**BIOGAS ASSESSMENT PROJECT**

**Site ID: 16**

**Date: July 21, 2022.**

**Interviewer**: Are we in Green Corner or Mpemba?

**Interviewee:** We are in Mpemba

**Interviewer**: Where is Green Corner?

**Interviewee:** It’s before Mpemba when coming here.

**Interviewer**: Okay, first question, where did this digester originate from?

**Interviewee:** It came from Lilongwe. The owners’ are these [Stand and take a calendar of Ecogen]

**Interviewer**: Oh, okay. It came from Ecogen, and they even gave you a calendar, wow, nice (Laughs).

**Interviewee:** Yeah (Laughs)

**Interviewer**: So, how did it get here? Did you buy this with your money?

**Interviewee:** Yes, and it did cost me K600000, and I’m supposed to pay in that in 2 years.

**Interviewer**: K600000 in 2 years - Okay, how much are you paying a month? Or, they just said in two years, you should settle the debt?

**Interviewee:** They said I can be paying according to my financial standing, but up to this point, I haven't paid enough. I have challenges paying them because my cows were dry. Recently, they called me to check in on me, and I told them my cows were dry. Luckily, my cow has given birth to a calf, and I will be in a position to continue paying them. As of now, I have only paid K20000.

**Interviewer**: I still a long way to go...

**Interviewee:** Yes, none of my cows had calves; only one cow was pregnant though and has a calf now. So, during that time, I couldn't milk. Now, since one has given birth, I will be able to milk and pay the debt.

**Interviewer**: So now, you will be able to pay your debt?

**Interviewee:** Yes, yes, and I have to say the digester is helping me a lot, because I’m now able to cook food fast. So, I just have to pay them to show my appreciation.

**Interviewer:** When did you buy this?

**Interviewee:** Last year.

**Interviewer:** Okay, okay, who built this?

**Interviewee:** It’s the same people [Ecogen]

**Interviewer:** How many people built this?

**Interviewee:** They were two, right? [Asks a son]… There were two boys and one girl, and it took them about three days to complete. Initially, we were told to dig a hole for the digester but when they saw that the work was not done properly, they dug it themselves. Then after digging, they laid a thing like a blanket under the digester bag. The following day, they dug another hole and assembled the whole thing. In total, it took them 3 days, and they were doing the same work for three other cow farmers in this area.

**Interviewer:** You said before they came to dig the holes, they asked you to dig a hole or holes to place with the digester bag, and whatnot. How many people did you involve in this process?

**Interviewee:** The first two holes took two days, and they worked for another extra day to adjust the holes. So in total, it took three days to dig the holes. They gave me the dimensions for the hole to dig [Goes to take a notebook]. They give me this.

**Interviewer:** Okay, so the dimensions are 2.25 by 2.25 m with a depth of 0.9 m… Okay, thanks, I'm seeing calculations written on the notebook as well. Was this for the digester, something else?

**Interviewee:** No (laughs). I write all kinds of things in this notebook; things concerning my group and other things, so when you too are leaving you need to sign in this book.

**Interviewer:** Okay, that’s okay. You bought the digester, and you dug the hole. What other role did you play in this?

**Interviewee:** I was also responsible for water collection.

**Interviewer:** How much water?

**Interviewee:** I think it was three drums (200 liters) of water. At first, we used water from the tap, but then decided to use water from the borehole; a lot of water was used. Even now, this thing requires more water for mixing the feedstock.

**Interviewer**: What type of drums?

**Interviewee:** The metal drums.

**Interviewer**: I think those drums are 200 liters in capacity.

**Interviewee:** Yeah, yeah, it was a lot. At first, we use water from water board, but then we decided to use water from borehole to save water and money.

**Interviewer**: How did you connect with them [Ecogen], what happened?

**Interviewee:** We have an extension worker at SHMPA [Shire Highlands Milk Producers Association], who connected us with Ecogen. SHMPA is a milk producers group, and I'm the chair,

**Interviewer**: Is SHMPA an acronym?

**Interviewee:** Yes, it's a women group involved in cattle management, and it also gives women cattle. So, what happened was, Ecogen got in touch with the extension worker for this area, who came to SHMPA and encouraged us to adopt biogas. He also encouraged them to come here, because people have a lot of cattle here. Then, I had discussions with the extension worker, who asked me to persuade people to come and learn about biogas. He said he was advocating for biogas because people here have firewood and charcoal issues, and with biogas, people would be able to cook using cow manure. Then after some time, Ecogen came to SHMPA and they taught people about biogas. First, they started asking people how much charcoal and firewood each one was using per day or per month, how much firewood and charcoal cost, and they were recording this information on a paper. At the end, they gave a rough figure that the people spend per month and then a year; it was clear that people were not aware how much money they were spending on charcoal or firewood, and they found out that it was a lot that day. Then, they started a cooking demonstration, and said that at the end people would eat nsima cooked on biogas.We had doubts about it. Still two girls, one cooking nsima, and the other cooking side dish continued cooking, and to our amazement, we saw everything cooked, and we ate the nsima (Laughs).

