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| **Sub-contractor organization** | XXXX |
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| * **Participant name** | XXXX |
| * **Organization name** | XXXX |
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| * **Stakeholder category** | Engineers and others responsible for putting those vision–led plans into action |
| * **Country** | Nigeria |

CF Okay. Thank you very much. Well to begin with, there are four sections. Yeah, so the first is there will be a broad introduction. So where we'll looking at your background and how you got into this kind of what they have been doing. So the second part has to do with understanding the key issues and the third parts has to do policies and interventions and in the last part is just some closing questions. Okay, I will just ride on because of time, can you just start by telling me about your current roll, your position, your organization the department you work for?

Participant Presently so simple, I’m managing director of Havila trending engineering Consult and Construction Ltd. My background is Electrical Engineering I have been in this field for over 40 years and it has translate to imagined technology or renewable and the other one we call it PVD, just like we're talking with people we were making presentation to in Sierra Leone few minutes ago. We are also very good in energy management, Audit Consultancy, because the future now depends on what type of competence you have and how can you affect the Next Generation and because of that I have written several books, which is also in Amazon that somebody can look at. And new book is also coming out by next month or two on renewable energy.

CF Interesting. I am coming to get that one.

Participant Applying on how to design what we call solar farm, which is similar to what you implement in Sierra- Leone, Senegal and Cote D’ Ivoire. We’re also looking at Liberia but that one is not too much for now. So they are looking for skilled African people who can support them. The issue of Europe, Europe, Europe! We want to demystify that I can say that there are technology that we Africans can promote and Implement without the help of the almighty US for example. Technology is technology. Electrical Engineer in Nigeria is the same electrical in Europe, There is no difference. That is my philosophy and that is my believe.

CF: Interesting! So in brief can you tell me about your background and how you ended up in this line of work?

Participant: So, yes my background is very interesting, it’s not so palatable if I will say. I was not opportune to actually go to school. That is my background, but my quest for knowledge make me to take that leap. I think if I would recall that year 1979. I went to the workshop after graduating in that 1979 to become an Electrician, but why do I end up that way because the parents were very poor, there's no hope for anybody who can sponsor you to go to school. In the process because I love that education very well. One I have a good skill in my hand. I travel out of my state (Edo State), went to the North. It was in the North that God helped me to work in a place that enabled me to be earning about 100naira every month.

CF That a lot at that time!

Participant My daily earning was 2naira per day, but because I do a lot of overtime and all that. So the salary sometimes end up 80, 90, 100 and 102 naira. So the cost of living is not even up to 10 or 15 Naira and you have 100 naira. So what would you do with the remaining? I looked for who can help me, I started home studies from home study as at 1980. We are now in 2021. I have been able to get in all, two PHDs, five master's degree and several, several still on the pipeline. Also transcended from Electrical Engineer to Energy Engineer, to so many profession, even management PhD I have so you can see that the background is not easy. It is just the grace of God.

CF: Interesting, interesting, interesting. Well, we’ll still go into that. Now, can you please tell me about the specific energy access issues that you work on? So for example, I know you work on electrification programs, do you talk on policy or look at technology projects, I know you are very strong in those first ones. Technology projects and electrification projects. I want to know more on this?

Participant: Yeah. Electrification Project is very good. I’ve done that in the local understanding of it. But you work with the generative firm or transmitting firm. We call them Disco Distribution Company. I have worked there for a very long period and then in terms of technology, I now work with DVD, they are manufacturers of several equipment. That took me to Sweden Switzerland and Spain, Germany. You name them, they are very many to the factories where they produced transformers to the factories where they produce revenue record the factories where robots also produce robotic technology, so then when you talk of other technology, which are they major one which are 50 years ago which are springing up, renewable energy, yes that has also taken me to Indian call other places that have been together. I have been to places where they produce solar panels. Nigeria is one of them, then turkey all these are manufacturers of them all these are technologies that in my view can be replicated here. When I went to India in terms of solar panel production, I went to a village where they have never seen any black man. When I went to be factory. What are they producing there? The factory maybe two times this my compound. Very simple factory, villagers came out to see him a black man. I was wondering what is the problem. What are they were looking at? They said they never saw any black man in their life. I said that is why you are archaic. Waving at us, greeting us. So technology, correct. I've been to several places. Also in India we have been to where they produce would call it FED, what way can we maybe explain that well it is actually used for big transmission line where you correct the voltage the power factor and all those things. It's also manufactured by a NDB in India so going to the Factory in my quest for knowledge. How is this thing done? What can we do in Nigeria particular? So more are yet to come because what I want the foundation is already laid, I will say implementation is the remaining where we can also do some of those things we saw there in Nigeria.

