Chinese companies, there is ?? which is a very strong player, they've been here for very long, they've been here in East Africa for almost 10-15 years, yeah.

INT: so what about the goals for growth for the subsidiary here in Tanzania?

2: I know definitely, I mean like any other, profit.. like any other commercial institute, we would definitely like to grow in terms of turn over, and the amount of money we make, and commercially, we'd like to grow commercially, but apart from that, I think one of our major goals, you know in the next three years, is that we would like to have an assembly plant in Tanzania, yes, yes, and also to grow in other parts of East Africa, you know, so assemble in Tanzania, and then distribute to Uganda and Kenya.

INT: and what do you think is the major barriers to reaching these goals?

2: ehmm.. I definitely think.. one of our biggest barriers, commercially, in terms of, you know, finally being able to set up... I think the business environment is okay, but it's just like I mentioned earlier, the fact that people who need this, cannot necessarily afford it.

INT: and about regulatory barriers, are there any laws or programs that help a business like this, or may be a barrier to it?

2: I mean dealing with renewable energy I think in Africa, is most probably the best business, because most people, who do business in Africa, especially, you know, most foreign investors complain about high taxes and things like that, but if you.. if your equipment is solar powered, you don't pay tax, so really, I think that's really supportive, and then the organizations like ehmm.. how do they call it, the Renewable Energy Association, TAREA, that supports, you know, us a lot as well, yes, yes, so I think the environment is.. regulatory-wise, the environment is very good, a lot of support from the ministry, because the need is a bit obvious, at least that's something that's a bit unique about the business that Solarwave does, is that the need is obvious even to the ministry. So a lot of support from there as well, and government support and things like that. [phone rings, answers briefly]

INT: so do you think that people, or, you know, customers prefer the renewable energy over traditional energy sources?

2: I think they do. I feel they do, because I mean, you know, 50 percent of the clients that walk in here actually want, you know, a back-up system, they already have normal on the grid energy, but they want a back-up system because it's not reliable. You know, but when you have solar energy then it's always there when you need it. Yeah, and we have an abundance of sun, so it's not a problem [laughs].

INT: and so do you think that's also a concern for the environment, or do you think it's mainly just because the national grid is unreliable, or?

2: Honestly? It's about the national grid. Yeah. I think, in terms of awareness, as compared to Europe, Africa is not there yet. You know, in terms of awareness about the environment, and things like that, and taking care of it, we are not there yet. I mean it's something we know, we are taught you shouldn't throw plastic, you shouldn't.. but we don't think about it. Yeah. It's not, I mean, it's very different from Europe. Yeah, it's not something that we think about, and not necessarily because we don't want to, but I think you realize that in Africa there are competing priorities – it's about am I gonna be able to eat, you know. Ehm.. I have to walk ten kilometers to go to the well to get water, so... people, yeah, yeah I hope you understand... so our customers mostly it's really about, you know, it's not convenient and I need to have electricity all the time. Yeah. But of course there are a few people who come, and they're like okay fine, the environment, but very few, I'd say maybe I've met two since we started yeah.

INT: and how about in the business, do you think that the environmental or social are competing sometimes with your profit goals?

2: definitely. Definitely. I mean because, this is the.. like I said, the need is out there it's obvious, it's a very social need, but we also want to make a profit, but sometimes, you know, it's very overwhelming even to us. Such that, you know, you might have to reduce prices, reduce and reduce, such that, you know, okay fine, this school really needs it, and if it get it, the community can access water and things like that, the kids can take some drinking water back home, you know, they're talking about.. during rainy season we have about, just up to 25 percent attendance because our kids are sick. So because of that you have to really reduce the price.

Yeah. But we are hoping that now that we are looking for developmental partners, and people who really want to give out the system, actually to donate them, that actually this could change.

INT: and so how do you try to work around it?

2: well, ehmm.. so far, what we have done, is that we try and give it out, and then have them pay over a period of time. Yeah. So we don't demand all the money at once, we have them pay over a period of time. And we are now piloting a lease system, where we give the system to a school, and then they give us a certain amount of money each month.

INT: and that's working well?

2: it is, yeah, it is.

INT: and then if I can ask you, howcome you decided to start working for this company?

2: ehmm.. I would say, I mean, I'm from the commercial sector, you know, that's my history, like previously. But ehmm. The social aspect really pulled me, as well as the environmental aspect as well. I really liked, you know, the idea, and the fact that they wanted to integrate solar into this, and make it accessible, and having grown up, you know, in a rural setting, I understand how much of a burden this is, to women and to the environment as well in terms of the firewood, you know, and yeah, I mean basically. So, it was the social aspect, but the environmental aspect as well.

INT: So I think that's basically it..

### **1.3 Interview 3**

Rex Energy, June 19<sup>th</sup> 2014

3: Francis Kibhisa

INT: interviewer: Ida Kirstein

NOTES: Rex Energy is located in the center of the city in their own building. It's a large space with a showroom in the front, and offices in the back. The manager of the company, interviewee Francis Kibhasa, had requested the interview questions in advance, and was well prepared for the interview. He was, however, a bit suspicious about me taping the interview, but agreed.

INT: So I would like you to tell me a little bit about the business and what you do.

3: Rex Energy is part of Rex Investment Limited, that was founded 14 years back, the main objective of the company was to narrow the gap between the access of electricity to the majority of Tanzanians. As you might be aware that about... between I'll say 86 between 86 to 90 percent of the majority of Tanzanians does not have access to electricity as you know, especially the lack of power, that's the first of all, it is a huge market for energy entrepreneurs. If you look at the.. the statistics shows that Tanzania has an access about 14 percent, but I wouldn't say it's more than that, it's an average of 14 percent. The people say it's between 12 and 15

percent, but to be precise let's say it's 15 percent, it's ehh.. general does not have access to electricity. And ehh.. the only easy access to energy is solar power. Then we set up a company for the past 14 years to try first of all, to create our own employment. Create our own employment, second to create or narrow the gap of access to electricity. Three, the issue of environmental and renewable issue, that was absolutely a push behind... of course when we started, we started a small.. a small enterprise. I and my fellow engineer John, I'm actually the founder and the chief executive of the company, and I thought I should invite my fellow engineer to join. Later, we found the demand was bigger than we thought. Obviously it drives the business to grow... we set up a financial department, set up market and sales, of course set up a operational and technical department so that we can deliver the services we wanted to. We moved from being a small and technical company to a commercial driven company that focus on delivering the services. You know how demanding it is, when you have to set up a company, of course we set up an office and to set up an environment where you can say, where people can come.. this is the place where you can find all relevant... Okay that's how, of course that's of now, if you look at ehh.. we're almost operating through the country, we've got about four big offices, in the northern zone, which has been there in Arusha for the past 5 years, we have a branch, in Mwanza, which is at Lake Victoria, we have at Lake Tanganika, which services the western zone of Tanzania, of course we have southern highland, which is a branch servicing the south and central part of the.. that's how we are outside. When it comes on the organizational structure, we have a board of directors in terms of, because we have grown in such a way that we need it, so we have a board of directors, which has got seven board members, we have five are non-executive and two are executives. This is how we do it. Well it has got people from all angles, that is from the financial institutions, to help us to deal with the financial matters, we've got people from the legal matters, that support us from the government institutions, then from the background of market and sales, and ourselves are technical background, and that's how the board is set up. Of course, the ??, when it comes to the management level, we... are the local company that have actually employed people from all around outside, to get a certain standard of.. a certain skill-set. Like now, our financial manager is from the Philippines, our product manager is from China, and ?? is from Netherland. Then when we have to decide.. because we wanted to acquire skill and knowledge from all around, of course, I believe, investing in human resource and.. that's the setup, we have well-trained engineers from the local institutions, and the marketing type from the telecom industry, they are here to support our business. I think that's the general I would say, the company, Rex Energy as of now.