**Interviewer**: Oh nice (Laughs)

**Interviewee:** Then we were asked, if we were interested, and as a chair of the group, I decided to lead by example and opted to get one. Then two other people, [name redacted] and [name redacted], both members of SHMPA, followed suit. And, it took the installers a week to install the digesters for the three us here in Mpemba.

**Interviewer** Who is this other person? I only know [name redacted]….

**Interviewee:** It’s [name redacted]. She stays in Chadzunda, along [location redacted].

**Interviewer**: Is it not far from here?

**Interviewee:** It's far - It's far.

**Interviewer**: You need to give me her number so I can get in touch with her.

**Interviewee:** [Calls her son to get the phone to search the contact number from the phone]

**Interviewer**: Okay, I will get it at the end. So, on the day they came, were you able to eat nsima….

**Interviewee:** Yes, and it was fast.

**Interviewer**: Like how fast?

**Interviewee:** I didn't record the time, but it was fast. After eating, we boiled water and everything went well, the water boiled. Then, they said when it's not fast enough, we can put a sand of bag or a heavy stone on top of the digester bag to increase the intensity of the fire.They said if it’s on a cold day, as it is now, we should be putting a sandbag on top of the digester bag too.

**Interviewer** Why did they say you should be putting a heavy stone or a sandbag on top of the bag when it's cold?

**Interviewee:** To make more gas to travel into the pipes and the stove from the digester bags.

**Interviewer**: Okay….

**Interviewee:** And even now, when we do have issues with gas, we put sand of bag on top of the bag, and the fire becomes intense, that it then takes a very short time to cook things on the gas.

**Interviewer**: I'm seeing SHMPA - Ecogen meeting session and asking people to buy their product…..

**Interviewee:** [interrupts] Yeah, they were asking people to buy and tell other people the goodness of biogas.

**Interviewer**: How many people attended the training?

**Interviewee:** Eh, we were many.

**Interviewer**: Roughly, how many people?

**Interviewee:** Maybe around 150 people - were many.

**Interviewer**: And sadly, only a few accepted the offer to buy….

**Interviewee:** Yes, some thought it was involving because it's more like cooking on firewood in the sense that it requires you to source manure and then constantly feed it with manure; and when it is not fed, it does not produce fire.

**Interviewer**: You said the meeting session with Ecogen had 150 people and only three people bought the digester, only 3....

**Interviewee:** Yes, three people bought the digester. We were then told about bio-fertilizer (Stops to pick a call)…. so I get biofertiliser at the outlet. Last time, I grew maize using bio-fertilizer, without adding organic fertilizer, and I was able to harvest three bags of 50 kg of maize. I only used 4 buckets of bio-fertilizer, which I diluted with water to reduce its strength. We were told to add water to the bio-fertilizer because it’s too strong and can damage maize if not diluted.

**Interviewer**: How do you make the fertilizer? I mean, how much water do you add to the bio-fertilizer?

**Interviewee:** I add two buckets of water to one bucket of fertilizer, and we used a cup to apply the bio-fertilizer on the maize. We apply the bio-fertilizer two times, one for growth of the maize, and the other for strong kernels.

**Interviewer**: Oh, that's good. Let me put it to you; you were about 150 people and only 3 people decided to buy with the digester. Why do you think only a small number of people bought it?

**Interviewee:** Because it was a new thing, and people did not believe that this thing works. But since that time, I have been receiving people frequently to appreciate the digester. You know people; people are always resistant to change and to new things. Also, some people thought they couldn’t manage it because of their houses.

**Interviewer**: Can you elaborate? Why did they say they couldn’t manage it because of their houses?

**Interviewee:** Maybe because they have small houses, and don't have a structure or don’t have space to put the stove. But, I always tell them that they can make a structure of few bricks and plaster it in the kitchen to put the stove on, as in my kitchen. But, people are skeptical about it. Overall, I can say people showed interest, especially after they calculated the money people spend on firewood or charcoal in a year, and I’m sure people did not know that they spend that huge amount of money on firewood and charcoal.

