**BIOGAS ASSESSMENT PROJECT**

**Site ID: 11**

**Date: July 19, 2022**

**Interviewer**: Thanks for granting us an interview. So, we will approach the interview as you have said. [name redacted] will respond to questions regarding finances, and the rest of the questions [name redacted] will answer as you think that he is in a better position to answer the questions because he interacts with it regularly. So, without further ado, let us go to the question by starting with [name redacted] as she has directed. Firstly, how much did the digester cost?

**Interviewee**: K650000 for the digest itself, and then I paid another K50000 for the wall building because we built basin around it; both at the outlet and the basin for the digester itself. And, recently I’ve added the greenhouse construction, but I think that should not be included in this question, right?

**Interviewer**: Uh, no. You can include it.

**Interviewee**: I bought the plastic for K50000, and then we put the frame in, I would have to check the cost, but it’s probably another K45000 for the iron, and then one day labor for the guy who welded it, and then three days labor for the tailor who tailored the whole tent together.

**Interviewer:** How much did you pay the tailor?

**Interviewee:** The tailor got K22500, and the welder think got around K15000.

**Interviewer**: Okay, how many people were involved in the construction of the digester? Did Ecogen only build it? Or, you had your workers as well?

**Interviewee**: Ecogen advised, so they came for two days. Then, [name redacted] and two other people dug the hole. And, then we had a separate person at some point bricklaying. So that is, what are we now, four people? Yeah, four people with the advice from Ecogen.

**Interviewer:** How many people came from Ecogen?

**Interviewee**: They came with a team of three people. [Picks call and leave]

**Interviewer**: Okay, how long did it take you to dig?

**Interviewee**: It took us two days.

**Interviewer**: So you were also responsible for digging, [name redacted]?

**Interviewee**: Yeah, and because it was weekend, she paid me overtime… I do not work during the weekend.

**Interviewer**: Oh, very nice (laugh). How much did you receive?

**Interviewee**: That time I got paid K10000 and the other people received K5000 each.

**Interviewer**: So, K10000 for two days?

**Interviewee**: That was for a day; she paid me K10000 per day, and the other people were paid K5000 per day.

**Interviewer**: Why was the rate different?

**Interviewee**: She paid me more because I work here and I was overseeing the other people. Besides, I was person who brought the people here. Moreover, when I brought them to her she asked them how much charge her and they said K5000 per day. As for me I didn't charge, she just gave me the rate of K10000 per day. So in two days I pocketed K20000.

**Interviewer**: Okay, how would you describe the job itself? Was it tough?

**Interviewee**: Because we were many, the job turned out to be simple. Also, the place where we dug the holes used to be a keyhole garden, so soil was not compact as it had been tilled before. And, also because of previous watering activities, the ground was not hard. So, it would have taken more time and even more labor if those factors didn’t come into play.

**Interviewer**: Did you know anything about biogas before?

**Interviewee**: No, I didn’t know anything about it.

**Interviewer**: So you were surprised to see the digester.

**Interviewer**: Before the installers came, our boss told us about it. She told us that the installers were installing the digesters to cow farmers in the villages. But, she told us that the installers were happy to install the digester here because they thought she could be exemplary to many, and that even people in this community would adopt the technology. Then, she told us that we would learn more about it from the installers when they come. And, when the installers came they told us about some of the things about biogas as they were assembling it.

**Interviewer**: What did the installers tell you?

**Interviewee**: They told us the dimensions of the two holes. Usually, a digester has one hole for the digester bag and the other hole for the digestate. So they explained that when it is fed at the inlet the feedstock is flushed out into the other hole as digestate.

**Interviewer**: What were your expectations?

**Interviewee**: We expected our work to lessen. Before biogas, we used to cook using firewood, so our expectation was that we would stop searching and using firewood for cooking. The other thing is that our boss is big on caring for the environment, so she was expecting us to stop using firewood, even the ones we were gathering after pruning trees within the compound – she never liked seeing us using trees [firewood] for cooking. So, she chose to buy biogas because she wanted to save and protect the environment – no one cuts a tree here, and that’s why if you move around the compound, you would see a lot of trees. Therefore, when we got it we expected to save the environment. Secondly, we were so excited to have a digester to take away the burden of searching firewood in the wet season. Thirdly, as you know smoke cause a lot of health complications, so we expected protection from health issues related to smoke.