And.. what's our mission, setting up a company, our mission is to.. I mean ehh.. to be the hub of energy in Africa. What do I mean by saying hub of energy solutions, is... when you think of solar or renewable energy has to think of Rex. Why do I say so? Because, we are trying to develop solutions that suits rural settlers, solution for urban guys, solution for being a corporate entity, think of any... whoever who need power have to think of it. We're developing projects and at the same times developing retail services, that's how we see it. I've seen it now in Eastern Tanzania, East Africa, and Africa as a whole, most of the people who does solar, they do it by the way, like a small shop, or small person, for us here at Rex we see it that's not the way, we take it as a serious business and as a commercial entity, we're trying to drive it in a way that whoever comes can be attracted even to invest, as of now, we are actually seriously looking for partners, investors, either in terms

of equity investors or in terms of ehh.. in terms of strategic partners, that's how we're set. We're not set in something small... as we speak, this was belonged to the government, and now, the building belongs to Rex Energy, this is Rex energy house. And yes also, we're trying take it to where you can find all types of solar energy solutions. I would say, think of selling solutions, project development, having research and development, training guys, coming up with a way that if you need some kind of services, here we have one.. a one-stop center for renewable solutions, and that's it.

I would say simply... for business environment when you look at Tanzania as a whole, the potential is huge, because.. specific in energy, the government supports a lot, if you look at the... they have actually waived, or exempted tax, all taxes related to solar equipment, of course, I was one among the people who participated in lobbying the government, but it's not a matter of lobby, but the government is willing to do, the pull is supportive. Ehm.. look at ehh.. the renewable energy industry. Renewable energy is well backed up by the government. Because the government has seen that it is very difficult to run national grid all around because of.. initial investment is huge. But solar is a tailormade kind of solution, where you can actually.. someone need a lantern can actually, if you go to the village you can actually come up with a solution that suits those guys. Look at ehh.. if you go to a hotel the big solar water heaters we will actually give them solar water heaters, and a few lights. If you go to the village, maybe somebody who cannot afford to pay the light, television and who only can afford a lantern like you've seen, our small solar mobile of two lights. Of course we're developing a lot of, we're striving to developing a lot of solutions, that most of the people can afford. But.. affordable solutions, that does not attract the ... capex. I guess you now, we try to work out those capex kind of initial investments..

Anyway, when it comes.. is it easy to get employees with the right skills.. I think about it like this. If you are able to pay, why not.. if you're getting a simple shop like you've seen someone has got a corner.. will not even dare to invite you. The way I see you is like a potential future candidate in this company. [laughs]. It's a matter of you coming here, you deliver a service, and you get what you have delivered. It's not like you come here to.. I mean for us, that's what our way of doing. We employ people from all levels, because we.. they come and we give them task to do, or deliverables. We don't see challenge, because now our market is open, we can employ from abroad, we can employ from like Tanzanians who have been abroad, we call them back, like I said, the people from Phillipines now, the people from Netherland, the people from China, people from Zimbabwe. Tanzanians were not trained, it used to be that, but I don't think even now it is, of course, now we've got quite a number of well-trained guy and we got weaker people who are not well trained, but we don't employ weaker guys, why should we? Why should we? Because we recruit globally. When it come on.. I think that's what I can say... Let me hear from you.

INT: well, you said that you were looking for investors, what kind of investors are you thinking about?

3: Well, I would say when you look at.. we're expanding our business. From the local to an international. We need people who can actually take our business to the next level. Look at the suppliers. That's important strategic investors that can actually supply goods in a long term at a good price, of course we are looking for a competitive.. it's not like getting money from the bank, it is quite.. equity investors. We need to take this company to the next level, we can actually list it in a public market. We need people to inject funds into the

business.. long-term investors, not short-term investors or financial institutions, because already, we've gone beyond the normal operation.

INT: and the suppliers.. do you produce anything yourselves or is it imported?

3: Well, as of now, we have some manufacturers like most of us business-guys have got in Asia, particularly China, we design our own product, and then they make them in China.

INT: so you have your own subsidiary there?

3: Not really, I think let me tell you, even guys.. companies from Europe, they do not have their subsidiary in China, they'd rather have subcontractor, so a Chinese company working for their business, and what they do, they send out their engineers, to control the quality and discuss... even China has grown into a level where they can control the quality themselves depending on how much do you pay them ... yeah, we work with some strategic partners in China who develop our product. That's why when you get your own branded.. it came from a factory. But our own design.

INT: and then you mentioned that you started this business, because of environmental concerns, because of social concerns, and then of course you have a commercial business as well, so how do you weigh these different.. different goals?

3: ☺ I think you quoted me well, the first and foremost goal was to create my own employment. The way we're moving we found that okay, we're saving the environment. We are saving the nation, which does not have reliable access of electricity. I think that's how we came up, but most important was to create our own employment. Because you know, employment is very challenged.. of course I was very ambitious from the beginning, I didn't want to do a small thing, I thought I should set up something, at least I can.. that can actually fulfil my ambition, of course creating employment to the others. We started two, now we are more than 50 people, and we have employed even foreigners. Then it's not only setting up a small thing, but we work with your family, or your child, or your uncle, so it's now... an institution, that has got mad skilled people coming. And I'm sure that's why you say.. you know, it looks like you have something, it's not like the other ones we visited. You witnessed yourself, setting up my own structure.

INT: has it been difficult?

3: ☺ I don't call it difficult, I call it has it been challenging ☺ Well, we have not done the... whatever we've done, it's actually been pre-planned. If you plan, of course challenge, and success, it's all how you plan. But the most important, you don't shy back. You want to run out of whatever goal.. feel shy or feel.. it has been challenging, but only since we've got mad skills, we sit down, we discuss, and we see a way out.

INT: and can I ask you, what your background is, before you started this business?

3: ☺ How do you find, I mean what have you learned from our discussion☺

INT: Engineer?

3: Yes, my background is as electrical engineer.. yeah.