**Interviewer**: Based on the calculations, how much money do people spend on charcoal and firewood?

**Interviewee:** People were spending K1.5 million to K2.5 million per year.

**Interviewer**: A single person?

**Interviewee:** Yeah, you may ask you how; initially they started by simply asking how much firewood or charcoal we were using; how much does firewood or charcoal cost. We did not even think or know what they were trying to find out. And, when they mentioned how much people were spending, it showed that people were really spending a lot unknowingly, and we were all alarmed… They were like how many packs of charcoal do you use; how much does a pack of charcoal cost? K300! How many times do you cook? Three times! How much time do you spend on cooking nsima, beans so on and so forth? As for me, I sell thobwa (sweet beer), and they asked me questions regarding my business, for example, how much wood do you use a day? K1000 per day and – K1000 per week! So, they calculated that from the first day of the month to the end of the month, and then to 12 months. After that, they started talking about fertilizer, how much a bag of fertilizer cost? K25000.

**Interviewer**: And that was before the price of fertilizer got up…

**Interviewee:** Yeah, and they made a total for all that. And, at the end, I was enlightened, eh, and I realized that I spend a lot of money. Talking of fertilizer, we have an extension worker who advises us to use manure or maize bran. But, we don't really buy into that, because when we use such manure we still add inorganic fertilizer. However, during the last grow season Ecogen told us to use the bio-fertilizer only, without adding inorganic fertilizer to appreciate its strength and impact on our maize crop. Then, they came with journalists to document the occasion. They filmed us eating maize and all that.On top of that an organization called One Acre visited us. They said they were impressed that our maize did well without using organic fertilizer, so they suggested that we should find a small piece of land to use as a demonstration plot. And, after harvesting, they suggested that we should measure the harvest. In so doing, we will learn the positive impacts of bio-fertilizer on top of other things.

**Interviewer**: When you use inorganic fertilizer, how many bags of maize do you produce on that very same plot? Do you harvest the same number of bags, or is it less or more this time?

**Interviewee:** This was my first time, and they said we should expect more next time since this was our first time. They even showed me pictures and videos of another user who uses biogas bio-fertilizer on a 3-hectare land, and I must say I was very impressed by the maize. I was also told to try applying the biofertiliser on other piece of land, if I was satisfied with the maize I got last time. I will definitely do it, because, if I had not used the biofertiliser last year, I wouldn’t have gotten anything because government subsidy fertilizer was very scarce last time. This year, I feel like we don’t even have a choice, but to use bio-fertilizer since it will be difficult to get fertilizer as the number of beneficiaries of subsidy fertilizer has been reduced greatly and the price of fertilizer is out of reach now.

**Interviewer**: yeah, this year it will be even more difficult to get fertilizer.

**Interviewee:** Yeah, this is the right time to use our biogas in farming.

**Interviewer**: What were your expectations? But before we go to that, did you know about biogas before Ecogen came to SHMPA? How did you learn about biogas?

**Interviewee:** We learned about biogas when they came. Before that, I was only seeing adverts on TV of people cooking using LPG gas and I was very much surprised to see that happening in Malawi. So, when they came, we told them that we had seen people using gas, but this was different because it used cow manure. We even thought that it was better because it’s somewhat free since it uses free cow manure. It’s also better than electricity, because electricity is expensive, it can’t be accessed everywhere, and it's very much unreliable these days because the power outages are something else… Biogas is very easy for me to use, because I have cow manure.

**Interviewer**: What were your expectations of biogas?

**Interviewee:** I was very happy, and expected my life to change and it has really changed.

**Interviewer**: What has it changed? And, how did you expect your life to change?

**Interviewee:** I go to SHMPA very early as I’m the chair of the group. I go as early as 5 AM, so to look for firewood that time is difficult and time consuming. As a result, that time I was going without eating. Now, I’m able to turn the stove on and cook porridge with ease, as it is in the house. Now, I have also been told that I can use it for lighting as well as a power source for my TV. I did ask them if it’s possible to use it for electricity last time when they came, and they told me that.

**Interviewer**: What made you ask about that? I mean, how did you learn that? And, what’s required for you now to use it for lighting and as a power source?

**Interviewee:** I was just curious. Talking of what is required; we have never been told what is required. But, next time they are here, I will ask them what we will need to have it produce energy for lighting.

**Interviewer**: So far, are you happy with the digester?

**Interviewee:** Very much so. It is a good thing. I do believe other people like it too, but are put off by its cost; and now that I have seen it work, the cost is not that much, it worth the cost, especially when it's paid in 2 years.

**Interviewer**: Yeah, K600000 in 2 years is not that much.

**Interviewee:** [no response]

**Interviewer**: There two things you were told to expect; one was that you would be using it for cooking, two as fertilizer, and now you have learnt that you can use it for lighting. What else where you told to expect apart from these?