**Interviewer**: What health problems do you have in mind?

**Interviewee**: It brings cough– and the installers said that you can’t say you don’t smoke when you burn litter or use firewood for cooking – so they labeled as smokers (laughs) – they said smoking is not only about lighting up Chingambwe [unprocessed tobacco] or puffing cigarettes – So, it mean that any type of smoke make people smokers. So, at the end of the installation we learnt so many things.

**Interviewer**: Do you smoke?

**Interviewee**: Yes, I do not smoke. Since I was born I have never smoked, and I have never taken alcohol.

**Interviewer**: How did you feel that you were a smoker, when you have never puffed a cigarette?

**Interviewee**: It did not feel right (laughs). But, it is not bad as smoking a cigarette or something.

**Interviewer**: So, we learnt many things. For example, we realized that some of the things, we thought were good were actually bad. So, without this we couldn’t have changed some of our bad behaviors.

**Interviewer**: Which things were you doing wrong, and got corrected?

**Interviewee**: It is about burning waste. At first, I was okay with it, but now I’m not….. The coming of the digester has not only enlightened us but has also helped us in many regards, for example, cooking. Cooking on biogas is very easy and fast. The time we were wasting on searching firewood we now use for other things. As you know, we are given one-hour break at lunchtime, so it was not enough when we were cooking on firewood. So, it meant that we had to take some of our working hours from our boss. Thus, the time we were supposed to be working; we were busy eating or cooking.

**Interviewer**: What kind of training did you receive?

**Interviewee**: We got trained on its operation. Then, we learned about making feedstock, for example, how to prepare initial feedstock to start it up, and it’s not like you feed it, and then it starts working, no. I remember this one took about a month to start up.

**Interviewer**: So, you were basically told how to switch it on and off, and feedstock making?

**Interviewee**: Sure! For example, they also told us the dimensions of the hole, and then make the hole, for example, they advised us to dig a hole of 90 cm deep, 250 cm long and 250 cm wide. They also told us that we needed to build a wall around it to prevent soil from collapsing into the hole as the soil was loose there since the place used to be a keyhole garden. So, we made a wall of 2 layers around it. Then, to start it up with we used 300 liters of water and 8 bags (50kgs) of fresh cow manure, which had no rubbish and sand because that blocks a digester.

**Interviewer**: Did they teach you about maintenance, or how to fix some of the issues?

**Interviewee**: Yeah, they explained that feeding is what make it block or not. So, they advised us to feed it with food waste, but to be careful because some of the things like raw vegetables end up blocking the inlet. Thus, after some time we made a round thing with hook like things. The equipment we made has no sharp edges because we didn’t want it to puncture the digester bag; the thing enters inside the digester bag to gather things that could block the digester; we made this because at some point the digester blocked, and we managed to unblocked the digester with that equipment.

**Interviewer**: How prepared to run or operate the reactor did you feel you were?

**Interviewee**: We felt that we could run, and after we started using it, we got more confident because we started understanding it more. And, we have learned new things that we weren’t told in the first place. For example, to minimize the issue of blocking by rubbish as well as sand, we soak feedstock and after sometime sieve it with our own made sieve and then we put the feedstock in a clean bucket. Then, we have also made our own funnel to ensure that feedstock doesn’t spill over. And, also before feed it we keep the feedstock in a bucket for some time to allow things such as sand to settle at the bottom of bucket. Then also, we feed the digester gently and slowly so that the settled things should remain at the bottom. After that we get the remaining things like the small pieces of grass and use it for composting.

**Interviewer**: Okay, why do you think she decided to build a digester there?

**Interviewee**: She bought the digester to reduce LPG gas and electricity bills, as before the digester we used electricity and LPG gas for cooking. Thus, if we were using two cylinders of LPG gas, now we only use one. And, that time she was using an electric cooker, but now she doesn’t use it. Also, before the digester we used to buy organic fertilizer, but now we don’t buy the fertilizer anymore, we use our own bio-fertilizer. And also we were told by Ecogen that we could use the effluent as a pesticide, so now we are using effluent as a pesticide in our gardens. This pesticide does not possess any health risks, and it’s possible to apply the pesticide in the morning and eat vegetables on the same day - something you can’t do with inorganic pesticides, with such pesticides you wait for a week or two for the vegetables to be edible. But, this chemical is not hazardous, because it comes from things we usually eat.