INT: and so you wanted to start on your own. Why do you think that is?

3: [Long pause] well, I usually read a lot of books. And I inspired those guys especially, the guy who has made things to change, like big business guys like Bill Gates, I like my friend, I know you don't like him, the American guy, very arrogant ☺ sometimes.. he is ehh 'Think Big' you know who is that? Ehh... Donald Trump. Yes. His books, and that because they inspire me, and those kind of things. And of course, the most important, as I tell you when I started, of course the challenge of employment has started all around the world. We thought we should.. I should come up with some kind of innovation, and fill the gap, and I'm encouraging whoever who can setup something – let it be done. And ehh, the challenge is always there, but the challenge differs from Europe to Africa, and even Europe to Europe, country to country, and then as well in Tanzania, and in from place to place. Challenge is always there, it's part of life, and we're here to meet them.

INT: and about the customers you have, do you sell mostly to businesses, to private people, or government institutions?

3: well.. we'll set up, I mean our sales and distribution are close to all walks of people, so, and... we have solutions as well for corporate, for rural, for private sector, depending on our demand, we don't choose. Because, the power demand either you are corporate, you're an individual... at the end of the day you need power. That's how we.. we have all ranges of solar or solar cell solutions.

INT: yeah, we could see out there [in the showroom] you have the small lamps, and the big water heaters and everything..

3: yes, and solar water pump, and small lantern, torches, mobile kits.. yeah.

INT: so howcome you chose the renewable compared to another.. or the traditional.. you said that this is what everybody can use..?

3: I think again, to be specific, is initial capital is not as big as going in to conventional.. you need to set up a small mini-grid, that is from either the river, or the lake, you need a quite substantial set-up for a turbine, and you need a lot of skills, you need a lot of procedures to set up to manage issues, and so forth and so forth. For solar, if you have a knowledge and skill, you can even sell you skill, you can by a small thing and sell it, you know. The capital was one amount of the challenge, even skill, and you could not, it is not easy to sell the conversion of power. If you're not a giant consultancy company, or a giant company. Venturing into solar it was easier for us.

INT: so you, as an entrepreneur, do you think it's something that people aspire to be here in this country in general? To have their own business, and have their own employment?

3: ☺ you told me you have gone to a business school..

INT: that's right..

3: the same question I'll come back to.. As I told you my background, I'm a purely technical person, I've been to a secondary technical school, my A-level went with a technical school, I went to a technical college school to acquire my engineering skill, I think sometimes, it's not because you gone to a specific discipline of studies. There is inborn and there is the skills that has been imposed to somebody. And some guys go to school because a friend or a relative or a parent has actually been director, when I was young man, a young boy, I thought of going to a school, of going to a technical school, I'd go to work in a national utility company. But, I woul... I have never thought of that, I decided to do business, of course, coming to your question, do I think ??, well, opportunity and ..tation are there, if they wish to do they're welcome, but it depend what sort of set-up or business they want to do. When we started, we were one of the first Tanzanians to set up business and there was a lot of things to do. Raising awareness, education, training people to understand what solar can do, but now, you walk few meters, you find shop, that means the awareness creation, demand has been created, now it's a point to come and take this ☺

INT: and so you say that the awareness has increased now, do you think..

3: the support of the government is there, the ...

INT: so among the regular person out on the street, so do you think they will buy your products because it's good for the environment, or because they need the energy?

3: ☺ the answer is simple, we people have been ehh, in a... to a certain level maybe education or in an environment.. be enlightened about the environmental issues that wasn't care about the environment, but someone who need to buy lantern or a torch, it's because you want to run away from capex of kerosene. I think that's an obvious answer. They're buying it because they need the service for their immediate demand, there are children they are the ones who knows about the environmental issues, you know. They are buying it because they want the service for their house. It's not like Europe, where you find in Denmark, there is zero house who does not have electricity, I was there... in Switzerland I think I went, even Norway, when I told people that about ten to fifteen percent of people doesn't have electricity.. 'are you coming from a cave!' ☺ anyway, yeah.

INT: so it's a basic demand.. I was thinking Rex investments do they invest in similar projects like this energy project or is it very different?

3: Well lets specifically about renewable energy, then that will be the second when you come to invest... anyway, we generally invest in various places, energy, real estate, development, and... in any other potential business.

INT: and so, since you sell to everybody who needs or wants a product like yours, do you find it.. I mean if people are very poor, do you have any specific programmes or do you sell to NGOs or development projects, or something like that?

3: If I understood your question, I wouldn't call people very poor, I would call.. can people afford the solution that we're selling. That's why once, when we are entering into our showroom you can see a range of products,

we've come up with a solution where – a diplomatic person from Denmark would buy ??of solar type, and someone from rural can buy lantern, we have a range from 1000 dollars to a few shillings of Tanzanian.. I think if you are a business person, your work is to come up, I think you're going to a business school, to come up with a solution that is affordable, and that's how the Chinese overthrown us, most of you guys, you're so busy making the.. what's the very expensive car from Italy.. the Ferraris, Lamborghinis, and the other one from Germany what's that..

INT: they have the Audis and the Mercedes..

3: yeah, they came up, they are 1.3 billion people, in Europe you are half a billion people, they cannot make a solution, people call it poor quality product, but at the end of the day, they raised up, and to a level where now everybody is hearing about their economy ☺ even ourselves we have come... ehmm, we have solutions that suits every level of affordability.

INT: and you said you have four different, you said you are present in four different places in the country, is that apart from here? How is your reach then, is it.. do you sell out of shops, or do you have a wider distribution system?

3: well, I think that's a very technical and very fundamental into our business ☺ well, our commercial guy would be able to tell, but at the end of the days it's the shareholders. We want the numbers to be.. we want the result, but how they do it ☺ we want target to be met☺

INT: and so about your international expansion, so you're looking for capital in order to expand your business.. and what's your goal, you want to be present in all of Africa.. or maybe on the short term, what do you think..

3: first of all, we would like to leave the company a legacy, the company that stay today, tomorrow, and the day after, and ehh.. we're not only focusing to the local market of Tanzania , of course, we'll make sure that Tanzania's market is well serviced, and deliverables is made standard, you from Sweden or from Denmark, when you come here, you get the same that's more or less the same, of course to have that level we need to invest into the capital, substantial capital, and that capital as a fuel of the business. ?? capital is always, especially competitive capital. What I mean competitive capital, capital which does not give us a pressure. You see, the capital from the banks, mostly the commercial banks, it's like, I always give this terminology, it's like giving someone an umbrella when there's clouds towards raining, when it starts raining, you call back your umbrella. What do you expect ☺ now we need an umbrella that stays from the beginning of the clouds, to the end of the raining season. A long term, under competitive capital. And ehh. Most.. capital that can actually be injected into the business, in terms of capital, in terms of human resources, in terms of ehh.. intellectual capital, in terms of experience of course.. in terms of ehh.. setting up ehh.. a proper way of doing business, an international way of doing business. Of course, while you can attract I would say the right candidate, to the right positions, I'm sure you be very happy to hear that my commercial director for Rex energy is a Swedish guy, who have two years... five years he's been working for bank of America, now he's my commercial, he's my human resources director, you see.. there's no risk to working with Rex ☺ because when you tell someone these are all locals, ... community. We're looking for investors in order to stabilize our business, to be stable,

to be sustainable, a continuation to stay there. Again, to have experience, international experience, because we've never been working in ???. Again, to find that last, and make the business be stable. Of course, attract the right skillset into the organization.

