# SMALL-SCALE BIOGAS DIGESTERS AS DEVELOPMENT AID: TALES OF HUBRIS AND FAILURE

**Site ID: 02**

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**Interviewer:** Okay, where did the digester originate?

**Interviewee:** It came with students from Chancellor College, together with [name redacted].

**Interviewer:** I presume the students were whites?

**Interviewee:** Yes, it was [name redacted] and his colleagues. I don’t remember the names of the others. What they said was that all of them were from Sweden, but from different parts of Sweden. For example here in Malawi, we can say some were from Mzuzu, Zomba, and Blantyre – But, all the three students were from Sweden.

**Interviewer:** Okay, who designed the digester?

**Interviewee:** It was them – the whites.

**Interviewer:** Okay, why do you say that?

**Interviewee:** It was them who were mostly involved in the installation work with little assistance from [name redacted].

**Interviewer:** Okay, who provided money for the digester to be built here?

**Interviewee:** Ahh, I am not quite sure – What I saw was them bringing bricks and cement, so I couldn’t tell where they got the money, and who was paying for the materials and equipment. My only role was to provide land and water for construction of the system. Also, I identified two boys who assisted with construction work.

**Interviewer:** So, you paid the boys?

**Interviewee:** No, the boys were not paid. What [name redacted] did was, he thanked them at the end with touch devices with phone battery charging capabilities for their involvement. For the reason that in some instances the boys would excuse themselves to go charge phones at phone charging centers.

**Interviewer:** Okay, it was the 2 boys who built it… I mean who built it?

**Interviewee:** Ahh, No, I can’t say it was the 2 boys. The two boys were involved in digging work as well as helping with other work like mixing of mortar. The other work like installation of equipment was done by the whites and [name redacted] because the local boys didn’t have the expertise to do that.

**Interviewer:** Okay great…… Umhu, clearly there are many households and people within this community, so how were you selected as a beneficiary out of the many?

**Interviewee:** Aaaah, I believe they got my name from LEAD Malawi or from the forestry department because I have worked with these institutions for quite a long time. Yet, I’m not really sure about it. And when they came to me, it did not cross my mind to ask how and why I was selected as a beneficiary because I was very excited about the thought of having a new things which I could use for cooking – So I didn’t care about enquiring anything because of the excitement (Laughs) – It was just like Manna from Heaven for me! (Laughs)

**Interviewer:** (Laughs) what made you think that it was LEAD Malawi or the Forestry Department that connected you with [name redacted] and his team?

**Interviewee:** Mmmh okay, it’s because if you look at the biogas digester, it’s a technology that when in use protects the environment because it eliminates the use of firewood. Thus, LEAD Malawi and forestry department being organisations whose objective is to protecting the environment, and me being a volunteer of Forest department and a secretary of their community group since 2006 made me believe that is why they chose me to be a beneficiary.

**Interviewer:** Okay! Before [name redacted] and his team came to you, did you know about biogas?

**Interviewee:** Yes, I learnt that manure can be used to produce energy for cooking and lighting. I learnt this in school - It was just theory, and not practical. This was back in 1996 when I was in Standard 8. Yet, my first experience with the technology was when [name redacted] came with news that they were coming to install the technology, and eventually they installed the technology on my backward. Thus, I saw it as an opportunity to learn more about the technology, and I was excited to use the technology. Unfortunately, I was unable to use the technology as I expected.

**Interviewer:** What were your expectations?

**Interviewee:** From the knowledge I had, my expectation was that I was going to use the technology for cooking. I expected that everything that I would eat that needed cooking I was going to use the technology. This explains why I was willing to find people to assist them with the work. It also explains why I even supplied them with piped water which is paid for, instead of simply collecting water from the borehole which is far from this house and free. I was very excited because at the end of project, I was going to own the technology.

**Interviewer:** (Laughs) Okay! Okay! When [name redacted] and his colleagues came, what were you told to expect?

**Interviewee:** Initially, he simply came to inform me that he was going to come with students from Chanco to do practicals on biogas, and that they had selected me as a beneficiary of that project.

**Interviewer:** Did he mention what the selection process was like?

**Interviewee:** Ahh, he didn’t explain anything pertaining to that. He just said they had selected me as a beneficiary on the biogas project. Personally, it wasn’t surprising because they were not the first people to come and work with me under such circumstances. Many people and organisations approach me to work with, just like you have done - They simply explain their agenda; we talk and then take off from there. So, I didn’t ask many questions, and I suspected that they were referred to me by the Forestry department – just like I said. I do Agroforestry work with Forest department.