**Interviewer**: How do you make the pesticide?

**Interviewee**: First, we dilute the effluent with water in a ratio of 1:2. Then, we add ginger and pepper to make the pesticide stronger. Then, we pour the effluent in a sprayer and start spraying the vegetables.

**Interviewer**: Who told you to add ginger and pepper?

**Interviewee**: Ecogen told us that we could use the effluent as a pesticide. And, we make the pesticide stronger by adding ginger and pepper. But, before making the pesticide we even saw that when we used the effluent as fertilizer, pests were moving away especially when the sun was hot. I believe it is effective when the sun is out because the heat facilitates evaporation of the effluent. So, when we made and applied the bio-pesticide, we even saw a greater effect. Previously, we had a big challenge of pest as we compost, and to prevent/control it we used ash. But, it wasn’t that effective….. We have always been using compost as fertilizer, and ash as a pesticide, because my boss does not entertain the use of organic fertilizer or pesticides at all. So, even though it wasn’t effective we continued doing that because it was an organic solution we knew.

**Interviewer**: So you were told by Ecogen to add pepper and ginger, or it’s something you thought by yourself?

**Interviewee**: No, we were told by Ecogen again. They were like some pests are stubborn and can’t be controlled by effluent alone, so to overcome them you need to add ginger and paper.

**Interviewer**: Apart from using ash was there any other solution you were using to control/prevent the pest?

**Interviewee**: Ah, we were using a traditional method, thus we used to go line by line to kill the pest physically. But, it was very challenging to do this on big garden or where we had multiple gardens, because we were moving from one garden to another. So, the main problem was that pests where moving from a garden you hadn’t been to a garden where you had already killed the pests (laughs). Thus, to control/prevent the pests you had to do this all the times, and you couldn’t do other work, as you kept moving back and forth.

**Interviewer**: How did you meet your energy needs before the intervention? I understand you were using LPG gas and an electric stove, and even firewood, right?

**Interviewee**: Our boss was using LPG gas and an electric cooker, because she cannot manage to cook on firewood. But, now she uses biogas as well. As for us, we were using firewood – we couldn’t go inside to cook nsima, you know how long it takes to cook a very hard nsima (laughs)… Now, if you are seen cooking on firewood by our boss, you get in serious trouble. The only excuse you can give is that biogas is not working, but other than that there is no other reason that can spare you. And, she would even try the biogas herself to see if it’s not really working – and, if she finds it working, you will get in very serious trouble (laughs)

**Interviewer**: Where were you getting firewood, like you have said you are not allowed to cut a tree?

**Interviewee**: It’s not like we need a lot of firewood because we only work during the day, so we only prepare lunch. Thus, the dead wood we get from the trees is sufficient for us. Sometimes, we use firewood from flower plants and trees after pruning. But, we don’t prune all the time, it’s only in May and June of every two years. So, after pruning we dry and store the firewood. Then, in the wet season we use the firewood for cooking.

**Interviewer**: So you get all the firewood from the compound?

**Interviewee**: We get all the firewood here, and we don’t buy anywhere.

**Interviewer**: I can imagine that the digester has helped you a lot….

**Interviewee**: Yeah, it has helped our boss to save money, but, I can’t say it has helped me save money, no. It has only helped us [workers] by reducing our workload (laughs).

**Interviewer**: Do you differentiate the taste of food cooked on biogas and on firewood?

**Interviewee**: No, the taste is the same. But, I can only say that biogas is faster than cooking on firewood. Cooking on firewood is time consuming because it takes a lot of time to find firewood itself, and even for the fire itself to ignite fully. While with biogas, you simply switch it on and then start cooking.

**Interviewer**: How did you manage your feedstock before the digester?

**Interviewee**: We used rabbit and chicken manure to make compost. I have gone for compost making training before, so I know how to make good compost. So, to make compost we make a square thing made of bamboo tree, and then we put leaves and manure, and then sprinkle water. After that we start another layer with leaves and on top of it we put manure, and then sprinkle water and so on. Now, we don’t use water and manure any more when making compost, instead we use effluent, and it’s more effective than adding water and manure as it breaks the leaves faster. The effluent in compost works as manure and water itself, and it also facilitates the breakdown of the leaves. And, now since we don’t use animal manure for compost, we solely use it for feeding the digester.

**Interviewer**: How do you compare the two composts in terms of strength?

**Interviewee**: I haven’t used the one made of effluent yet, but I’m planning to take the old vegetables out soon, and then I’ll see how effective it is. I can’t and haven’t used it on old vegetables because it will not be a true reflection of the compost.