INT: So I think you have answered all my questions..

3: Have I been quite useful for you?

INT: definitely..

3: ☺ because you send me, and I said can you give me guidance..

INT: but it's very interesting to hear how you set up the business, and what you think about.. how you will reach your goals, in the future, and everything.. you sound, it's very ambitious, but it sounds like you have a very planned approach..

3: yeah, I would actually like to emphasize to advise you my fellow business guys, it's better to set up a business that stay today and tomorrow, and the only way to do that is to have the right personnel, into the company. And that is the only.. the right medicine to cure the business challenges. Otherwise, we will be having an ad hoc solution to a problem that solution has not yet been found. I have actually experienced quite a good challenges, before we employed the right skillsets, we had actually always been curing our problem with like a temporary solution. But now, of course we.. it doesn't mean that we've totally cured, but again, you need an international experience in terms of expanding business, to a big picture, that's why you look for investors, that has gone beyond the borders, and have mastered to do that, of course, networking and experience a market, like market share, because at the end of the day, all business is a market. If you don't have customers, your business is nothing. And of course, at the end of the day you have to make profit ☺

INT: is that, when you started, there wasn't much of a solar industry here yet, how did you raise the awareness, and create.. did you create the market? Or.. was that easy?

3: well, there was a challenge, because we had to use a lot of money for TV advertising, newspapers, seminars, training, because we were the first, local Tanzanians to set up, the first company in Tanzania. Of course at that time, even ourselves, we had no muscles in terms of financial muscles. We tried, of course again, when there's no competition.. it's not very expensive to put awareness, because everybody, even if you had is not attractive enough, they would be attracted to here. Again, you attract the mass, I think that is the... we used billboard, we used radio, all the television media, radio medias newspapers.. of course later, as market grows, the other people see the potentials in the market, nowadays there is a lot of young, they call themselves young billionaires in solar ☺ but for us, we keep investing in the right kind of people, and we keep investing in the business, and to attract more.. of course, it's not every investors who will be welcome, but there will be a lot of.. a screening, before approval. Otherwise, you're most welcome, if you feel Rex is a part of, once you complete your research, come and stay. Ehhh.. work for Rex! The future is bright. ☺

... pause in tape.. after being told that the purpose of the study is investigation of social/environmental and financial aspects..

3: of course, to support environmental issues, we actually support. Of course the challenge I see, is there's a lot of poor products being imported in Tanzania, or in the African market, but actually at the end of the day the issue of environmental won't be supported, that means, if you import... ?.. of you buy a lantern and you can't actually use it in six months, what do you expect. We need somebody, to purchase a lantern for five dollars, at least stay with him six months or a year, but I have seen especially the people around where Anverson is, is a big challenge. It's a big challenge. And people goes into the business without a real real meaning... they're just going there to make money. Today selling shades, tomorrow selling shoes, you know, no professionalism. This is the challenge we see. People selling, they want to make money and go, but for Rex, that's not my way of doing.

INT: but that's maybe also why you're so successful? Because you have the focus on quality?

3: yeah, we're focused, I'm focused, and actually I'm focused on the quality of the product, I'm not focused on .. I'm here to stay.

## 1.4 Interview 4

Arti Energy/Arti Africa, June 20<sup>th</sup> 2014

4A: Nakichet W. Potnis (Executive Director)

4B: Manon Lelievre (Program Officer)

4C: Sales officer

INT: interviewer: Ida Kirstein

NOTES: Arti Energy and Arti Africa are part of the same organization, but separate entities. One (Arti Energy) is the commercial solar lights and cooking stove business, and the other (Arti Africa) is the non-profit spreading clean cooking stoves and solar powered lighting solutions to households around the country. The activities performed by the two organizations are designed to back each other up. Arti is located in the outskirts of the city, in an area next to one of the busy main roads in and out of the city, on a small dirt road in a housing area. The premises are small, with a small showroom outside, next to a small workshop, and the offices located inside. All in all, around 10 employees were spotted during our visit. We were met by the two interviewees in their office, and were given a thorough introduction to all the products by a sales person in the showroom, before the actual interview.

INT: So maybe you can tell us a little bit about this institute or..

4A: okay, in this office, there is basically two organizations. One is called the Appropriate Rural Technologies Institute of Tanzania, what is called Arti Tz, and the other organization is called Arti Energy Limited. Now Arti Tz is a non-profit organization and Arti Energy is the commercial face of Arti. Activities that Arti Tanzania does is basically training people on charcoal production, training people on using of solar lights, and then the commercial activity that is required as a follow up to that project, is what Arti Energy does. Like providing the solar lights, manufacturing the charcoal briquettes, buying the charcoal from the people who've been trained,

that's what Arti Energy does. So that's basically two organizations within the same office, and they back each other's activities.

INT: okay, so the financing from the commercial branch goes into the not-for profit, or how does that work?

4A: the financing for the Arti Tanzania, basically comes from grants, from whoever is willing to give us grants, and Arti Energy is financed by the directors themselves. So far what has been happening is any profits generated by Arti Energy have been put back into the business, basically to grow the numbers. We don't have any loans or anything, for Arti Energy, it's just.. you keep turning over the money, and increasing our capacities.

INT: Okay, and how does then... so the employees for Arti... so it's separated with the employees or do you work on both different projects?

4A: ehh.. It's a very blurred line.. it's a very blurred line. Okay, Manon, she is for Arti Tanzania. But the others, they work on wherever required. But legally and technically, they're all employees of Arti Energy. Because Arti Tanzania doesn't really need employees as such, it is a project based activity. Once we get a project, then we need the people. If we don't have a project, then we don't need the people.

INT: and how, is it easy to get the grants to.. for the projects for Arti Tanzania?

4A: no, it's a lot of hard work.

4B: For us it's like we know what we want and we know what is our aim, so we only are looking for grants that matches our requirements. So it's not often that you find any proposal that matches our aims and how we want to develop our organization, so..

4A: and it also works the other way around, where, the people who want to give the grants, they also have some specific fields, or specific areas, or specific objectives, so if we fall into those objectives, then we can apply for the grants.

INT: and who would typically be.. NGOs or governmental organizations, or who would typically be receive grants from?