**Interviewee:** Uh, that’s all. It was about using it on TV, radio as well as lighting. And, they did talk about this when I asked them, I think it was around the time they came to see the maize.

**Interviewer**: Do they usually come?

**Interviewee:** They do come often to see how we are doing. And, they even call to check in on us.

**Interviewer**: How many times have they come? And when was the last time you talked with him?

**Interviewee:** I do speak with them regularly. They even called me the day before yesterday. They also told me to call them whenever there is the problem, but since it was installed, we have never had any issues.

**Interviewer**: Did you receive any training? Or is it just with training you and others received at SHMPA by the installers?

**Interviewee:** No, that was it. But, the first time when they came at SHMPA, they were six men and some were from within. I know one is from Thonda, and the other is from Green Corner. At one point, it was producing little gas and we called Ecogen, and they sent those men to come and fix the digester. When they came, they simply replaced the filter and switched on the stove, and it worked out. Since then we have never had issues with it.

**Interviewer**: How long did it take for this to happen?

**Interviewee:** I think it was after 5 months.

**Interviewer**: So you only saw how they fixed the filter. Apart from that, is there anything else you were taught how to fix it?

**Interviewee:** No, that's all.

**Interviewer**: During the meeting at SIMPA, what training did you receive? What did they say? Did they mention anything about how to fix it?

**Interviewee:** The just explained about how it works, how to operate it, and its importance. But, they did not teach us how to fix it. They just assured us that we will not have problems with it, and that we will use it for a long time.

**Intervewer**: How long did they say it would last?

**Interviewee**: (Laughs) a very long time; 10 to 20 years.

**Interviewer**: Mainly, why did you choose to have a biogas digester here?

**Interviewee**: It was all to do with my waking up time. I wake up very early, and that time whenever I was going to SHMPA, I was going on an empty stomach. As a result, I was taking my high blood pressure medication without food. Then, I thought deep about it, and then came to a conclusion that I need it, since it was going to help me a lot in terms of my health. As we are speaking now, I can’t go to SHMPA without eating, and I can certainly not take my BP medication without eating.

**Interviewer**: You were going to SHMPA early in the morning and taking medication without food, tell……. [Interrupted]

**Interviewee**: I go early, maybe around five in the morning. So, basically in the morning, I boil water on one burner, and on the other burner, I cook porridge. But, I haven’t literally stopped cooking on firewood, because I cook thobwa (sweet beer) and the pot I use for cooking thobwa doesn’t fit on the biogas stove.

**Interviewer**: What was it like taking medication without eating?

**Interviewee**: It was bad because I was feeling very hungry and weak at the same time. Then, I would soldier on, and come home to eat, or I would buy food from the tuck shops after some time. It wasn’t good for my health - it was killing me slowly.

**Interviewer**: Before the biogas, what were you using for energy, for example, cooking?

**Interviewee**: Firewood and charcoal

**Interviewer**: Where do you get firewood?

**Interviewee**: I get it from mango trees and blue gum trees, which we have around the house. We have lots of bluegum trees because I planted them to use them for construction of cow house. You can’t buy bluegum, because it’s very expensive these days.

**Interviewer**: How much charcoal do you buy or use?

**Interviewee**: I don't usually use charcoal. I use firewood because I have enough trees around. Now, I have plenty of firewood in store to use during the rainy season. Nonetheless, I buy theK300 packs of charcoal, which was previously at K200, sometimes.

**Interviewer**: Roughly, how many times do you buy charcoal per month?

**Interviewee**: Maybe 10 times, I don't really count though.

**Interviewer**: How do you differentiate between cooking on biogas and cooking on charcoal or firewood?

**Interviewee**: I do differentiate. Cooking on biogas is faster than cooking on charcoal or firewood, if you feed the digester properly. Biogas is very fast!

**Interviewer**: What else apart from that? I remember the last time I came alone you told me it doesn’t blacken pots with soot.

**Interviewee**: Yes, it doesn't produce soot. As a result, you can use a pot three or four times without cleaning it, because it doesn’t blackened pots with soot. While, when you use firewood you are forced to clean the pot every time after cooking. I remember one time they came and took a video of us cooking on firewood. After that, they took another video of us cooking on biogas. The pot that was used for cooking on firewood turned out be very black because of the smoke.

**Interviewer**: At this time, are you satisfied with the fire you are getting from your digester?

**Interviewee**: I can say, yes. We onlyget little gas if we don’t feed it, and when we feed it again, we get strong flames - and it’s not like we need to feed it every day to get strong flames,for example, if we can feed it today, after three days we can still get strong flames.