**Interviewer:** You have said from previous knowledge you expected to use biogas for cooking, I want to know, what were you told to expect from the technology by [name redacted] and his team?

**Interviewee:** I was told that I could use the technology for cooking, and after installation the system was producing gas, and as a matter of fact, when they were leaving they tested it by boiling water, and it worked. It took like the time you been here (10 minutes) for the water to heat up and boil.

**Interviewer:** Oh great! So how long did it take to cease working?

**Interviewee:** It never really worked. Actually, for the digester to work and produce gas someone had to squeeze and release the gas pipe to force it to produce enough gas and pressure for cooking. They said the stove was no the recommended for the system, that’s why it was not producing enough gas and pressure…. If one didn’t press and release the gas pipe, one couldn’t cook or boil anything with it because the heat that was being produced was very low.

**Interviewer:** Okay, what kind of training were you given by the installers?

**Interviewee:** No, I was not trained in any way.

**Interviewer:** Zero?

**Interviewee:** Yes.

**Interviewee:** Ooh?

**Interviewee:** Yes, they only demonstrated to me how to prepare the feedstock. I was told how to mix and stir manure and cover manure in a bucket. Then after three day I was told to put feedstock in the digester. Accordingly, the same way they showed me how to mix feedstock, I was doing it. I didn’t for some time. After some time I stop it. What really made me stop and eventually stop using the digester was the fact that I had to press and release the gas pipe during cooking. It was more less like I was doing two things at once. When I was cooking, instead of leaving the pot on the fire to do other things, I was going outside the kitchen to press and release the gas pipe – you see that! – If I weren’t pressing and releasing the gas pipe, I couldn’t get fire.

**Interviewer:** So, we can say you were trained how to prepare the feedstock, and how to produce more gas and heat under the then conditions. What else were you trained?

**Interviewee:** There was nothing else!

**Interviewer:** Okay, so after you were trained how to prepare feedstock, how prepared to run operate the reactor did you feel you were?

**Interviewee:** Because I had no prior experience with the technology, I felt that what they had taught me was enough to run the system. But when I look back - if it was now, and someone come and teach me how to prepare feedstock and everything else they told me, I would say it’s not enough to operate the reactor because certain people taught me that and it wasn’t enough. It didn’t work!

**Interviewer:** From what I have heard, you did not you choose to build a digester? /have one built here; it was [name redacted] and his team who brought it here on their own accord…..

**Interviewee:** Ummhu, Yes, he chose to build it here because he wanted his students to do practicals. But, I can’t say that’s why it failed to work. It failed to work because they didn’t have enough equipment. For example, the stove, if the stove was available and producing gas and fire, I would have been more interested to use the technology, and eventually it wouldn’t have failed – It failed because it didn’t work properly in the first place. Then, that’s when I decided to remove the stove and pipes, after I got fed up with technology.

**Interviewer:** Okay, how did you meet your energy needs before the intervention? (i.e. cook)

**Interviewee:** I was using firewood for cooking.

**Interviewer:** Okay…… Apart from firewood, what else were you meeting your energy needs?

**Interviewee:** There was nothing else I was using aside from firewood.

**Interviewer:** Where were you getting firewood for cooking?

**Interviewee:** From the mountain. Plus, we have lots of trees around the compound. We also have a woodlot within. That one you see, that’s ours.

**Interviewer:** I remember you mentioned that you were using manure to run the digester, where were you getting the manure?

**Interviewee:** They brought the first manure in two black containers; I guess they were 250L containers.

**Interviewer:** Did you use your own manure at some point?

**Interviewee:** Yes, I did after they had left.

**Interviewer:** Okay, before the reactor, how did you manage your manure waste?

**Interviewee:** I had pits where I was dumping the dung. After sometime, I was collecting the dung, and use it as fertilizer at my farm.

**Interviewer:** Okay sure. After everything was done, how did the system work?

**Interviewee:** As far as I’m concerned, it didn’t work well. If it had worked well after commissioning, I’m sure you would have found it working today or else recently broken. Nonetheless, on their part it worked well because I believe they wanted to see if manure can produce energy for cooking, and it did. So, to them it was a success. And even myself, I can testify that manure really produce energy for cooking because I saw it too. All in all, it didn’t assist me in anyway because it never worked since it did not produce energy for cooking because the stove was not compatible with the system – That’s what they told me. Because I asked what the problem was, they said the problem was certainly the stove. They said they needed to buy the stove from Kenya, and once they replace the stove things would change. But, since then they have never returned.