4A: We got our first grant from the World Bank, and that was in 2010, 2011, and we got the second grant.. the first grant was for a charcoal project, the second grant again was from the World Bank, but for the solar project. Then, we right now have a grant from what is called the EEP, the Energy and Environment Partnership, which is basically a partnership between the Austrian Aid, UK Aid, and ehh.. Ministry of Foreign Affairs of Finland. Then we have another grant which is called the Nordic Climate Facility. So we these are basically not NGOs, but you can say Donor Organizations.

INT: And what kind of products do you have in the commercial part of the business?

4A: okay, for that what I can do is let me take you out to our showroom, and the girl will explain to you all the products, and then maybe we'll come back.

(Moves outside)

4C: Okay, here we have different kinds of products, first of all, we have this solar product, we call it ??, so the company is from the USA..

INT: so it's a lamp?

4C: yeah, it's a lamp, which has three lights, depends on how you want to use it. Others they use it, especially students, for reading, also you can use it as a lamp for domestic use, also, it can be used maybe if the electricity is not working...

Detailed technical description of all the products in the showroom follows. Summary and interesting quotes included below:

They have a number of different kinds of solar powered lamps ranging from small reading lamps to larger installations with 4 separate lamps for larger houses or schools. All charged with photovoltaic solar panels. All the products are imported American or Australian products to insure top quality and with 1 or 2 years warranty. The small lamps start at 20.000 shillings, medium ones with 2 lights for 130.000 shillings, and the biggest ones 'village kits' with 4 lights, battery and security lights with sensors sold for 435.000 shillings.

The small lamps are primarily bought by small rural households where there is no electricity, who can't afford the bigger models. The small lamps have option for charging of phones, which gives them great functionality for households with no other access to electricity. The larger ones are sold to schools, businesses or more prosperous families with bigger houses, to use when there are power outages, or if located in areas with no grid connection. These are more often sold in the city.

After describing all the solar products:

4C: do you have any questions so far?

INT: Do you help people install them or do they install them themselves?

4C: No, what we do.. others they prefer to do it themselves, we just tell them how to do it, and they go do it with instructions. Others they... we have engineers here, so they go together and fix it there.

INT: and you sell it from here?

4C: ehh.. this is not, this is just the showroom, but we are selling different process, and we are having markets here in Dar es Salaam and in other regions, we are trying to sell in other regions, and also we are having this festivals, where we sell, maybe.. trade fares and we are bringing our products and selling there. Here is just for those who are passing by and saying oh, I like this.. then they can buy it.

Goes on to explaining all the cooking stoves related products. There are small household cooking stoves and bigger industrial sized to use for example in schools. The stoves are charcoal fired, produced in good quality materials. They also sell finished charcoal, and smaller and larger machines to produce charcoal for own use or for selling.

The first small stove is their most popular product, American design produced in Kenya, called envirofit. Compared to traditional cooking methods/stoves in the country, this one is designed to retain heat in order to use the cooking fuel more efficiently and reduce cooking time and thereby. It is priced at 55.000 shillings with a 5 year warranty. According to her, the best product and very popular particularly in the city, where charcoal is available for fuel. In the villages another small stove is more popular, as it fires wood.

The small woodfired stove is also made to use the cooking fuel efficiently, with just a small amount of wood necessary “this is made to reduce the destruction of environment, especially we are talking about trees.. as you can see, first of all, it uses few woods, and second reason it reduce the smoke almost like 75 percent, compared to those they use the villagers, you can see just putting something, just the woods and start using it, but here you reduce it almost like 75 percent, this one you can put even inside, not outside, to fear that smoke will bring you pollution. Yeah. You can use it even inside. This one, we are selling it at 50.000 shillings.. “

Tells more about the product's features..

INT: so they are popular in the villages?

4C: yeah.. they are popular, but not most. We are trying to explain to them how this thing works, how it can help in the society, so to avoid the destruction of the environment.. something like that, so they are trying to change somebody from this point to this point, it's not easy, so it goes slowly. But most of them, they are buying it, but those who cannot afford, they're just saying ok... but they are buying it, they are buying it.

Goes on to explain the next product.

The next one is also a small wood fired stove, it is an improved version of the traditional way of cooking in the villages to use the wood more efficiently, reducing use of wood and smoke output. This is the cheapest one, selling at 35.000 shilling.

The last one is the large institutional stove, particularly used in the schools that makes porridge in the mornings. Large stove with large pot, and wood fired. This one has a chimney, to direct smoke out of the building. Also uses few woods “to maintain the environment”. Costs 2.4 million shillings.

She then shows the charcoal briquettes, how they are made, and what products can be used in the production. They can be made with waste from agriculture, and wood waste, and many other kinds of waste materials, it is burned, and mixed with a binder such as flour, and is then shaped with some kind of machine, for example a small hand operated one, which they also sell for 150.00 shilling. They also sell an automated electric one for 850.000 shillings.

They are sold to small businesses, “if you can invest more, you can produce more”. The charcoal burns at higher heat and longer than wood. The charcoal is sold from the showroom for 1000 shillings for 1.5 kg, up to 15.000 shillings for 25 kg.

She finishes the presentation, and we walk back to the office to continue the interview.

INT: so you import all these, it's from Australia and America we were told.

4A: Yes Australian and American products, the Australians they produce the lights in China, the manufacturing is set up in China. The American company, they have a production unit in Nairobi.

INT: and so it seems to be a pretty good price..

4A: Yes.

INT: so you can make a profit on that?

4A: Oh yeah,

INT: so it's because they produce it cheaply I suppose...

4A: for the cookstoves, there is a carbon financing aspect to it, which is why.

INT: so you calculate how much you reduce the carbon...

4A: yes, well, that's still being negotiated, but we should get 5 dollars per stove per year.

INT: and how do you then distribute these things, she told us that you sell it around the country?

4A: We have eh... distributors or wholesalers. They have this network of retailers, so that's how it's spread across the country. That's one. Secondary, we have different, let's say.. methods of getting it to the people, we work very closely with savings groups, we work closely with a lot of womens groups, we have a project together with Care International. Care wants to create about 1200 women entrepreneurs working with renewable energy products.

INT: so how is this received, the products, how are they received by the users?

4A: very well. Very, very well. Right now, we are out of all cookstoves, we're almost finishing the lights, trucks should be leaving from the border this afternoon, so hopefully tomorrow we'll have lots of stuff again.

INT: and so is that you think because it is more effective, or because it's better for the...

4A: they are all good products. Very, very good products, but we started selling the cookstoves last year about this time. We were selling about 3-4-500 per month, now the numbers have gone up about 3000 or 4000 per month.

INT: okay, so there's a big demand?

4A: yeah. Very big demand. We initially thought that at 55000 shillings, who would really buy a cookstove? But it was proven wrong.

INT: so do.. if people can't afford them right away, do you have some kind of arrangements that they can pay over time or?

4A: no. That's.. the system that most retailers have with their customers, we don't get into that.

