**BIOGAS ASSESSMENT PROJECT**

**Site ID: 48**

**Date: October 1, 2022**

**Interviewer**: Where did the digester originate from?

**Interviewee**: That is a difficult one for me (laughs). The ADC chair knows a lot about it. He only told me that I was selected as a beneficiary. So, it is hard for me to say where it came from.

**Interviewer**: Who funded it?

**Interviewee**: From my understanding, I think it was an NGO.

**Interviewer**: Which NGO?

**Interviewee**: As I said, I do not know.

**Interviewer**: Okay, who built it?

**Interviewee**: It was some students from a certain University.

**Interviewer**: How many were they?

**Interviewee**: They were two.

**Interviewer**: I also believe that you played a part in the existence of the digester. What was your role?

**Interviewee**: I was responsible for sourcing feedstock as well as preparing it.

**Interviewer**: What else? Did you take part in the building process of this?

**Interviewee**: Oh yeah, we invested a lot of things in this. We sourced water and dug the hole as well.

**Interviewer**: How many people from your side dug the hole?

**Interviewee**: Four people dug the hole and one person lined it up with a brick wall.

**Interviewer**: Did you pay them?

**Interviewee**: I have forgotten how much it was, but it was a lot of money because I had to push the people to do the work in a single day.

**Interviewer**: We have many people in this community and many households too, how were you selected as a beneficiary?

**Interviewee**: I think God favored me. And, it is not like I was special or something. So, I got it through God’s will.

**Interviewer**: How did you meet the project implementers first time? Is it like they came here, and then discuss their business as I have done, or is it like it went through the chiefs or something?

**Interviewee**: No, there was nothing like a community meeting at the chief’s court. I think the ADC gave the names, and then the ADC chair directed them here. So, they project implementers came here pretty much as you have.

**Interviewer**: When they came here, you had the right to say no. Why did you accept it to be built here?

**Interviewee**: I accepted it with both hands and was very much interested because I took it as development, and I wanted to be part of that.

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

**Interviewee**: No, I did not know anything about biogas.

**Interviewer**: So when the project implementers came, what did they say?

**Interviewee**: They explained that it was a technology for cooking, and that it was one way of reducing the use of trees for firewood.

**Interviewer**: What did you expect?

**Interviewee**: We expected our household to develop by using a modern method of cooking. We expected our life to be much easier because we thought we would stop going around searching for firewood. But, we would easily turn it on and then cook everything we wanted.

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

**Interviewee**: We did not receive any training at all.

**Interviewer**: Then, how were you able to operate it or use it?

**Interviewee**: They explained to us how to operate it and we were doing just that.

**Interviewer**: What did they say?

**Interviewee**: They showed us how to turn it on and off. Then, they told us how to make feedstock, and that we needed to feed it all the times to have gas, and that if we did not feed it, it would stop working. They also told us that after feeding it, it starts releasing digestate at the outlet, which could be used as fertilizer.

**Interviewer**: After explaining all this to you, how prepared to run or operate the reactor did you feel you were?

**Interviewee**: I felt we lacked the proper skills because when it started misbehaving we were very confused and we did not know what to do. As a result, we just abandoned it when it started misbehaving.

**Interviewer**: How did you meet your energy needs before the intervention?

**Interviewee**: We used firewood and charcoal.

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

**Interviewee**: My brother, firewood is very hard to find here. To get firewood we buy from the Mozambican vendors who bring it here.

**Interviewer**: You have exhausted all the trees here?

**Interviewee**: Mmh, it is all gone.

**Interviewer**: And, where do you get charcoal?

**Interviewee**: From the same people [Mozambican vendors]

**Interviewer**: In a month, how much charcoal do you use?

**Interviewee**: Brother, it is a lot of money because we use 5 or 4 bags of charcoal in a month.

**Interviewer**: How much was a bag of charcoal?

**Interviewee**: It was at K2500, but if you were good at negotiating, you could buy a bag at K2, 000. But, now it is K4, 500 or K5, 000.

**Interviewer**: That time when the digester came, did you have cattle or any livestock?

**Interviewee**: I had cows.

**Interviewer**: Okay, how did you manage your cow manure before the intervention?

**Interviewee**: I was getting the manure to the field as fertilizer.

**Interviewer**: Some people say cow manure does not work as fertilizer. What is your take?

**Interviewee**: Manure works very well as fertilizer. And, it even retains soil moist that even in dry spell the maize do well. So, personally, I think it is good, and it is obviously better than not applying any type of fertilizer.

