

Towards Universal Energy Access in Ghana

—Transcript of a webinar offered by the Clean Energy Solutions Center on 9 July 2014—
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Webinar Panelists

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Sean Esterly Hello everyone, I'm Sean Esterly with the National Renewable Energy Laboratory and welcome to today's webinar, which is being hosted by the Clean Energy Solutions Center in partnership with the United Nations Foundation Energy Access Practitioner Network and today's webinar is focused on energy access towards universal energy access in Ghana. One important note of mention before we begin our presentation is that the Clean Energy Solutions Center does not endorse or recommends specific product or services. Information provided in this webinar is featured in the Solutions Center's resource library as one of many best practices resources reviewed and selected by technical experts, and you have two options for audio today. You might either listen through your computer or over your telephone. If you do chose to listen to your computer, please select the mic and speaker option in the audio pane, doing so would just eliminate the possibility of feedback and echo. And if you choose the dial in by phone, please select the telephone option and then a box on the right side would display the telephone number and audio PIN that you should use to dial in.

And panelist, just another reminder to please mute your audio device while you're not presenting and if anyone is having technical difficulties with the webinar, you may contact us. Go to webinar's helpdesk number which is displayed at the bottom of the slide and that number is 888-259-3826. And we encouraged anyone from the audience to ask questions at any point throughout the webinar. To ask a question, simply submit it to the question pane or go to webinar window. I will receive them through there and present those to the panelist during our question and answer session. And if you have any difficulties viewing the material to the webinar portal, you will find PDF copies of the presentation at <https://cleanenergysolutions.org/training> and you may follow along as our speakers present.

Also in audio recording of the presentations, it will be posted to the Solutions Center training page within about a week of today's broadcast and we are also now adding webinar to the [Solutions Center YouTube channel](#) where you will find other important webinar as well as video interviews with south leaders on clean energy policy topics. And today's webinar agenda is centered around the presentations from our guest panelist; Aneri Patel, Wisdom Ahiataku-Togobo, Paula Edze, Ishmael Edjekumhene, and Kwasi Agyenim Boateng. Aneri from the UN Foundation will be providing an overview of the Energy Access Practitioner Network and then panelist will share their reflections on various priorities, approaches and ongoing efforts on electrification in the country, and then showcase how practitioner can engage in off-grid business opportunities. And before our speakers begin their presentations, I just want to provide a short informative overview of the Clean Energy Solution initiative and then following the presentations, we will have a question and answer session where panelist will address questions submitted by the audience, some closing remarks, and then wrap up with a brief survey.

Now, this slide provides a bit of background in terms of how the Solutions Center came and be formed and the Solutions Center is one of 13 initiatives of the Clean Energy Ministerial that was launched in April 2011. It was primarily led by Australia, United States, and other CEM partners. Initiative includes support of developing countries and emerging economies, doing enhancement of resources on policies relating to energy access, no cost expert policy assistance, and peer-to-peer learning and training tools such as the webinar, you are attending today. The Solutions Center has four primary goals. The first goal is to serve as the clearinghouse of clean energy policy resources, second is to share policy best practices, data and analysis tools specific to clean energy policies and programs; and third is to deliver dynamic services that enable expert assistance, learning and peer-to-peer sharing of experiences, and then lastly the center foster dialogue on emerging policy issue and innovation from around the globe. Our primary audience is Energy Policy Makers and

analyst from government and technical organization in all countries or we opt to strive to engage with the private sector, NGOs and civil society.

One of the marked key features that the Solutions Center provides is the no-cost expert policy assistance, known as ask-an-expert and the ask-an-expert program has established a broad team of over 30 experts from around the globe, who are available to provide remote policy advice and analysis to all countries at no cost. So, for example in the area of energy access and rural electrification, we are very pleased to have Ibrahim Rehman, Director of the Social Transformation Division with the Energy and Resources Institute, serving as one of our experts. So, if you have a need for policy assistance in energy access, rural electrification, or any other clean energy sector, we do encourage you to use this valuable service. And again, it is provided to you free of charge. So, to request assistance, simply go to <https://cleanenergysolutions.org/expert> and to make your request through the form on that page. So, in summary, we encouraged you to explore and take advantage of the Solutions Center resources and services including the expert policy assistance, the database of clean energy policy resources, subscribe to our newsletter, and participate in webinar like this one.

So, now, I would like to provide brief introduction for today's distinguished panelist. The first speaker we will be hearing from is Aneri Patel, officer at the UN Foundation Energy Access Practitioner Network and then following Aneri will be Paula Edze. Paula is the national coordinator for Sustainable Energy for All also known as SE4All implementation in Ghana. And following Paula, we will be hearing from Wisdom Ahiataku-Togobo, the Director of renewable energy at the Ministry of Energy in Ghana and Wisdom was also instrumental in the development of passage of Ghana's Renewable Energy Act, and then we will hear from Ishmael Edjekumhene. Ishmael is the Director of KITE. Additionally, he has been managing the KITE office in Kumasi and has been a member of the KITE management committee since 2003. And then our final speaker today is Kwasi Agyenim Boateng and Kwasi is the Marketing Manager for Wilkins Engineering Limited, a private Renewable Energy Company based in Accra, Ghana and he has overseen the implementation of various projects including the instillation of solar systems for community health post in rural Ghana over the past eight years. And so now with all those introductions, please join me in welcoming Aneri to the webinar.