INT: and... so I'm thinking about the.. because I've heard that many different NGOs and companies are trying to bring these better cooking stoves, that it's a big problem that people don't know how to use them or they'd rather use the traditional methods of cooking, but you haven't had that problem?

4A: No. because... we go out there and train people. We train the wholesaler, we train retailers, we have this method of having road shows, we actually demonstrations, a whole bunch of people can see the demonstrations..

4B: you see, this product is also very, very good and very efficient, so people they see this very fast, and then they just use it, because they save so much charcoal. I go out conducting a survey, like Jacklyn who talked to you, she said like probably 80 (?) percent they are satisfied.

INT: and she said it reduces also the smoke..

4B: Especially for the wood stove..

INT: so people are aware that there's a health benefit as well?

4A: yes.

INT: okay, so what do you think is sort of your, I mean you have the two different divisions, but what's the central mission or purpose that you have?

4A: We... The mission basically is to identify appropriate, good quality affordable renewable energy products, wherever they may be made in the world, and to try and bring them into the Tanzanian market.

INT: so you have a definite environmental and a social purpose?

4A: yeah, definitely.

INT: and then also you have the business part of it... and is that mainly to support the other two purposes, or is it.. or do you weigh them all equally?

4A: they are all weighed equally according to us. There is one thing that we've learned over the years, is that... if people are not making money or profit, there is no sustainability. It has to be a profit oriented business, otherwise it just dies.

INT: So have you experienced that there has been a problem to earn the profit while still maintaining the environmental and the social purpose?

4A: I guess it depends on how fast you wanna get how rich. ☺ We're very patient. We take it as it comes.

INT: so you don't compromise?

4A: no.

INT: And so I just wanted to also ask a little bit about the general energy industry here in Tanzania, you say there is a big demand for the products..

4A: yes.

INT: and that's because the traditional kinds of energy sources are not sufficient or?

4A: the traditional energy sources will continue. Like charcoal is a traditional energy, so. It will continue to be used, while it's being used, the prices of the charcoal are going higher and higher. So if somebody comes up to the store like we have, that reduces your consumption by more than 50 percent, then naturally people are going to go towards it. Charcoal and everything else is going higher, but salaries are remaining just where they are.

INT: and how about for the solar products?

4A: the solar products... people are getting slightly affluent in Tanzania especially with the globalization, multinational companies coming in to Tanzania, so the middle class is building up. Now this middle class now has access to home financing, they have access to loans, so they are building, and the power supply company unfortunately is not able to either provide power, to some of those areas, or, the cost of getting power from the closest point to the house you're living in is very, very exotic. So then, this middle class starts buying the solar. At the village levels, we're replacing candles or kerosene lamps so... that demand is also there. And what we realized when we first started, was not that people don't know about solar lights in the villages, or they don't have the money... they just don't have the confidence. Because before us, there was a lot of other traders that brought in some stupid products from China, people that invested their money in that, 2 months, 3 months, 6 months, and the product just dies out. So, to build that confidence, we're using the traditional distribution set-up, we don't go to the villages and sell the light, the retailer in the village will sell the light. So people know, if the light breaks, I can go back to my retailer. It's not a fly by night thing, that somebody comes with a truck parked at a tree.

INT: okay, so you're experiencing that people have more confidence now..

4A: yes. And then we also make sure that every wholesaler for the lights, at least three to four of his people are trained in first aid. They are trained to open up the light, to find the problem, fix it, then it doesn't have to come back all the way to Dar Es Salaam. So the service factor is also very important.

4B: they have built us a very good reputation from other solar lights suppliers. We work also with microfinance institutions, to try to reach out to even more customers, and we have some center here where they can do also major repairs...

INT: and maybe I can ask about who started this organization?

4A: it was Dennis and me, we started, we met in 2006, I explained to Dennis, this was something I wanted to do. My background was basically from the business background, I used to work at an organization down the road, for 13 years, and then I got fed up. I went back to India, and I met (someone) from Arti in India. I saw what he was doing with biogas, with charcoal, I thought this is a very idea for Tanzania. I came back, I had no idea how to set up a, whether this should be an NGO whether it should be a for profit, I'm asking around, I

came across Dennis, said okay, let's give it a try. So we started off in Dennis' house, three streets down the road... it's getting bigger.. 😊

INT: and has it been a difficult journey to get from there to here?

4A: very difficult. When we started we officially started in 2007, and we had no grants, no funding, no nothing it was just ourselves. Then we got our first grant in 2011, so four years was like we were, we literally, sometimes I had to borrow money from my wife 😊

INT: but... perseverance, so you persevered, and... what about, did you encounter any specific barriers, or did you get any help from any, apart from the grants of course, but..

4A: We.. all through, we've got very good support, model support, from the government. Like the Tanzanian commission for Science and Technology, work with people who organize the first conference to launch us into Tanzania. Starts from there, and they introduced us to the ministry of natural resources, who then gave us space for demonstrating these products and getting to Dar Es Salaam international trade fare, so that kind of support we've always had from the government departments.

INT: and that's because, is that because it's a social project..

4A: yes.

INT: or because it's renewable energy...

4A: it's renewable energy, it's creating employment, reducing deforestation.

4B: there is so many impacts that they really appreciate because it's rare to be able to kind of combine, all these aspects..

4A: it's getting (a positive..) for women, it got a gender aspect to it as well..

INT: so you touch on many different things that are priorities for..

4A: for any developing country... or for any donor also.

INT: yes. So you said you were fed up with what you were working with before, which was more commercial?

4A: I was employed as a market development manager for a multi product company, you tend to get tired of working for somebody else.

INT: so you wanted to start your own? Do you think that's something many people wants to do here in this country?

4A: Yes.

INT: people are entrepreneurial...

4A: yes. At least they think they're entrepreneurial..

4B: yeah, but on the other hand the employment.. it's so hard to get a job that so many people are forced to be self-employed. Some are really, really, but for many they don't really have a choice, some become very successful, and some.. you know you see all these petty businesses..

INT: And do you think people think that it's better to be in this kind of business, than in the traditional business, I mean regarding the environmental and the social, is that something that's..

4A: mm... People still want to be in the traditional line of products, they don't think different. That's the whole problem. If you drive by and see there's a hardware store, and there's a hardware store, and there's a hardware store, and another hardware store. So... somehow I think that is missing in the people in Tanzania, they don't know how to think out of the box.

INT: I'm a bit interested in the whole.. how come you chose to do this, the renewable energy and have this social purpose.

4A: Number one, nobody else was doing it, that was number one. Or even if everybody else was doing this, this was very very different from what everybody else was doing in Tanzania. We had started off, with a biogas system, which was an urban solution, ??, we built about 2-300 of them in Tanzania so far. But then that's too much of hard work, too much follow up, so that slowly went onto the back burner, and the solar lights and the cookstoves kind of replaced them. So, we were doing something very very unique and different. So that kind of gave us that added advantage of..