CF: Interesting. Now, what sort of policy context shape the kind of work you do?

Participant: The policy, are there AG, NERC, are the policy makers in terms of electricity, no matter which aspect of electricity or kind of electrical engineering you are involved in. the regulation come from them. They are the one making policy, what I have discovered in our policy, I think recently now COREN has also become part of them although even those policy maker COREN are large member that form the committee, but another one came in now, which is likely controlled by a COREN. Company like this, if you don't have COREN registration that you want to practice you are not supposed to practice, so when it comes to policy, Nigeria comply with a lot of norms that you see in Europe. The only thing we lack is implementation, NERC is already mandated to be monitoring company for a long period now, almost 6 or 7 years, but nobody has visited us here and we are practicing. and the policy implementers are also our problem, for example, for you to install meters by all these utility disco. We register to be meter installers, I am a COREN registered Engineer. And what they need is just one registered Engineer and we submitted three registered Engineers and yet they said we are not qualified, I registered in 2011 for prepaid meters when Fashola took over as minister of Energy/Power. He said all registrations that were done before are canceled and we need to register again, policies are there but they politicize it, and turn it to what I call not-too-good. It's a shame. It is the same thing they were telling me now in Sierra-Leone. They have energy policy and everything. implementation is rubbish. So that is the problem with policy in this country. Almost everything you are doing has a policy, regulations

CF Interesting

Participant Houses like this now is in our documentation for people who are applying these things in the houses. That your houses should be in RCC Enter all of these houses to see if you will see one that is qualified to run electricity. This office may be the only one that is qualified. Your own electricity policies are there but do I say we are not so forceful to implement that may be another angle to it. So we have policies.

CF: Interesting. Well we will come back to this policy thing a bit more later again, but let's look at the second part which has to do with understanding the issues now are we going. It's very good at you actually implemented some projects and then you already can see it lots of the benefits at local level. So a lot of you your knowledge and experience there will be needed. So, what do you think? what does equitable energy access mean to you based on your experience?

Participant Equitable access supposed to mean everybody has equal access to electricity. In the real sense that is not applicable because we have over 80 percent of Nigeria population that don't have access to electricity. That is work motivate me to take electricity to my Village. If you read that my book on renewable energy. It takes more than 200 years before electricity got there. So, Is that equitable? Whereas just about four to five kilometers away from the village the super grid passes through there. And nobody can step it down and distribute it to the nearby village, so there is no equitable way of distributing this electricity that is just my understanding from the terminology you are saying of how equitable it is.

CF: Interesting. Do you want to look at it from a gender angle? What does gender equity mean in energy access? because some people argue that women are supposed to have more access

Participant The gender issue. Based on our culture we believe that there are jobs or things specifically meant for women and the one specifically meant for men. When you look at what has evolved all these years. It is immaterial, that argument is, do I use the word fallacious because it is not tenable.

CF So you mean both are actually impacted?

Participant There is a project we are trying to implement now in Senegal and Cote’ D’ Ivoire. They believe in that culture that women should not work. They should not even work, leave the men to go and work and produce more money. We found those who are lazy and not ready to work. With that the European Countries set up a project that want both old and youndg female women to be at the same level. The women who have the ability to work should just setup energy that is just solar installation. Thte concept they had is just like what I did in my village. Build a house, on the rooftop, put solar and in the rooms, they say we should use it in training the women specifically for women not men That building use it for training, use it for computer training the it related give them all manners of training on how to farm and all sort of thing, irrigation and those other things. Everything should be done but not for men for women is that not also what the men are doing?