**Interviewer:** So they said they couldn’t get the stove here in Malawi but in Kenya.

**Interviewee:** Yes, that’s what they told me.

**Interviewer:** And they said they were going to bring the stove and install it, and finalize everything?

**Interviewee:** Yes

**Interviewer:** Did they tell you how long it was going to take them to buy and bring the stove here in Malawi?

**Interviewee:** Mhhh, they never said it, and I didn’t ask because I was certain that they were going to bring it, and it wouldn’t take a very long time.

**Interviewer**: That was 2014, and now we are in 2021. Why do you think they didn’t bring and install the stove?

**Interviewee:** Like I said, they got what they wanted. They wanted to see if manure can produce energy. Their objective was not for me to possess and use the biogas system. If their objective was for me to use biogas, I’m sure they would have brought the stoves in the first place or bought the stove by now.

**Interviewer:** (Laughs) Let me put it to you, there are many people who they could have chosen to build the biogas on their premise, or worse still they could have done their practicals everywhere else even at Chanco, why do you think they bothered to come here?

**Interviewee:** (Laughs)I don’t really know. Only [name redacted] knows. It could also be because I was well known to have many cows around the community. It could also be because of my affiliation with LEAD and Forest department.

**Interviewer:** (Laughs) what makes you think they got to you because you had many cattle?

**Interviewee:** Biogas needs manure to run so because they saw that I had lots cattle, they knew that I might be able to run it, unlike someone without cattle.

**Interviewer:** Okay**,** how much gas was being produced?

**Interviewee:** I wasn’t taught. Also, to know how much gas was being produced, it would mean I had measuring equipment. And I wasn’t exposed to the measuring equipment and any other technical aspects, but they had measuring equipment and they were testing things all the time and I’m sure they must have recorded how much gas was being produced.

**Interviewer:** And you weren’t told how much gas it was producing?

**Interviewee:** Yes.

**Interviewer:** Let try to measure it may be by using simple methods. How long were you using it in terms cooking? Let’s say how many meals, how much long would it take to boil water?

**Interviewee:** I never really used it because I couldn’t be doing two things at once. I never used it.

**Interviewer:** You said you were using manure, what were other operation requirements?

**Interviewee:** They just talked about manure and that was what they used to produce gas. I didn’t see them bringing any other material **-** No! Excerpt other equipment and pipes which gas was circulating in. So basically manure was used to operate the biogas system.

**Interviewer:** Okay, how much manure was needed to operate?

**Interviewee:** No, I wasn’t told how much manure would be required. I was just told to mix manure and water then stir and cover. After sometime to stir and cover again and so on, for three days. Then after that, I was supposed to put the feedstock into the three bags through inlets made of the blue standing pipes.

**Interviewer:** How much feedstock were you putting after three days?

**Interviewee:** As you have seen, there are three inlets so I was supposed to put a 16 Litre bucket of manure in each inlet after every three days. And when the inlets where full, there was an outlet which was overflowing so you knew the bags were full.

**Interviewer:** Oh, if you put 16 litres, there was no overflow?

**Interviewee:** No, there was already manure in the digester bags so I was simply refilling manure that was already in the bags. Thus, sometimes I could feed less than 16 Litres and it would overflow.

**Interviewer:** Oh, I understand. How did you know that the feedstock was ready after three day?

**Interviewee:** Like I said, I was simply gathering manure in a bucket then I was adding water and stir. We stirred the mix to breakdown manure to a level where there were no lumps. But, even when I saw that it was broken down perfectly and it was smooth, but if it wasn’t after three days I could not feed the digester because I was told to feed the digester with manure after three days.

**Interviewer:** Let me see if I have got you correctly. You had three 16 litre buckets, you were mixing manure with water, stir and cover for three days. After three day that’s when you were feeding the digester.

**Interviewee:** Ummhu, Spot on.

**Interviewer:** Okay, why after 3 days?

**Interviewee:** That’s when manure is matured and ready to produce gas.

**Interviewer:** Okay, how much water did you add?

**Interviewer:** I can’t say I was adding a specific amount of water then I would be lying. But it was more manure than water. I wasn’t measuring the mixture, and I didn’t saw [name redacted] and his team mixing a specific amount of manure with water, and I don’t think they had a specific amount of mixture for manure and water. They simply told me to add water to the manure.