**Interviewer**: Where did you learn about compost?

**Interviewee**: I have worked as a garden boy for 22 years; 15 years with the owner of this house who went back to his home country, and another 7 years with my current boss. They are friends, so I just moved from one to the other when he was moving. So, this other time my previous boss enrolled me in a compost making training at Chigumula [Crown Ministries], and also in agriculture training in Ndirande. I’m very keen in learning things; it’s just unfortunate that I don’t go with school.

**Interviewer**: (Laughs) why did not you finish school? And, how far did you go with it?

**Interviewee**: It’s because of school fees. I only went as far as primary school. So, my English is limited and I feel like if I had gone far with school my boss would have done great things for me. School is very important, but I have just accepted that such is life – we can’t all have degrees. But, I only thank God that I have wisdom and an ability of remembering things. So I hope when I retire I will use the knowledge then.

**Interviewer**: How did you know that you could use the effluent in compost as both water and manure?

**Interviewee**: I just thought that myself. When I was making compost using animal manure and leaves, it was taking 30 days. One time I tried to make compost using effluent and leaves to establishing the exact time it takes for the process, and I found out that it takes 20 days to break down the leaves.

**Interviewer**: Doesn’t the effluent go down the leaves since its all leaves?

**Interviewee**: Oh yeah, I put soil on top of each layer of leaves to prevent effluent from sipping through the leaves. But, I make sure that the soil doesn’t contain plastics, rubble and other things.

**Interviewer**: How did it work after commissioning?

**Interviewee**: I can say since it was installed in January up to now, we have been experiencing cold weather, so we haven’t been getting more gas. And, the installers told us that getting this season we would not be getting more gas like in summer because bacteria works well in hot weather.

**Interviewer**: So you are still using conventional methods of cooking.

**Interviewee**: It’s only the guards who use firewood because they come after we have exhausted all the gas. Since sometimes, we see ash around, so we assume that they use firewood. But we are expecting to get more gas during summer, and then we can have full information of its capabilities. And, someone was doing research and he asked me how much cooking time we are getting from this? I told him that it is difficult to estimate, because we don’t track records of how each person uses it. For example, I can’t know how much my boss uses it, or how the guards use it. But, we have decided that when the bag gets full to the maximum and reach its full capacity during summer, every user should be recording how much time he or she has used it.

**Interviewer**: And, it could be that the guards use the firewood for warming themselves, and not for cooking….

**Interviewee**: Yeah, we can’t know whether they use it for cooking or warming themselves because they come after we have left, and they leave before we come. So that’s why I’m saying it’s hard to estimate the amount of cooking time we are getting from the digester. But, once we start keeping records we will be in a position to know if we are using it for two hours or two under half hours

**Interviewer**: Specifically, when are you starting?

**Interviewee**: When the bag has fully risen out of the hole in summer, I believe that everyone will be able to use it, so it will be easy to track its capacity. Right now, it is difficult to estimate because sometimes after our boss has prepared breakfast; it goes off while we are making our tea. So, we’ll find the actual cooking time in summer.

**Interviewer**: You have told me that you used 8 bags (50 kg) of fresh manure and 3000 liters to start up the digesters, where did you get the manure?

**Interviewee**: We got the manure from Chikwawa [more than 44 kilometers one-way], and it was Ecogen that sourced it. Initially, we did find cow manure ourselves, but they said it had a lot of rubbish and wouldn’t work. So, we used the manure to make compost. Basically, I was the one who prepared feedstock by just following their instructions. The installers couldn’t be around because they said they had overstayed and needed to get back to Lilongwe to do other important things. Of course, we had 10 bags of fresh cow manure, but they told us that if we see the digester retaining the feedstock then we should stop. Then, after fed it, we waited for some time and the digester bag got full, and we were concerned that it would burst. After that, we started it and we were excited to see the fire. And, they told us that at the beginning we will be getting effluent but after some time we will start getting slurry at the outlet. Also, they said the slurry is a better fertilizer than the effluent.

**Interviewer**: Where did you get the water?

**Interviewee**: We used tap water. But, my boss was concerned that we used water from the tap as it contains chlorine. She thought the chlorine would kill the bacteria in the bag (Laughs) – and I agreed with her! Then, she also told me I think that chicken dung and food waste is the best feedstock.