CF Exactly

Participant The same so they want to create a balance. But what a man can do a woman can do it also. And to a large extent it may not be hundred percent, correct, but to a large extent there is a pass mark for it. Let’s just look at it. If you are married, and you have all female children. Would you say because of this gender issue your child should not go to school?

CF Meaning what? exactly.

Participant We should create a simple common platform for everybody to thrive.

CF Interesting, interesting. Now, how is demand for energy determined? And how does your organization come to understand consumer needs? So first how do you even determine is it that you rely on some statistics or idea or what? How do you determine consumer needs?

Participant It's very simple when you look at it on a technological view. My Village is a practical example. I went back there after so many years of not going there. And I saw the need that they have need for energy. The man who helped me to determine the amount of energy is not an engineer. He is a farmer. He doesn't even understand what electricity is. All I told him is to go there, count how many rooms that are in that house in each house give me an idea. I gave him a list of all the houses in the village. In each house, tell me how many rooms. I didn’t ask him any other thing. HHe gave me a list of the number of rooms in the house in a very very simple designed way. A room should be given at least one light. If I have determined how many watts should be per room and I know how many rooms, I should also know that there are right, left and back that I need security lighting for. My need is already determined when you talk about energy. And then I also say how many people are living in that room? Do they need television in each room or fan in each room? All those things is in my book, which you don't have to date. And sum of what is the total watts. To be very efficient, you need to know. You may not be correct. But you have to have estimates of hours of usage by those days When you multiply that we now say watt hour when we now divide it by 1000 we now call it kilowatts/hour. So Energy Design is based on kilowatt hour. If you are able to determine the kilowatt hour, the remaining is just simple stress. Again if you are now looking at achieving that level of renewable energy then you still need a lot of statistics. Which is all extremely my book that I have written and more are coming on this renewable energy. I focused this new book now that is coming on just solar. For the first one I published cut across almost 8 or 9 new renewable energy sources, but the demand for solar now is so rampant. So we have this one backed on solar only. It has a how you determine all this energy needs.

Also simple if you want to achieve it on top of your roof all that we need is take measurement of your roof, length and breadth. Multiply that gives you the square meters then if you want 100% achievement, look for something to measure which direction your house is facing that matters in solar application. But again, you can do all this exercise and you decide to go and buy a generator to run all these things. What you are doing is that you are creating more problem in this world than ever. Polluting everywhere. So these are the simple ways to determine energy, also interacting with those who are to use it. It's a similar thing that we were talking about Sierra-Leone now. How do you determine what power is required? We told them that we need to do feasibility study. We interact with the community. We see houses. We count, we make some projections. Like that Village that I mentioned. We estimated the need about 31 kilowatt. Is it 29 kilowatt hour and we built solar to take care of it. As at the time we took measurements it was about three or four months after Commission. We realized that we designed for 29 and we achieved 23 so that shows our design is very very efficient per se. Meaning they are consuming less than what you expected. That gives room for expansion. That is what we actually do. So unless you want to frame the question again, if this one does not answer your question.

CF No. this is this is fantastic. Really. I mean, you've gone through a technical way and then of course very practical so it's so good. Now how equitable is energy access particularly as community and household level you have a lot of experience now doing this you've done something for a community and you've also seen how it is so how equitable is it at community level at the household level and how are do you explain this also from the gender angle.