INT: and what did your family think of this, you said you had to borrow money and were they supportive of?

4A: absolutely. To the end.

INT: and then after, are there any other companies like this now, or has anybody followed your example?

4A: not with the kind of mix that we have, but the.. they focus on solar lights and only a certain type of solar light, like Delight (?), Delight has an agent here. They had started on their own, but then they found it was easier to have an agent, than to have their own offices, and then there's Solaraid (?) that's also only solar, otherwise I don't think there's anybody who's really the way we are.

INT: we haven't met anyone 😊

4A: And I don't know if she told you about the charcoal project that we are doing?

INT: yeah, the production of charcoal..

4A: making charcoal.. that's what Manu's, that's her department.

INT: okay, so that's one of the donor funded projects...

4B: Yeah, exactly, it's like ehh... for us it's not only distributing it's the whole production process, we are also supporting and trying to develop, so this one still needs some ?? before it can reach a commercial level, and also it's something very new, so we are getting some support from the Energy and Environment Partnership,

as well as other kind of facility, so basically, what the project is about is that we have a factory where we produce charcoal briquettes from agricultural waste, so we train farmers in the village to carbonize their biomass, and what is available around them, then we buy it from them, the factory buy the charred powder, the carbonized biomass we call charred powder, so we buy it from the farmers, and then there's the whole production process, buying and packaging, and then we commercialize the briquettes here in Dar Es Salaam. So at the moment, Arti Energy is the one who is marketing the briquettes, in partnership with Bagamoyo (?) briquette company, which is the factory now. The factory is like, is based on a community based enterprise, whereby Arti Energy Limited owns 60 percent of the shares, the manager owns 10 percent, and the villagers own 30 percent, so once profit starts to be made then the..

4A: the producers will benefit 30 percent of the profit generated by the production.

INT: and this is something you want to copy elsewhere?

4B: yeah, eventually the idea would be to have different production sites, and then have maybe a company heading, like overhead, which now is responsible for commercialization and marketing, so that's the idea..

4A: there are different production units, owned by different groups of people, and then you have an umbrella organization that is buying all the production and distributing it.

INT: okay...

4A: who else have you been interviewing?

INT: We have been talking to quite a bit of different solar companies, from the very small ones, that just sell from the small shops, most of it imported from China, and we've been talking to some bigger ones as well and foreign owned, but there's lots of people doing just the solar in a commercial way, so it's been interesting to hear about how else to structure a business.

4A: there are different models of getting solar lights out, we have different programs, we have what is called and MP program, the member of parliament program. So we approached all the members of parliament, and request them that part of their constituency budget they should allocate to installation of solar lights, in schools and dispensaries. If they really do that, then we send out a team, we do a survey of how many schools, how many hospitals, and then arrive at a figure, that for so many schools we need so many sets of 5 watt power packs, then later the proposal on behalf of the member of parliament and take it to the Rural Energy Agency. For the funding. And then the REA pays us, and then we go an install it, and come back, so it's... so far, we've done about 9 for 9 different members of parliament. And we have... we got social responsibility kind of thing. There are a lot of European and American companies buying materials in Tanzania, the cocoa for example, so.. we meet up with them, we say under your CSR maybe we can distribute solar lights into the farmers where you're buying from. So one of the programs, that's what we call the solar ambassador program, so every 6 months or so, we select 5 schools, where the top 5 girls and the top 5 boys they all get one firefly (lamp) for doing well in school, al the teachers houses get a power pack with two lights, then they're all trained in how to

use the lights and how to repair the lights, they're given (tools), so they become the ambassadors for solar lights in their communities.

INT: so in many ways you create your own market..

4A: yes

INT: you have to be inventive in order to..

4A/4B: yeah ☺

INT: so if you don't have any questions for us?

4A: let us know when you are at the end of your research and what the outcomes are.

(Shows us a map of their distributors across Tanzania, they have many, covering most of the country, also the rural areas. But he holds that there is a lot more still to be done, points out areas, where they are not present.

INT: so do you have problems getting your stuff transported?

4A: not anymore.

Shows us their service center..

INT: so this is where you repair..

4A: yes... all of our engineers have been trained by the manufacturer.

INT: okay, so you send them to the manufacturer?

4A: no, they come here and do the training.

INT: so is it easy to get the qualified employees? You have good engineers and?

4A: we generally get people from ?? they come to us for internship, and if we see somebody has a spark in them, we just keep them on.)

## 1.5 Interview 5

Voltzon, June 20<sup>th</sup> 2014

5: Evans Kakai (Sales Executive)

INT: interviewer: Ida Kirstein55555

NOTES: Voltzon is a solar retailer located in a building shared with another solar company in the richer part of the town, near the area where the expats usually hang out. We are met by the sales executive after having a correspondence with the Dutch owner who is out of town. They have a few offices on the second floor, with approximately 5 employees present. The sales executive is a young man.

INT: So maybe you can tell us a little bit about what you do here?

5: Voltzon limited is a renewable energy and solar company, whereby we do sales of solar equipment, solar products like inverters, charge controllers, batteries, we also do installations, like make installations. Yeah. The company was started like in 2008, and yeah.

INT: and here you are☺

5: and here we are.

INT: so who started the company?

5: The company was started by Mr Pepijn Steemers, the one man you started talking to, yeah.

INT: okay, and he, is he here from Tanzania?

5: no, he is from Holland, yeah he is Dutch.

INT: but it's not part of a foreign company? It started up here?

5: yes. It's a private company started here.

INT: and you are the sales executive, I can see.

5: yes, sometimes sales, sometimes logistics.

INT: so how many employees are you here?

5: we have 8 employees, yes, permanent employees.

INT: and you sell and install solar equipment?

5: yes.

INT: all different kinds of products?

5: yes, we are distributors of ?? energy products, only, so mainly we deal in ?? products, from Holland, and that's the brand that we deal in. yeah, that's the only brand we sell.

INT: okay, and who is your customers, you sell to businesses or you sell to private persons?

5: All, because, we are distributors we are like, we only import everything from our on product, and from there we have dealers, from all over Tanzania, and also private people, who come in, like we have people who come and buy..

INT: okay so everyone, and do you also sell to maybe NGOs or government organizations?

5: yes, it depends, if the government people come in and maybe government organizations, and they would like to install solar, we do sell them the products, or if they want us to install, we do that.

INT: so how is the market for your products? Is it growing, is it good business?

5: it is, I won't complain, it is, but like you know the solar market is big now. So there is so many companies there's a lot of competition, but, at the end of the day, it's about quality, and we're here to provide people with quality, and for those people who know it, they come to us, so we're happy for that.

INT: so it's just that one dutch company you buy your products from?

5: yes. Yeah, its ???. It's from Holland.

INT: do you do big solar installations, or is it mainly smaller?

5: smaller, this is the book from ?? from Holland, so they show the big installations they've been doing. But from here, we have done big installations, like last year we had a big installation of 30KV, but yeah, that was one of the biggest installations we have.