**Interviewer**: How do you process your manure?

**Interviewee**: We do it two ways; if we are kind of feeling lazy, we just dig holes and place the manure soon after making the ridges; if we have time, we place the manure between the ridges after harvesting. Then, after sometime, we go make ridges on where we placed manure, thereby burying the manure under the new ridge.

**Interviewer**: Okay, let us talk about how it worked. Before commissioning your digester, I believe they asked you to make feedstock and then feed it. How much feedstock did you start it with?

**Interviewee**: Mm-hmm, I have forgotten but they advised us to feed it with a certain amount. But, it was a lot because the work we did that was very, very heavy – it was a lot of work.

**Interviewer**: Did you hire people to do the work?

**Interviewee**: We hired people but some quitted because they found the smell of the manure too much. Then, we just forced ourselves to do it. But it was a lot of work and many bags of manure.

**Interviewer**: Was it 2 bags or 3 bags?

**Interviewee**: It was more than that. I think it was 8 bags (50kg) of fresh cow manure.

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

**Interviewee**: I got all of it from my cow house.

**Interviewer**: You didn’t go around asking or buying cow manure?

**Interviewee**: I did not ask from anyone.

**Interviewer**: You must have had a lot of cows.

**Interviewee**: Yeah, I had a lot of cows. I think I had 13 cows that time.

**Interviewer**: Okay, where did you get the water?

**Interviewee**: I got it from the borehole somewhere there.

**Interviewer**: Is it not far?

**Interviewee**: It is right after that tree.

**Interviewer**: Oh, it is not far. That is like 200 meters. How much water did you use to start it up?

**Interviewee**: I have just forgotten. I think we used a drum (200 liters) of water.

**Interviewer**: How long did it take to start up?

**Interviewee**: It did not take long. I believe, after we fed it we waited for 2 days.

**Interviewer**: So after two days, when you turned the stove on, you saw the fire?

**Interviewee**: Yeah, it worked quite well. I recall we managed to cook pigeon peas on it that day.

**Interviewer**: Nsima?

**Interviewee**: Yeah, we did also cook nsima [30 –45 minutes]

**Interviewer**: How did it work on the second day?

**Interviewee**: After the first day, we wereable to cook side dish of fish and others, but we could not cook nsima on it because my wife thought the digester was not producing strong fire. So, after the first day, we were basically cooking light side dishes and boiling water [30 – 45] minutes) for the school going kids in the morning.

**Interviewer**: How long did you use it?

**Interviewee**: We used it for 4 months. After 4 months, it was producing very little fire, so my wife stopped using it.

**Interviewer**: In the 4 months, it worked were you using biogas only?

**Interviewee**: No, especially in the evening when she wanted to cook things fast she was combining biogas and charcoal.

**Interviewer**: Oh, the biogas had one burner?

**Interviewee**: Yeah, it had one burner, and the gas was very weak.

**Interviewer**: How many people were you in your household?

**Interviewee**: We were 7 people.

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

**Interviewee**: They simply told us to feed it with 20 kg of cow manure and one bucket (20 liters) of water every day.

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

**Interviewee**: We were placing manure in a bucket, add water, and then mix with a stick. But, most times, we used hands because it was easier to break the lumps and to remove trash. After thoroughly mixing feedstock, we used to pour the mixture in the digester bag.

**Interviewer**: How did you feel about preparing feedstock? Didn’t you feel that it was gross or tiresome?

**Interviewee**: We are used to handling cow manure since we are cow farmer. Also, we were very keen on trying to make the digester work, so that we could save money.

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

**Interviewee**: When I was around I was feeding it. My wife was also feeding it. Both of us knew how to make feedstock and how to feed it.

**Interviewer**: Do you think making feedstock was worth getting the fire you were getting?

**Interviewee**: We did not find feeding the digester hard because cow manure was withinthe house. So, everything was good.

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

**Interviewee**: They just gave us their numbers to call when there was a fault. So, when it malfunctioned, I called thembut the line did not go through. Then, I called the installers again after a week and the line could not be reached, so I just gave up.