Participant Gender angle, it is still equal because man there and a woman is there. They are enjoying. So unless maybe I don't understand the question very well. I will see so far have a problem with that. Then you say at community and household? Community-wise most people do not understand what we have achieved in what I did for them because it is free. They don't pay they only consume. Even when we put some meters to limit the consumption per house. The Electrical oriented people including clergymen, in the night they will take their screw driver and do the other way round. Just to permit them to put everything. That is the people in the home now then the community entirely like I said, the only thing that can give me comfort like I said the first one. I did another village. You have about four or five villages at the first phase we finished. The second phase is only the thing that gave me comfort today. When the Ambassador visited the village he didn’t even visit the second phase, but the community there. The head really made me happy they brought almost about one hundred tubers of yam, goat, bush meat and everything. They said they came with it to give me thanks. But the first phase, I have never been applauded like, thank you for giving me light. To them, one of the side talks I heard them say, if I can quote them verbatim “ shebi em talk say em get money mek em spend am naa” they cannot comprehend why that special favour was given to them. Why are you wasting your money? Some of the relatives we have there have told me severally, you don’t have to spend all these money on the community. Of what benefit is it to them? But for me it looked like completely misnormal to me if we are enjoying our lives in the urban area and the people in the village are languishing as if something happened. So if you read that book, some of those conclusions are there that the community member never appreciate what you have given to them is free. Because those in the home must have criminals among them. It is a matter of Oliver Twist looking for more. You will say limit yourself to 100watts, they want I kilowatts. They keep wanting to. What Bob home in a village like about 40 you need solar installation of almost 50 to 60 kilowatt unlike we usually put 40 kilowatts. So I don't know whether that answers your question, it is a little bit confusing when you are trying to relate them.

CF No. I mean I like it I like the very interesting dimensions you are bringing out. Now in I want you to highlight something in terms of who benefits. I would like you to talk about who benefits more. Do different groups benefit from energy access in different ways firstly where different groups of women rural versus Urban young versus old?

Participant Very correct, different groups benefit differently. In the village, rural area; There was a woman that is operating all this selling soft drinks, beer and all that, the solar we provided for them during the day she put everything in the freezer on it. Around this time, it is still running till 4:00, because with the program we have there your big load should switch off automatically by 4:00. If you don't do. The meter that we put in there will switch it off, the entire house will just go off because you are on heavy load. Now what is the benefit you have? The cost of running a generator before? As an old woman may be in her seventies. Then the younger ones it is a very interesting thing to them because they are able to charge their phones and do a lot of all this internet thing, use it to run computer and that for the children. So it has huge benefit for the village but in the town because utility is there if utility is available you don't feel any too much of no Light every. Like here now, there is no utility but when I saw that we are sweating too much I switch over to solar. Though the AC is running now. It's from solar. So is that not a very big benefit to the town? In both ways it is benefiting everybody. Then in the town, electricity is used for running commercials for example barbing. My child I barb them with every time 300naira, if there is no light 600naira. You have created revenue for the barber. So it is very very beneficial when you come to the urban areas, it promote commercials and as well it does that in the rural area. In a very small way.

CF Interesting, interesting insights. So in terms of decision-making now, do men and women participate equally in decision-making about energy access? So it can be at household level. It can be at the community level.

Participant I will say yes. Citing example for a married man when I was to get solar installed in my house here, my wife is part of the decision making. I will still remember the very first question she asked me. When we install this solar, can I blend with it? Just for cooking. I said that is even a small load, I said you can power your fridge so that your food is always refrigerated and also during the day you can iron your clothes, it is part of the decision-making and also the children do you need to ask them whether they need IPad for games?

CF They will decide by themselves! Yes, yes. I will go to the next parts now, which is the penultimate part that has to do with policies and interventions. Now to what extent does equity factor in energy access? I know we've talked about this before but let's just fine-tune it a bit. Do we look at this when we look at energy access problems, is it something that we think about consciously? And how effective has it been like some of the projects you are looking at. You're thinking about women, women, women

Participant To me it is more of energy things and just give us which part of energy you are talking about and then we can now deviate from the talk. In my view the word energy is all about electricity the definition of energy is you multiply the while by the hour you want to use it. We use it as our definition. We still have another mechanical technical form which we'll not be talking about here. So when you say in your question now. Whether general? What do you want from the general I have forgotten the main question there.

CF So the idea is when we are even thinking about it. Do we think from a gender perspective?

Participant We don't think. If you now say that you need energy, I cited an example with my wife. she need to do some certain things, which I already have in mind think of it now. She's sick for almost a week few days ago. I was working. Do I need to tell a sick woman to go to the market and blend? I need a blender to use. So the common answer you have to give is to find out what type of energy that we need and from International point of view, an average person require a minimum of 500watts a day that is why you see in a three-bedroom flat the common concept is you need a minimum of four to five kilowatts to solve all your energy needs and that cuts across everyone. It is not a gender thing, it is generic. It is for everybody. Do I answer your question there?