**Interviewer**: How many cows do you have?

**Interviewee**: I have six cows and one calf, which has just been born.

**Interviewer**: That's like you have seven in total.

**Interviewee**: Yeah

**Interviewer**: Before thedigester, what were you doing with the cow manure?

**Interviewee**: Previously, I was using cow manure in my farm as fertilizer, and I was also selling the manure.

**Interviewer**: Okay, okay…

**Interviewee**: Yeah, I sell 50 kg of cow manure at K250.

**Interviewer**: Only K250? Is that not cheap?

**Interviewee**: Yeah, I sell at a give away price. I remember at some point there was a certain manwho was coming repeatedly to buy cow manurefrom me, and then I learned from my friends that person was selling the cowmanure at K500 elsewhere.

**Interviewer**: When was that?

**Interviewee**: Last year, and this year alone I have sold K4000 worth of manure.

**Interviewer**: Wow, that’s like how many bags?

**Interviewee**: (laughs) a lot of bags.

**Interviewer**: We have done half of the interview. We are remaining with roughly the same time. Moving forward, how did the system work after commissioning?

**Interviewee**: It started perfectly, and even the installers who were present on the day it was commissioned were impressed. But, it was difficult for me to operate during the first days. Luckily enough, my daughter who understood it was around. So, yeah, during the first days, I was getting confused, and I was forgetting the information they passed to me, I think because I’m old and I was given too much information at once. Good enough, my son was also there when they were installing it, so he understood it and he was able to operate it and was also able to prepare the feedstock. What happens is, when we get cow manure from the cow house, we soak it in a bucket, and then we start pouring water. Then, we stir it till it gets between thick and runny. Afterwards, we remove trash from the feedstock in order to have feedstock without weeds, stalks that can block it. Then, we pour the feedstock into the digester and start stepping on the bag to kick-start it, and after doing that we get strong flames on the burner, which sometimes ignites the other burner without lighting it with a matchstick.

**Interviewer**: Oh, that’s strange. How much gas did it produce? I mean, how much cooking time did you get from this?

**Interviewee**: We are able to cook breakfast, lunch and supper without any problems [2 hours – 3 hours].

**Interviewer**: Even now? Doyou still get enough gas to cook breakfast, lunch and supper? I mean, is it the same? How much cooking time do you get?

**Interviewee**: It’s the same, and there's no problem. But, my friend told me that she has a problem with her digester.The gas valve has gotten broken, and it's not working. I believe someone must have pushed it with more force than necessary because certain times the gas valve is hard to move, so it makes you move it with unnecessary force just to make it work. She told me that she has contacted the installers and they told her that they would come to fix it. I believe they will go to fix it. But as far as I'm concerned, since they commissioned my digester, I have only had an issue with the filter, which I communicated to them and they fixed it.

**Interviewer**: What is this filter? Where is it located?

**Interviewee**: Let me show you.

**Interviewer**: That’s okay; you can show me at the end.

**Interviewee**: Yeah, it's more less like mesh wire scourer, like the one we use for cleaning pots. Our digester stopped, so we only replaced the filter and it worked. Last year during the heavy rainy season, I worried and thought that I might not be able to get enough gas because they said it slows down when it cold. But, that was wrong because it was producing enough gas.

**Interviewer**: It didn't slow down?

**Interviewee**: It didn't slow down as we were feeding it as usual, and when the sun was out the digester bag was able to inflate again. And, even when the bag wasn’t full, we were still able to cook.

**Interviewer**: Do you use the gas for any other purpose other than cooking? Is it strictly for cooking?

**Interviewee**: Yeah, it is strictly cooking.

**Interviewer**: Do you store your gas?

**Interviewee**: We don't have the material for storing gas.

**Interviewer**: What were the operation requirements?

**Interviewee**: We only require cow manure.

**Interviewer**: And water, I guess.

**Interviewee**: Yeah, we require cow manure, which we mix with water to have suitable slurry.

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

**Interviewee**: We have a borehole there.

**Interviewer**: 50 meters! Okay, how much do you feed the digester?

**Interviewee**: Two buckets (20 liters) of cow manure and four buckets (20 liters) of water.

**Interviewer**: Then you mix?

**Interviewee**: Yeah, we mix with our hands.

**Interviewer**: You use hands?

**Interviewee**: Yeah, we use hands.

**Interviewer**: Bare hands?

**Interviewee**: Yeah, we use bare hands, so thatwe are able to remove the rubbish from feedstock effectively and efficiently.

**Interviewer**: You can at least use groves.

**Interviewee**: It’s hard to find gloves. But, yeah, gloves are good – I agree that gloves are good. Still, you know we interact with cow manure on a daily basis, so we don’t find it gross.