**Interviewer**: Since it was installed, did they ever come back?

**Interviewee**: After commissioning, it they did not come back.

**Interviewer**: Not even once?

**Interviewee**: Never!

**Interviewer**: Did it meet your needs?

**Interviewee**: We were satisfied with its performance especially because we knew for sure that we would use it for cooking even when we came home late from the field. But even then, we were still using conventional methods of cooking in combination with it.

**Interviewer**: What were the challenges?

**Interviewee**: The main problem was that it was not producing strong fire for a long time.The other challenge is that our children liked to play with the gas pipe when we were not around. One time, they even sliced it. So, it was difficult for us to monitor it because we could not stay around all the time – thus, the challenges we faced with it.

**Interviewer**: Did your children reach a point of cutting the pipe completely?

**Interviewee**: Yeah. Yeah! It happened. You know childrenare always attracted to new things. So, one day out of curiosity they tried to play with the pipes and ended up cutting the pipe.

**Interviewer**: What did you do after that?

**Interviewee**: Eh, you cannot just understand children, sometimes you wonder what really goes in their mind. Going back to your question, when that happened, I sealed the pipe.

**Interviewer**: With what?

**Interviewee**: With seal tape.

**Interviewer**: What was the first problem you encountered?

**Interviewee**: It stopped producing strong fire for long.

**Interviewer**: After your own analysis, what was the problem?

**Interviewee**: I do not know and I did not try to find out. But my thinking was that maybe it was not made to last long, and that it had reached it expiry date. So, we just accepted it –we just thought that they were trying it out.

**Interviewer**: You thought they were here to experiment the digesters?

**Interviewee**: Yeah, I thought it was an experiment to see if the digesters could help people – Or, maybe they just wanted to see if the digesters would produce fire or something like that.

**Interviewer**: Why do you say that?

**Interviewee**: The project implementers explained to us that it was like it was a pilot project, like they just wanted to try out the digesters. I do not really remember, but they explained something like that.

**Interviewer**: Between the children cutting the pipe and starting to lose its efficiency, which started first?

**Interviewee**: It lost its efficiency after the second day of using it, I don’t know why. But, when the pipe was cut by the children it reduced its efficiency slightly too. I cannot just figure why the children cut the pipe. But, after I sealed the cut with seal tape, it worked quite okay. So after some time it started producing fire for a short time then I just thought that the digester was not meant to last long. Like I said, it was just a try out.

**Interviewer**: How long did it take the children to cut it? Or, after it was installed, how long did it take you to notice that that it was cut?

**Interviewee**: I think it was 2 or 3 months after it was installed.

**Interviewer**: How did you find out that it was cut?

**Interviewee**: One of the children told us. And, even when we switched on the digester, it produced flame for some seconds and stop. But, the children told us before we tried it.

**Interviewer**: Did you check the place where you sealed with tape when it started producing little fire?

**Interviewee**: Yeah, we checked and it looked fine. And, there was no hissing sound on that part as if gas was leaking out.

**Interviewer**: And, that is when you called them?

**Interviewee**: I called him but his number could not be reached.

**Interviewer**: So you mean you have never talked to them after it was installed?

**Interviewee**: I talked to someone on the phone, but I do not know if it was you or not. It was a month ago, I think. I was asked about my location and the directions. So, I do not know if it was you.

**Interviewer**: (laughs) sounds like me.

**Interviewee**: (Laughs heavily) yeah, you must be the one.

**Interviewer**: (laughs) yeah it must be me. I think it was when I was trying to establish your location.

**Interviewee**: (Laughs) yeah, you were like, if I drop at [location redacted], how should I proceed.

**Interviewer**: (laughs) Yeah, yeah. Moving on, were you given something like this? What do you think of this kind of information and do you think it would have helped you?

**Interviewee**: That would have done us good.

**Interviewer**: How?

**Interviewee**: It would have helped us a lot because whenever we had a problem we would have consulted this information. The problem is that the installers just explained things and left. So, when we had the problem, we did not know how to respond and eventually we just left it.

**Interviewer**: And, they didn’t talk about maintenance issues?

**Interviewee**: They did not discuss that.

**Interviewer**: If the installers call you today to find out about the digester, what would you say? I mean, how would you describe the current state of your digester today?

**Interviewee**: I would tell them straight that I abandoned the digester and removed the bag after it stopped working.

**Interviewer**: So after 4 months it started producing little fire, so how long did you try to feed it after that?

**Interviewee**: When it started producing little fire, we also slowed down. I mean, we would go two or three days without feeding because we did not see a point of feeding it daily when it was not helping us. And even when we told the children to prepare feed, they started refusing saying that it was pointless.