**Interviewer**: Why?

**Interviewee**: Because chicken manure and nsima leftovers contain a lot of bacteria, so it’s better than cow manure and even rabbit manure. And, I agreed with her as well, because if you put chicken manure on maize, it wilts the maize. Then, I asked myself why it does happen like that, and then I thought it happens because of the bacteria (laughs). In the same way, if you can take cow manure put it on maize; it does not wilt the maize because it’s not that strong.

**Interviewer**: Oh it’s strong. You have told me that someone asked you about how much cooking time you get from it. I wanted to ask you that question also, I just kept it, but it was coming….

**Interviewee**: So as I said it is difficult to answer that question because it has different users and we don’t track the cooking time. And, sometimes we find the stove going off whilst we are cooking. And our boss told us that if this happens we should go inside the house and use LPG gas. So, now we don’t really know how it works, and we can’t compare how it works in dry season and wet season. Thus, we can only answer how it works in the wet season.

**Interviewer**: okay, do you use it in the morning?

**Interviewee**: Yes, we do make tea on it. Also, in the afternoon we make tea. But, in the summer that’s when we are planning to start cooking nsima – now, we don’t eat nsima at lunch. So, in the summer it would be interesting to see how much time it would take to cook nsima. But now, she uses it for cooking soft things, you know what whites eat. We have also boiled sweet potato there once, but it’s always tea all times. So, that’s how our cooking looks like in a day.

**Interviewer**: The vice president in his campaign was promising that people would be eat three times a day, and you are only eating in the morning and afternoon is tea, what’s happening?

**Interviewee**: The thing is that the one-hour lunch break we get is not enough to cook nsima and clean the dishes. And, I talk with my boss that we should start eating nsima because the digester needs nsima waste to produce more gas, and she said she would think about it.

**Interviewer**: Your boss is not always home, she’s mostly at work. So, you mean 3 or 4 workers can’t manage to cook nsima because of time? You can always share responsibility around that time…. What do you think?

**Interviewee**: We made the decision have tea at lunch because that’s what our boss provides us with – we are not responsible for buying that! We get free food! So, if we want to be eating nsima then as workers we need to contribute money ourselves to buy maize flour and side dish.

**Interviewer**: I see. So, if you are talking about preparing tea twice, then that’s about 20 – 30 minutes of cook time. So, I can estimate that you use it for not more 30 or 45 minutes a day.

**Interviewee**: Yeah. It could be.

**Interviewer**: How do you use the gas? Is it only for cooking?

**Interviewee**: Yeah, it’s only for cooking.

**Interviewer**: My understanding is that you use the effluent for making compost or fertilizer, and for pest control. How else do you use the effluent?

**Interviewee**: It’s only that. But, just to add we have been using the effluent for vegetables like spinach, herbals, mustard, and strawberries and so on. Now we have bought a 2000-liter container to be storing the effluent for the next growing season, because we want to try it on maize too.

**Interviewer**: Oh, that’s nice. What are the operational requirements?

**Interviewee**: The digester needs feeding everyday with 5 kg of feedstock. So every day I feed it with you chicken manure, rabbit manure and food waste from the house. And, in most cases I get food leftovers from my house too. My boss gave me two buckets that I have placed in a compound of my tenants, so I get a fair amount too. So, we feed it roughly 5kg a day, but that’s the minimum. Sometimes, we feed it more.

**Interviewer**: How much water do you add?

**Interviewee**: We use a ratio of 1:1.

**Interviewer**: How many people use the gas?

**Interviewee**: We are six or seven.

**Interviewer**: How do you prepare the feedstock?

**Interviewee**: We get the feedstock and soak it in water for a day or two. After that, we mix the feedstock thoroughly, and then sieve the feedstock. Then, we feed the digester with feedstock without rubbish, and the remaining things we soak again for two days and use it as feedstock again but after sieving again. Then, what remains after that we use it as ingredients for our compost.

**Interviewer**: Who is responsible for feeding it?

**Interviewee**: I’m responsible for feeding it, but during the weekends my boss feeds it.

**Interviewer**: How would you describe the task of feeding it?

**Interviewee**: The task of preparing feedstock is not that involving. The challenge I see is that it is not easy to source the feedstock. The other thing is that the feedstock produces strong odor that I find a health risk. I feel like the bacteria we need for gas production enters in our body as we are making feedstock; and it has the potential of causing all sorts of problems. So to avoid this I wear face mask and gloves every time I’m making and feeding it with feedstock. And, also when I get home I buy milk to drink.