**Interviewer**: Yeah, when you deal with it on a daily basis, you get used to it.

**Interviewee**: But, we need to find gloves.

**Interviewer**: Why do you say?

**Interviewee**: (Laughs) Good hygiene practice!

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

**Interviewee**: My son and daughter, who has gone to the hospital with her child.know when to feed it; they know that after 2 or 3 days, it must be fed.

**Interviewer**: How do they about feeding it? Don’t they complain?

**Interviewee**: No, no, they do everything quite okay - and as for my son, he knows everything about cows; when cows are on heat, he’s able to make them mate; even now, he does clean the tits of the cow and milk; he is also responsible for feeding the cows, even though, he gets help sometimes from other people. He does everything.

**Interviewer**: Did he receive training on biogas?

**Interviewee:** (call his son) Chris! Chris! Were you taught on biogas? (Son confirms that he was trained) yeah, he was taught. He does everything; feeding and operating it. He's able to cook nsima on biogas; He even knows a lot more than I do; He taught me some of the things too, and now mom is good – Youngsters learn faster that adults, you know!

**Interviewer**: (laughs) yeah, what were and are maintenance requirements?

**Interviewee**: He and his sister know how to maintain it; when it’s not producing gas, they are also able to troubleshoot the problem; they know when it's not producing gas it is because of the filter or the feedstock. But, since it was installed, it has never really failed. [Asks son if it has ever failed and the son confirmed that it has never felt before]

**Interviewer**: Okay, does it meet your needs?

**Interviewee**: Yes! We cook quit okay.

**Interviewee**: What challenges are you encountering now?

**Interviewee**: There is no problem; I am the problem, I'm failing to pay for it.

**Interviewer**: (Laughs) you will pay them, and you have already started paying too – plus now that you have a cow, which you can milk, you will be good.

**Interviewee**: (Laughs) yeah, I even told them that.

**Interviewer**: You have told me you cook thobwa, and you don't use the biogas stove because the pot doesn't fit. Don't you think this is a challenge or limitation with your biogas?

**Interviewee**: Yeah, I cook a lot of thobwa at once and I need a big pot. Sadly, it doesn’t fit on the stove. Still, I use it when I want to cook a small quantity of thobwa and fast. On the whole, because of my business, I need a big pot, hence I use firewood.

**Interviewer**: How big is your pot?

**Interviewee**: It is 60 liters.

**Interviewer**: Have you encountered any problem? I mean, I’m thinking of the times you put stones or a sandbag on top of your digester bag. You also mentioned…..

**Interviewee**: Yeah, we were advised not to use stones too often because theymay damage the digester bag – and they made it pretty clear that we should a bag of sand. But, the sack we usually use got damaged because of the rains hence we are forced to use stones.

**Interviewer**: What I mean is, using a sack bag to make it work properly is a problem, what do you think?

**Interviewee**: Putting a bag of sand on top of the digester bag is not a problem, and it’s not like we do that all the times. We do that; and we have no problem with that; and it works.

**Interviewer**: I remember you said it failed once and you called them to fix it. Take me through that.

**Interviewee**: Yeah, there was a time when we switched it on and it did not produce gas. We tried to find the problem and fix it, but we couldn’t, so we called the owner of the installation company who sent his boys. So, when they came they just went straight to the filter and they replaced it. After that, they asked the children to jump on the bag, and then it started working again.

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

**Interviewee**: It did not take long

**Interviewer**: I mean, how long did it take this to happen?

**Interviewee**: When we called them, they came on the same day, and they didn’t take long. It rained that day, and I wondered how they even traveled from Green Corner to this place- and when they came, we told them the problem and that's when they went straight to the filter.

**Interviewer**: We are going towards the end of the interview. Were you given something like this? What do you think about this information and do you think it is helpful?

**Interviewee**: No, we were not; we were only told. But, it seems like they will be here again soon, so I’m going to ask for a handout. People do come to see this and we fail to explain some of the things, so I believe this will help us in that regard… I remember, last month [name redacted], an ex employee of Escom came to appreciate the digester. He said he wants to install one at his place because he has cattle. I do not only receive visitors who have cattle, people who don’t have cattle come here to appreciate the digester too. They take pictures and all. However, their concern is mostly on cow manure; they wonder if people who have cattle would be willing to share them manure. But, I tell them people would be willing to share manure for three or four times, and after that they will ask for money because they will think you buying firewood from them.

**Interviewer**: What do you think of this information?

**Interviewee**: It can help.

**Interviewer**: Why and how?

**Interviewee**: Sometimes we do forget some of the things that we been taught. So with this, it can be easy to access the information. Also, whenever there is a problem, one can easily look at the information, troubleshoot, and fix the digester. For example, when it’s not working, one can look at the cause, find the solution and act accordingly, and eventually bring the digester back to life with the help of this information...... I may forget what I was taught and my children might not be around, and that would be disastrous. But, this can help me in such a case…. Luckily enough now, I have children who can fix this or remind me some of the things.