**Interviewer**: We have talked a lot and we have tackled many issues. How did it reach this stage, and in your opinion what caused it?

**Interviewee**: That I do not know, maybe the installers would know.It needs someone who is conversant with it to deduce what caused it to fail. But, I do not think we are the cause of its failure because we fed it as we were advised – so, I cannot know and I do not know what caused it to fail.

**Interviewer**: So, I should see from a perspective that it was a try out and that the people who made it were mere students as you have said?

**Interviewee**: Yeah, that is the thing.

**Interviewer**: Okay, how much did the reactor cost?

**Interviewee**: They said it was worth K450, 000. I recall I asked the installer how much I would get it on the counter and he said K450, 000.

**Interviewer**: Who paid that K450, 000?

**Interviewee**: I do not know if it was the government or someone else - I do not know.

**Interviewer**: Did you contribute anything in kind?

**Interviewee**: It is only cow manure and water.

**Interviewer**: It also looks like the hole was lined with a brick wall?

**Interviewee**: Yeah, I provided bricks as well.

**Interviewer**: Cement?

**Interviewee**: It was little – We only lined the top of the hole. I think used half a bag of cement.

**Interviewer**: Did you do that or you hired a builder?

**Interviewee**: We hired a builder.

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

**Interviewee**: I have forgotten it has been long.

**Interviewer**: What special items had to be imported from another country?

**Interviewee**: I did not ask them so I do not know.

**Interviewer**: What do you think? Do you think it is from Malawi?

**Interviewee**: It is astonishing to see how Malawi has changed. I cannot be surprised to hear that it is from Malawi.

**Interviewer**: (Laughs) did the digester save you any money that time you used it?

**Interviewee**: It helped us because we stopped buying firewood, and we were only buying one bag of charcoal in a month.

**Interviewer**: Can you quantify how much were saving?

**Interviewee**: It is hard to know how much we were saving. But, we knew that we were saving money.

**Interviewer**: Oh yeah, after seeing that you were not buying firewood and all that. What was the biggest change in your life in the time you had biogas?

**Interviewee**: When a house gets a new thing there is always change. Our lives changed and it felt like we were living in luxury. It was fast. Though, we had to work hard to make feedstock, but there was a big change

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

**Interviewee**: I would like just to get a chance to question the installers. I would like to ask the installers what is the guarantee of biogas. Who was responsible for fixing it? If it was them, why did they not come again? If it was us, how did they expect us to fix it without training? I have always wanted to ask the installers these questions (laughs).

**Interviewer**: Oh, it was tough. Do you think it has a future?

**Interviewee**: It can have a future only if the installers are close to the users, so that they can do the maintenance work.

**Interviewer**: And, maybe a proper training would help. If you could have designed your own waste or energy intervention, what would you have chosen instead?

**Interviewee**: I would like to see this community get electricity.

**Interviewer**: When you want to cook with electricity, you need a cooker, and you have to be prepared to pay bills. Do you think you can manage that? Can’t we see you going to the mountains to source firewood or buying firewood from Mozambicans because of buying electricity?

**Interviewee**: (laughs) we can do our best to make it work – that is what I can say.

**Interviewer**: In closing, what are your last words?

**Interviewee**: I feel like I have some unfinished business with biogas. And, I need a deep conversation with the project installers so we can talk serious about the whole project and their conduct. You are only interviewing me about my experiences with it, but I want the people who installed the digester here, so I can have a few choice words for them (laughs) – and maybe then I can hear from them and they could understand me as well.

**Interviewer**: Are you angry with them?

**Interviewee**: (laughs) I just want them to explain what did they brought here? What were we supposed to do when it malfunctioned? How could they give us the digester and leave? What did they expect us to do?

**Interviewer**: Why didn’t you ask them about maintenance that time?

**Interviewee**: We thought that they would be coming, but after they left, they never came back.

**Interviewer**: Oh, I see. Thanks for the interview.

**Interviewee**: Thanks too. I really appreciate you coming. And, please share our message to the bosses. And, I think plea for us that when there is a project of this nature, they should not miss out trainings because it is so important to sustainability of innovations.

**Interviewer**: Yeah, the message will be shared.