**Interviewer**: How did you know that milk could help you with that?

**Interviewee**: I learnt this in school. Though I did not go far with school, this one stuck in my head. So every time I am involved in any working that involves dust or strong smell, I drinking milk to clear out the dust or the other particles. Moreover, I confirmed this when I was working at Robray, a mattress manufacturer. Every time we were closing business, we they gave us milk to flush out impurities in my body.

**Interviewer**: One big challenge in digester management is that what you have pointed out, the challenge of sourcing feedstock. And, most digesters fail because of that. How are you managing to overcome this?

**Interviewee**: We are able to overcome this because it is not a lot of people who use the gas; secondly, food cooked on the digester does not require a lot of fire; and, thirdly we have livestock like rabbits and chicken; also because I am able to source feedstock from my tenants. So, it’s like we have three sources of feedstock, and that’s how we have managed to keep it running update. And, now I understand what Ecogen meant when they said it’s for farmers. It really needs someone who has a lot of cows and someone who grows a lot of crops to meet its needs. But, now we are planning to buy more chickens because we understand that it produces strong feedstock. I also have chickens at my home, but the chicken coop does not have a floor. So, when we collect the chicken dung it contains a lot of sand. Thus, my boss has told me that she is going to buy a sheet, so that I can lay it on the floor, and come with the manure.

**Interviewer**: Oh, she is so serious about it, uh?

**Interviewee**: Yeah, but then it will increase my workload. But, she’s nice and so understanding. So, I’ll be okay.

**Interviewer**: How many children and rabbits do you have?

**Interviewee**: We have 8 chickens, and 12 rabbits.

**Interviewer**: How many people do you collect food waste from?

**Interviewee**: That’s about 24 people, including my family.

**Interviewer**: Okay, does the digester meet your needs?

**Interviewee**: Now it is not because we are in wet season. But, we expect it to meet our needs in the summer as the installers assured us that it produces more gas in hot weather.

**Interviewer**: What are the maintenance requirements?

**Interviewee**: We just made a thing like a coil so when we move it around the digester it gathers rubbish like grass, and eventually it prevents or unblocks the digester if it’s block.

**Interviewer**: What else apart from that?

**Interviewee**: It’s only that because the main maintenance issue is the blocking of the digester at the inlet. So, when it’s block, you can’t unblock by hands, because a hand can’t go inside the digester and remove rubbish. Thus, that’s why we made that special thing for unblocking of the digester.

**Interviewer**: What are the challenges?

**Interviewee**: It’s only that it blocked once, and that it’s not working well at the moment because we are in cold season. And, that’s why she has built a green house over it to keep it warm. She just came up with that idea own her own, and it’s not like she was told by Ecogen. And, sadly, it has a drawback too; it drops water onto the bag when it’s hot. So, we are still trying out different things to make it work better.

**Interviewer**: How did you know that it was blocked?

**Interviewee**: When we were trying to feed it, the feedstock couldn’t go in.

**Interviewer**: When it’s blocked how long did it take to fix it?

**Interviewee**: I think it took one and a half week. And, it was after we came with the idea of making the unblocking thing.

**Interviewer**: How long did it take to block?

**Interviewee**: We installed it in January, and it blocked on 4th March or April, I think.

**Interviewer**: Did you call the installers? And, what did they say?

**Interviewee**: My boss called Ecogen and reported that the digester was not producing fire, and that it was returning feedstock as we were trying to feeding it. Then, they told her that it blocked at the inlet. Then, they asked us what we were feeding it, so the problem was that we didn’t follow the feeding instructions, during weekends she was just getting rabbit manure, add water, and then feed it. So that’s what caused it to block. But, in the end we learned something, and that when we started soaking it.

**Interviewer**: It’s a known fact that white people are organized and do not follow shorts, what happened that? Was she not told how to feed it or something?

**Interviewee**: That time she fed it with raw pumpkin leaves from the hutch which easily block thing, because of the spines/white thread like things on the leaves, and also because pumpkin leaves don’t decompose easily. She didn’t know that it was a bad feedstock.

**Interviewer**: Was Ecogen coming to fix this?

**Interviewee**: Yeah, and even when we unblocked it we called and notified that they shouldn’t come because we had already fixed it. That time they were in Lilongwe, now they have their office at [Blantyre].