**Interviewer**: Oh, you are really proud of your children. Do you know how to read? Can you be able to decipher this?

**Interviewee:** Yes, I can read. But, I can only read Chichewa. So, the information needs to be in Chichewa (Laughs). Also, the text needs to be big. I’m old, so the font needs to be like on that calendar [Calibri 18/20].

**Interviewer**: (laughs) Okay, what is the current state of your digester?

**Interviewee**: It’s working okay; it has no issues.

**Interviewer**: Your digester is working okay, but most people’s digesters are not. Why do you think people are not able to maintain them? I mean, how have you managed to keep it in this state?

**Interviewee**: Oh, what type of problems do they face?

**Interviewer**: Some have digester bag punctured, the fitting issues, and leakages.

**Interviewee**: Can the bug get punctured? What can puncture it? Do you mean people puncture it deliberately?

**Interviewer**: Accidentally, we have also seen problems associated with connections, especially gas connector.

**Interviewee**: Which kind of digester? This group?

**Interviewer**: Not this types though, some other type?

**Interviewee**: With the experience we have had with it, I don’t think that can happen.

**Interviewer**: Why do you think you have been able to maintain this up to date? What are you doing?

**Interviewee**: It’s about management and following the instructions; If you are told to feed it with cow manure and water, and you do the contrary by feeding it with water only, then you are bringing trouble to yourself when you know what ought to be done. We were also told to ensure that there is no water in the pipes, so if we do not remove water that accumulates in the pipes at the water trap, then we have a problem. We may be feeding it as required, but it may not work. So, you need to follow all the instructions. When it comes to other issues, I’m not concerned, because when I look at the digester bag I don’t think it can be punctured easily. And, if it takes a sharp object to puncture it, then it has to be very strong and sharp. But, I only ask myself questions; since we have been feeding it for some time now, is the digester not decomposing underneath? And, if the bag gets damaged, how would we remove the digestate? And, I get surprised that when we step or out a heavy load on the digester, it starts overflowing with slurry at the outlet. And, that’s why we have covered with an iron sheet because we don’t want the chickens to fall into it…. And, we use the slurry as fertilizer.

**Interviewer**: What do you do with the bio-slurry? You said you use it as fertilizer for your crops?

**Interview**er: We use it in the farm, and in the tomato garden; because we were told that we can use itas manure for our tomatoes.

**Interviewee**: Do you sell?

**Interviewee**: Of course, I will start selling because I have seen how effective it is, and people have shown interest as well.

**Interviewer**: At what price do you intend to sell effluent or digestate?

**Interviewee**: Considering how high the price of fertilizer has gone up, I will be selling the effluent at K3000 per 20-liter effluent – and that’s even cheap when you consider its benefits and the high price of fertilizer now.

**Interviewer**: It’s really expensive, K70000 - that’s tough. So you said it did cost you K600000 to get this, are you paying on your own?

**Interviewee**: Yes and my children will support me because for the cow to be on heat again it will take another five months. So, if I get good quality milk, I will be able to pay. But, if the milk turns out sour, then I will have issues paying, because people buy sour milk at a cheap price and with hesitancy.

**Interviewer**: There are some things that were brought by Ecogen, and there are some things that you provided to have all that working, which things did you contribute on the digester?

**Interviewee**: Everything was brought by Ecogen. The only thing that is mine there is the filter. My daughter bought three of them after the original filter failed, just in case the filter fails again. Still, I don’t think the original filter failed completely, because it didn’t take long, so maybe they just wanted to replace it. On top of the filter, I can say I made this structure where I put the stove. If I had not made that, they would have placed the stove on a brick structure. So, basically I didn’t spend money on anything else.

**Interviewer**: How much did the filters cost?

**Interviewee**: It’s basically the kitchen wire scourer, so it’s very cheap. So, she bought three of them at K600.

**Interviewer**: How much did the structure for you stove cost?

**Interviewee**: I think it was K12000. I paid the person who built it K2000. I bought of cement at K8000 that time, and the bricks I just got from someone else for free. It wasn’t many bricks; it was less than 20.

**Interviewer**: Where did you get the five-liter bottle for storing effluent I saw?

**Interviewee**: Yes, they brought that.

**Interviewer**: How many?

**Interviewee**: I was given one and [name redacted] was also given one.

**Interviewer**: How much labour went into this? How many laborers did you provide?

**Interviewee**: I had two boys who did the digging.

**Interviewer**: And after the installers saw that the hole wasn’t dug as they wanted they made adjustments. Apart from that, was there any other work that was done?