**Interviewer:** Ummhu…

**Interviewee:** I was told to have a mixture where I could be able to stir but I wasn’t told the exact amount of water I was supposed add to the manure. In most cases though, it was half water and half manure. That was enough to have a proper mixture where I could manage to stir in a 16 litre bucket.

**Interviewer:** Okay, who was responsible for feeding the digestor?

**Interviewee:** It was only me as the owner of the house.

**Interviewer:** Was there a time you ran out of manure?

**Interviewee:** No! No! I had plenty of cattle, goats and pigs then. There was no shortage of manure.Maybe, in the future I could have run out of manure, but it never occurred. The time I abandoned the biogas, I had plenty of manure because I was keeping manure for this purpose rather than piling manure in a pit for manure.

**Interviewer:** Okay, what were the maintenance requirements?

**Interviewee:** They did not talk about maintenance. The last encounter we had they simply said they were not done with the work and they were going to come back to install the stove and finalize the work in a little while. As a result, I had no opportunity to ask how I could fix the biogas or anything if anything went wrong because I thought they were coming to finalize everything in a short time. I believed then that was the right time to ask about maintenance issues and anything else.

**Interviewer:** (Laughs) you though they were not done? ……………..

**Interviewee:** To me they were not done, but they were done in their sight because they had seen manure producing gas and fire. So, to me the work wasn’t done because they had not installed the stove which they promised to install. Even the time they were leaving they didn’t carry all their materials. For instance, they left three buckets and one drum so I was sure they were coming back as they said.

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

**Interviewee:** No, far from it. No even a quarter (Laughs)

**Interviewer:** (Laughs) not even a quarter?

**Interviewee:** (Laughs) Yes, not even a quarter.

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

**Interviewee:** I didn’t manage to use. Once you open the gas and start cooking, nothing could boil. Only a small volume of water would warm up. Unless you press and release the gas pipe continuously to allow gas to flow, then things could boil. It was very tiresome and discouraging.

**Interviewer:** If you press and release the gas pipe continuously, things could boil and get cooked perfectly?

**Interviewee:** Yes.

**Interviewer:** Okay, why didn’t you just seal pipe to allow gas to flow through the pipes?

**Interviewee:** No, you couldn’t do that because it would block the flow of gas. It wasn’t like gas was leaking from the pipe. Alternatively, I could step and release on the digester bags because they were in the open, and when I did that enough gas was produced to cook on**.**

**Interviewer:** Who told you that?

**Interviewee:** They told me.

**Interviewer:** Okay, what challenges were there?

**Interviewee:** Aaaah, I didn’t nit have any other problem besides that.

**Interviewer:** No other challenges?

**Interviewee:** Yes.

**Interviewer:** How long did you use it for before it stopped working? Like when did you stop pressing and releasing the gas pipe, and say I’m not using this anymore?

**Interviewee:** It didn’t last 5 months. It must be 4 months from the day they departed.

**Interviewer:** So, in those 4 months, there was never a point where you could cook without pressing and releasing the gas pipe or step on the digester bags?

**Interviewee:** No, there was never a time it worked without doing that. So after 4 months, I kept everything intact, the pipes and the installation, for 2 more years hoping that one day they were going to come. After 2 years that’s when I gave up completely that they were not coming back to install the stove.

**Interviewer:** Did you try to fix it on your own?

**Interviewee:** No, there was nothing I could do. Imagine if the experts and the owners couldn’t fix it, couldn’t manage to have the digester produce enough gas for cooking, it was obvious that I couldn’t fix it. Only if they had left it working properly, and told me what to do when gas was coming of short then maybe I could have tried to fix it.

**Interviewer:** Did they leave their contacts so that you could call them?

**Interviewee:** I’m not sure….. Oh, yes, I had their numbers

**Interviewer:** Why didn’t you call them?

**Interviewee:** I wasn’t supposed to call them. They were the ones who chose me as a beneficiary so in the same spirit they should have ensured that everything was okay before handing me the digester - what was the problem? I couldn’t call them like I was asking them to repay back a loan, calling them would have seemed like they owed me a loan. It was them who were supposed to be in the forefront to ensure that everything was okay. If they couldn’t get me on the phone, they knew my house so they could have come if they were serious. Then after all that, I realized that they didn’t bring the biogas for me to use, but it for them to do their practicals. That’s why when they saw that it produced gas they didn’t even bother to come back. They simply wanted a household to do their practicals and they got one – [my] house,

**Interviewer:** Have you seen something like this this?

**Interviewee:** No.

**Interviewer:** Let’s suppose you were given something like that. Do you think it would have helped you? And what do you think about this kind of information?