**Interviewer**: Better, what do you think of this kind of information, and do you think it would have helped you?

**Interviewee**: That’s useful information and you have brought an issue we have raised to Ecogen. We have requested them to provide us with a manual. So with that will be able to know what’s happening, and get guidance on how to react. For example, we are hoping to get information on how to make it better when it is summer or wet season.

**Interviewer**: How would you describe the current state of your digester?

**Interviewee**: I can’t explain more about it because we have only used it in wet season. And, you know here in Malawi we have two seasons; the wet season and dry season; so I can only explain what we have seen in wet season in regards to its functionality as well as its props and cons.

**Interviewer**: What are its pros and cons in wet season?

**Interviewee**: The one challenge is that it produces little gas in wet season….. The other thing is that it blocks. But, that time it was our fault because we did not feed it properly.

**Interviewer**: Why are you making a distinction between wet season and dry season in regards to its functionality? Where are you getting this? Why do you think things will be different in dry season?

**Interviewee**: It’s because we were told by the installers that in wet season it produces relatively small gas unlike in dry season. Now, we have decided to feeding it with 10kg of feedstock, we have started last week, so we are waiting to see if things will be different.

**Interviewer**: We are going towards the end of the interview. What is your opinion of biogas?

**Interviewee**: Personally, I can say biogas is a very, very good thing for a number of reasons. Number one is that it can help people save money by eliminating the cost of fertilizer in farming. I’m a farmer and I like to grow vegetables, so I think it can help me in this regard very much. I have two fields and I’m planning on using the effluent one farm to see how things will work out. I can’t use the effluent on both farms because I don’t know how it really works yet, so I can’t take the risk.

**Interviewer:** So basically seven people were involved in the construction of this digester. What special items had to be imported from another country?

**Interviewee**: They said they get the things from Mexico.

**Interviewer**: Okay, what’s the biggest change in your life now that we are using biogas?

**Interviewee**: Now, I’m very fast in cooking, and I find it very easy to use.

**Interviewer**: What do you mean?

**Interviewee**: It’s in the sense that you only need a matchstick to light it up the fire... And the other thing is that biogas can be used as fertilizer, so that another good thing about it.

**Interviewer**: Where do you see biogas in Malawi 5 years from now?

**Interviewee**: The challenge to its progression is the cost. But, it has a lot of benefits. For example, if you use two bags of charcoal, which go at K12, 000, you can be saving K24, 000 per month and that is lot. And also, if you buy fertilizer at K50, 000, it means you would stop buying fertilizer. It also has the potential to save the environment because it can make people stop buying charcoal, then charcoal producer will not have customers, and eventually they would go out of business.

**Interviewer**: You are saying biogas is expensive, but it is good. So to strike a balance, what do you think is a fair price for a digester for an ordinary person?

**Interviewee**: when Ecogen came they told us that this thing can cost as much as K900, 000. But, they do allow customers to pay a deposit of K300, 000 and pay the rest later. I feel this is not feasible to an ordinary Malawi – it’s too much. And, that’s a lot for anyone, even people living in cities. So, it’s only fair for organizations to be giving this to people in the villages, and I think that way we can save the environment big time.

**Interviewer**: Some organizations did what you are saying. They gave people the digesters but now not a single one is working….

**Interviewee**: Then, it has to do with management. I think a lot of people in the villages do not know how to manage things. And, from experience I think at household level this thing needs to be fed by one or two person to avoid mismanagement, and should have a proper feeding plan. I think with that this thing can last to 20 years if it’s well managed as they said.

**Interviewer**: Last question, if you could have designed your own waste or energy intervention, what could you have chosen instead?

**Interviewee**: Biogas is good but I found that it’s difficult to own it because of its price. So, if someone can have it, and take good care of it, then it has a lot of benefits.

**Interviewer**: You have said K900, 000 is a lot of money. What’s a fair price for it?

**Interviewee**: I just think the government or an organization has to provide the money. Then, if given to smart people, it can help a lot and save the environment. And, if I can get a chance to own one, I’m pretty sure I can quit my job and start focusing on farming right away.

**Interviewer**: (Laughs) Thanks for the interview. Do you have any last words?

**Interviewee**: I am just excited for this interview, and that I have learned a lot from you.

**Interviewer**: Thanks, I have learnt a lot from you too.