**Interviewee**: They simply put the digester bag in the hole, but before that they laid something like a blanket underneath.

**Interviewer**: Okay, and then the construction made on the stove.

**Interviewee**: Yeah – right.

**Interviewer**: What kind of special items had to be imported from another country? In your opinion, is this something from Malawi?

**Interviewee**: I even asked myself that question, is this thing from Malawi or another country? But, when I asked the installers if they were from Malawi, they said they are from Malawi. So, maybe they have people outside Malawi who import these things here.

**Interviewer**: Why makes you say so? Why do you think people from outside the country are involved?

**Interviewee**: When I looked at the digester bag that day, I doubted if it was made here in Malawi. So, maybe they work with white people since they are educated, just like you are doing now. But, the installer is from Lilongwe….. Right now, I’m starting to think that this thing is from Malawi because of the people you have come with to see the digester. If they had this in their country, then they wouldn’t have come.

**Interviewer**: (laugh) interesting. How much money are you saving now?

**Interviewee**: I’m saving a lot of money because I no longer use charcoal or firewood for cooking; It is only when I cook thobwa that I use firewood. I have to say that the digester is doing its job and it’s helping – and I truly appreciate Ecogen. I can only show my appreciation by paying the loan as we agreed. I do appreciate their patience as well, because of the way I have not been paying the loan; if it was Escom power, I’m sure they would have come to disconnect it.

**Interviewer**: You are now saving the K300s you were spending on charcoal and all that….

**Interviewee**: It’s really a lot……. I’m saving! Now, I will be recording all expenses on charcoal to get the exact figure. But, I can’t say I spend more than K10000 a month.

**Interviewer**: Where do you get the charcoal?

**Interviewee**: I buy packs from the market for cooking thobwa as well. In regards to other expenses on thobwa, I do record. For example, I record the cost maize, sugar and labour, so for that I know.

**Interviewer**: What’s the main difference now that you have biogas?

**Interviewee**: It was difficult to serve visitors who came and stayed for a short time. Now I’m able to make tea for visitors in very short time. Now my visitors cannot come and go hungry. In the past, it was very difficult for me to ignite charcoal and make tea for my visitors. I also feel happy in my heart now that I’m able to utilize cow manure fully. I’m proud of the extension worker who brought Ecogen here. We are proud of them because they bring things good for community development, and one example is the biogas. As for people who are not developing it’s their own fault, but we have people on the ground working to ensure that our community is developing.

**Interviewer**: What is your opinion of biogas?

**Interviewee**: I can only say thanks to them and that there is nothing disappointing about the digester. And, I don’t think the digester can be broken easily. You said that digester bag gets punctured; I think that can only be done by jealous people. I don’t think a person from within can damage this because the plastic bag is durable and to puncture it may need someone to go to a tinsmith to sharpen a knife and cut it on purpose. Nonetheless, I did express concerns that the people may damage it on purpose, because sometimes people do cut my trees without my consent and even steal fruits. But, they assured me that people couldn’t manage to cut of the digester bag. The same was also said about the pipes. They said people couldn’t manage to cut the pipes with a knife. Then, I also raised concerns that people may steal it since it stays outside. They said it was not easy for people to still it because it’s heavy and people cannot manage to carry it, and that also the stove is inside. I had all these questions but when I brought the questions to them, they laughed them off.

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

**Interviewee**: In my entire life, I have always wanted this kind of cooking. Of course, people do use LPG gas for cooking, but that also needs money, unlike this. I have free cow manure and I don’t need to buy LPG gas for cooking, so I do not envy them at all. I feel very excited and joyful. People have shown great interest in it, but don’t have cow manure - and when they think of buying cow manure, they are put off. But as for me, I can only say, I’m very excited with this.

**Interviewer**: What is the future of biogas in Malawi?

**Interviewee**: Though people do show interest, it’s not strong enough because of money or cow manure. Now, people from this community have seen how this thing is helping me and can agree that we don’t use and need charcoal anymore. So, this is the way to go for Malawians. We have rainfall problems and where do you think that is coming from? It’s coming from people who are cutting down trees for charcoal production. Yes, of course, people do plant trees, but they are not planting indigenous trees, which people use for charcoal production. We are destroying the environment – we are destroying nature……. Biogas has many benefits, and it even works during the rainyseason long as it’s fed – and they say if it produces little gas, we just need to put a bag of sand on top of digester bag, and surely, when we do that we get strong flames and we even wonder where all that gas is coming from.

**Interviewer**: Interesting! That was my last question. Thanks for the interview

**Interviewee**: Thanks for coming.