**Interviewee:** It’s helpful, because I can know how to read so I would use it to solve problems regarding biogas defects. However, in my case, like I mentioned, it wouldn’t have helped because they left the problem and told me that a stove would solve the problem. The solution for this digester was a recommended stove for the digester.

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

**Interviewee:** There is no digester. Can you say you have seen a digester? There is none – but I know I had a digester at some point. We had people who worked on the digester, including men I sourced who assisted them with the work, and had I know that time that they were here for practicals I wouldn’t have bothered to source them to assist them. I would have just let them hire men to help them. Without the men sourced, they wouldn’t have completed the work because if the boys were not present they were not doing anything – they were so dependent on the boys I sourced. They were even waiting for them to come to start their work – can white people dig? No (Laugh) you see that.

**Interviewer:** To cut the long story short, how did it reach this state? In your opinion, what is the cause?

**Interviewee:** The digestor was not producing enough gas that’s why I abandoned it. If it were producing enough gas, I wouldn’t have abandoned it because I was very much interested in biogas. What pulled me off was the fact that I had to keep pressing and releasing so that I could cook. So it was time consuming, and it couldn’t allow me to do other things while I was cooking…. But, I know he’s around, because he never bothered to call or anything that’s why he didn’t want come after he left.

**Interviewer:** What do you do for energy now that the reactor isn’t working?

**Interviewer:** I use firewood.

**Interviewer:** From the forest?

**Interviewee:** There is not much wood in the forest. I just use firewood from trees within the compound.

**Interviewer:** Has there been a time you have run out of wood?

**Interviewee:** No, I have enough trees around.

**Interviewer:** You said you were using cow, goat and sheep manure, How do you manage your such waste now that the reactor isn’t working?

**Interviewee:** I don’t have cattle, goats and pigs as I used to. The little I have I collect and put it a pit, then later use it as manure.

**Interviewer:** How much did the reactor cost to build?

**Interviewee:** I going to lie. I don’t know where they were getting the bricks; I didn’t know the price of cement, pipes and everything. I only know the bill of the water they used, and had I know they cane to do practical I would have asked them to pay the bill – What they did is pure impertinence!

**Interviewer:** What was the bill?

**Interviewee:** I don’t know the actual amount. And didn’t care much because I was very excited to own a biogas and I knew the benefits of using the biogas for cooking were going to outweigh the cost of water bill.

**Interviewer:** How much labor do you think went into building digging?

**Interviewee:** Two people – It was [name redacted] and [name redacted].

**Interviewer:** Masonry

**Interviewee:** The two, together with [name redacted]

**Interviewer:** In total we can say it took 6 people to do the work?

**Interviewee:** Yes, it was basically 6 people, however, in some instance they would call me to help as well.

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

**Interviewee:** I don’t know anything.

**Interviewer:** Maybethe stoves.

**Interviewee:** Yes, that’s what they told me.

**Interviewer:** Did the reactor save you money in terms of energy consumption?

**Interviewee:** It didn’t save me money because I rarely used it. I used it when I felt like I was not in a rush and had no other things to do. That’s when I would go press and release the gas pipe. I did that for 4 months hoping they would come one day but they never came.

**Interviewer:** We are going towards the end of our interview. We are remaining with two questions. What is your opinion of biogas?

**Interviewee:** Biogas is a good is a thing because when you are using it you don’t need firewood in the process protecting the environment.

**Interviewer:** What else from that?

**Interviewee:** Also, it’s important because it makes use of manure which in most cases is left unattended, and useless. So you can say I was killing two birds with one stone. I was able to sell milk from the cattle and at the same time I was using manure to produce energy for cooking. To cut the long story short, biogas is a good thing, and if in Malawi we could have at least 10 people in every district using biogas, we are going to protect and rejuvenate the environment because people would stop using firewood.

**Interviewer:** Last one. If you could have designed your own waste or energy intervention, what would you have chosen instead?

**Interviewee:** I don’t think there is no other alternative. The only alternative is electricity which requires more money. You can’t trade biogas with solar because solar requires very powerful and expensive panels to use for cooking. I have a solar system, but I can’t use it for cooking. So, I would say I can’t choose anything else other than biogas itself.

**Interviewer:** Thanks for the interview, I truly appreciate.

**Interviewee:** Welcome.