INT: So what is the goals you have, what do you want to achieve in the future with the company?

5: that one I won't answer, directly, I will leave it to the director,

INT: but of course you would like to maybe grow or..

5: yeah, that's the plan, yeah, where we were last year, is not where we are this year, we make growing plans every year, we need to grow, that's one of my plans, but I'm sure the director also has his plans. I'm just a sales person..

INT: and so you say there is a lot of competition, is that also, so you separate with quality you said, you have superior quality to your competition?

5: No, I believe each and every company has quality, but what I say is we have to be unique, we have to provide good services, we have to be number one in everything, so.. to get that customer you need to have a lot of things and we try to avoid those things there, so yeah.

INT: and how about, now, I know you're the sales person, but do you have any idea of whether the environment, is that a big part of why you're doing this business, or are you trying, I know there is a big energy shortage here in the country, so are you trying to bridge that gap or what do you think about that?

5: for my part, I think people... at the moment people really know like, people really understand like there's the sun, and people need to utilize it. So, you even find people who have electricity, people who are connected to electricity already, but they are still interested in solar. So, people are really changing, because they know solar is there, sun is there, we have to utilize it so..

INT: so you think the people who buys your products are also concerned about the environment?

5: yeah, yeah, partly they are, but taking into consideration like there is no stable power also, there's no like good connection of power from the grid, yeah, people go for solar.

INT: and how about the general energy industry, we just talked about it's unstable, can you say anything else about the energy industry in general?

5: I cannot, because I've just been few years like in the energy industry, and I have not much detailed information about, yeah so I don't rather..

INT: but in the rural areas there's a big demand for the..

5, oh yeah, always.

INT: so you sell mostly in the rural areas? Or also here in the city?

5: all, I would say all. Yeah. I would say like in the city center, like in the cities, where there is already electricity, people would go for back-up system. Like, only.. a back-up system whereby when the main power is off, the back-up takes over. But in rural areas, someone will just install a full solar system.

INT: And so these distributors you have, do they sell other stuff, or do they just sell your products?

5: we just get distributors to sell our products, but those distributors, the dealers, they also sell other products. So just, we get them to sell our products, but they mostly, sell other products also.

INT: and that's small shops..

5: small shops, yeah, in major cities, like Arusha, like Mwanza, there's some big shops there also, because we can't just, from Dar Es Salaam here, we can't reach like to all people of Tanzania, so we need to have people, in most areas, so that people from there can ..

INT: do you know how many distributors you have around the country? Many?

5: kind of, yeah...

INT: And then, if I may ask, why did you choose to come work for this company?

5: I started working with ehh.. I started working with a company that was dealing with small solar lights, that was back in 2008.. 2008-2009, and I had some basic information about solar so I had to move from, when this company started, I had to just increase from smaller lights and to build this company, but that's the main idea.. since I had most of my background was like based on solar, and I had to just move to something in the same industry, but bigger in a different way, from small lights to bigger systems now. Yes.

INT: and your background, you're an engineer, or?

5: no, I'm just IT..

INT: and how come you started working in the solar business, was it just an opportunity, or did you want to work here because it is an environmental organization..?

5: no, as I told you, I started working in this other company that was dealing in smaller solar lights, and, my intentions also like to go into solar in the future, like to become an entrepreneur in the solar business, that's why I want to take some time, see how the market goes, and start my business in the future.

INT: so you want to maybe start your own business..

5: yeah, that's my aim.

INT: and do you think that is something that many people want to start their own business here in Tanzania.. are people very entrepreneurial in general?

5: yeah. Most people are. Most people are.

INT: it's better to work, to have your own business than to work for someone else?

5: ehm.. that's a personal, like.. yeah, that's a personal decision really. For me, I would just, I'd say I wanna work up to a certain time, and maybe go into my business at a certain time. Yeah, so it's a personal decision.

INT: so about this solar business, how is the environment for this, is it easy, are there any regulatory, or is it an easy environment to do business in? in the solar industry...

5: ehm... yeah, the environment is always sometimes hard, we have a lot of eh.. we have a lot of fake items of course coming into the market, very cheap things, and they end up killing the solar business, because sometimes, when.. like, when someone buys something that's not good quality, after sometime the solar light is not working, and it would make some people, like they would complain at the end, solar is not working, and it is really difficult to convince them to buy solar. So it's one of the things. Also, the other problem is maybe with the government, like there's no straight like, sometimes there's no straight clearing, like getting this cleared from the ports.. sometimes it takes a long time, you have to complain a lot of times, you have to... some items are not solar, some items are not.. so, sometimes it takes time.

INT: but the solar, as far as I understand, is exempt from taxes.

5: it is.

INT: so then they have to see what is solar, and what is not solar..

5: yes. Yeah, sometimes it takes time.. and sometimes, yeah...

INT: but how about, is there any particular support for companies like this, because it is renewable energy..?

5: yeah. We have an organization like, not sure if you have heard about it.. TREA, it's an organization of Tanzanian solar business, like, people, and they have been trying a lot. They have been trying a lot, like working with business people, like everyone who's in the solar business, and also the government. They try like to make everything easy, yeah.

INT: what did you call it?

5: just like that.. Tanzanian rural energy agency.

INT: you said it was sometimes hard to convince people that solar power works. Do you do anything to tell that it's the right thing to use?

5: no. someone buys a solar light, and you tell them like... maybe buys a solar light that's not gonna work for the next for only like, it only works for two days, and when we can see that. So for the same customer, to have the same customer buy the same light again, it's difficult, because they are just like solar is not working.

INT: so how do you market your products – it's up to the distributors to market?

5: yeah, distributors do it, also we do some training also we do some training to our dealers, we also visit our dealers, we do visit our dealers every time, yeah, talk to them and.. we also... we have also some trade fares, that are organized sometimes, and these fares we have some samples that we give to people.

INT: okay, and do you also have service and repairs if something breaks?

5: yes. We have.

INT: is that here in Dar Es Salaam?

5: yes. Yeah, like, most of our products are like two years, we have a two years warranty, and for customers who have a problem, they just contact us, and we have them here, we repair it, and send it back. We have the workshop right here, service center.

INT: I was wondering, the other company sunny money [other company in the building] is that the same, or part of the same?

5: no, it's different, we are two different companies. They deal in smaller lights, small solar lights, we do in big solar systems.

INT: so you are more house installations..

5: yes.

INT: is it owned by the same?

5: no. two different, yeah. We just share this building.

INT: your sign wasn't out on the gate, so I just saw something with solar..

INT: and so you have been here with the company almost from the beginning?

5: ehh.. not, like, I started with the company like 2 years ago..

INT: ahh okay, and they started in 2008 you said..

5: yeah..

INT: and so do you know whether it has been difficult for them as foreigners to start up here?

5: mmm, I think that's a question you want to ask..

INT: okay..