CF Yeah, definitely well, do you think at all, thinking a bit beyond the work that you do Do you think our policy is gender sensitive particularly on energy access a bit at a broader level?

Participant We may say in my view that we don't normally consider gender when you're talking about gender equality, because woman are there, they can use it. Men are there, they can use it. But when places like Senegal and Cote d’ivoire. They review the culture and what is happening in terms of energy. They realize that because of culture some women are denied their right, they don’t want them to be here, here and here. So that is not true. Go to the north also it is culture, not that they are denied but there is a culture demand that a woman should sit inside their house if they want to go out they cover their faces. Is it that energy has some restriction? No! It is the culture now that is affecting them. Everybody is promoting allow them to come out. Saudi Arabia was also in that shit. They said no woman can drive, if you're familiar with that shit Is it the policy? It is the culture. There is a woman that broke the jinx. She was trending in US... She drove and they lock her up, after so many years the whole world started pleaded that you people are evil. You are doing it in a backward form, reverse energy or reverse engineering. At the end of the day, today now, they are driving. It was not energy deficient, it was culture that was affecting them. So they now liberalize it, you can see everybody is free. I don’t know if that answers what you asked?

CF Now let’s just imagine that there are no financial or policy constraints, what are those things? What are those other things we should be looking out for in order to address issues of energy access as to gender and energy access.

Participant If there is no finance or there is?

CF If there is, Imagine for a moment that there is no financial wahala. There is no policy wahala also. What are the other things we should look out for?

Participant We should now work, like what I called, a village called harmony. Bring our money together and produce a thing. I visited 2019 and this is 2021, I visited a village where it is the whole village that brought money together agreed and also went to the bank to take loan. So they produce light from this waste from animals with the weed farm. The weed-farm they installed in that area is almost 72 and each one is about 3megawatts. They told me that this Village, the man who made the presentation that is what I love most. When he was presenting, in this Village, we turn shit into money. That touched my heart. So what you are 100% possible if we agree. Just to bring your resources together the sky's the limit then if I may refer you to the bible. If you have heard the story of the tower of Babel what do they say they want? We want to see God. No need to be praying and kneeling and they came together and said what do we do? They said let us build a tower straight to where God is. They started building. We were told that God came down and said, they will succeed and He destroyed them by giving them different languages. Nothing is impossible!

CF Interesting, interesting. We will go to the final phase now, which is are there any other things you want to talk about that we have not touched that you feel you need to add?

Participant Well you are the questionnaire, it depends on what you want. Well anything you need is what I react to. So in my view, when we come to energy, you said when there is no money what of if also there is money? It will be achieved so quickly and very easily. What we lack in the whole world is corporation. Some people just believe when they have it is only meant for them, their family and their generation. Others can go to hell. But if you have good-minded, flexible ones who is ready to change this world, those are the people we need. They help you just like what I did in the village, you go to the village, for five years now they enjoy electricity. You don't negotiate that anymore because when you are going home, you know it is there. That is what they enjoy. In Europe you don't negotiate energy because you know when you push the button it will answer you. That is the way that village is today. How do you achieve that? Well if you can get. In my adage we were told that when you are able to get two good people in a village that everything will go well. But if it is only one, criticism, jealousy and everything comes in. But when everybody have, you have your phone now, I have my phone. Am I jealous of yours? When it is available criticism and envy and every other thing reduces. SO what I will add, for Nigeria to achieve energy sufficiency, we need the cooperation of all those people that has money, stolen one even; if I may say, to bring it and use it to build their community. Charity they say begins at home. You see a lot of people they have mansion in the urban area but in their village, nothing. These are the things I want to change, I went back to my village and it's working today. If a whole Ambassador of Sweden can go to my Village and the governor has been to my Village and Delta state government once upon a time sent a team of Engineers, about 4 of them to come and do a complete assess of what I am doing in the village, that should form the basis of the implementation they are doing. I became a little bit happy. They never gave me money but I was happy.

CF Great. So that's actually my last question. Hope you would be available in case I need to ask some follow-up questions later on?

Participant Yes I'm always available.

CF Great! Thank you very much!