Aneri Patel

Okay, thank you Sean. I would like to thank Sean and the Clean Energy Solutions Center and all our esteemed panelist today for putting together I think is really an excellent webinar on the exciting energy access work happening in Ghana. So, just a little bit of background, the Energy Access Practitioner Network was formed in 2011 as a support of the universal energy access goal under Sustainable Energy for All. We have 1700 members from around the world that are practitioners, who are delivering energy services on a day-to-day basis on the ground and what we do is try

to showcase and provide visibility to some of the best in class companies, nonprofits and states. From a survey we did with 141 members, they have electrified over 50 million households and that's just a small subset of the network in what it is capable of and what it can do. We are in 191 countries from all over the world and our information clearinghouse is on www.energyaccess.org and I will share a little bit more about what kind of stuff we on the website.

Just a little bit of background, we provide a lot of market-based mini-grid and off-grid solutions and we showcase the best in class energy service deliveries at the country level. We also promote the adoption of new technologies and innovative financial and business models, the best practices and peer-to-peer learning. And if you can see from the graph here, we have small and medium enterprises as what would I say the largest percentage of our network. So, we have a lot of entrepreneurs, many who have started companies or initiatives within the past three years. So, there are a lot of opportunities for learning in this network especially on what we think are some of the models that need to be replicated. We also have members from other kinds of sectors such as government, international organizations, academic research institutes, and others as well.

Then, in our network, we also say the majority of our network is in the solar industry, but we're technology agnostic. We allow any energy service provider that has a renewable energy technology to join, so we have representatives from biomass, from microgrid sector efficiency as you can see, and I would also say that some—this snapshot of our global network is probably similar to the working Ghana as well, as the majority of the Ghanaian practitioners are in solar as well. Also, you can see that the majority of the challenges that members face are in access to funding and also in renewable energy enabling cost environment. So, I would also argue that this is similar for Ghana as well, but we do have a representative in Ghana and he can share what is going on in the country as well.

Some of the network accomplishments we have to date, we have produced a report in support of Rio+20 on achieving universal energy access and what we did is we compile recommendations from many different practitioners on what is needed and that is also available for download on our website. We have also created and import tariff and barriers and through database, which is our global database of countries current tariff and bound and duty rates and you can also access Ghana's tariffs rate as well, especially for practitioners who are interested in doing business there. We worked with the IEC to reduce cost barriers, assessing quality standards and have a discount available for practitioner members. And we've also compiled an investment directory showcasing the deal flow for about 140 companies that responded and what the funding needs are in the sector, which we showcase regularly to investors

Lastly, we also have established an energy in women's health initiative as a High Impact Opportunity under Sustainable Energy for All and what that is it's looking at the thousands of clinics in the world that lack access to reliable electricity for health services and we are currently conducting a scoping study in five priority countries looking at the needs assessment for various health clinics, and Ghana is one of those priority countries. So, we are excited to also work on this especially with practitioners, who could provide those kinds of solution. We launched and supported the Sustainable Energy Network Ghana in May of 2013 and Ishmael will present more on this, but I wanted to showcase about our partnership in which we have a 147 Ghanaian members registered in the Energy Access Practitioner Network, which really shows critical math and why we felt a need to establish an affiliate network or help support and established the affiliate network there. In the practitioner network, we have 295 members globally who indicate operations in Ghana. So, clearly, there are a lot of business opportunities in the country and let the other panelists discuss more what those looked like. And in our network, we also have even representation from government, civil society and private sector, which is also a little unusual considering our network, is more focused for practitioners, but I think that also shows the promise in Ghana that these sectors are talking to each other.

I also wanted to quickly go over some of our work we think are the interesting companies in Ghana doing interesting work. So, persistent energy partners in Ghana are developing very low costs microgrid on the village level and providing basic lighting and mobile phone charging, and they're recently expanding. Wilkins Engineering, which you'll hear later, have a significant product range showing all the grid-type PV products all the way to small scale solar energy distribution. Daasgift Quality Foundation is a really interesting NGO working to utilize microfinance at the local level to really distribute clean energy products to women's groups and retail networks. And then Energie Bau is an interesting company that is utilizing German innovation to bring new and interesting technologies to Ghana. Then, we also have Atlas Business and Energy Systems, which is started by a professor, and he has tailored his classroom approach to really bring business excellence for his staff. So, that is the snapshot of the Energy Access Practitioner Network and we would love for you to join if you haven't already. Thank you.

Sean Esterly

And now, I would like to welcome Paula to the webinar for her presentation and Paula, just remember that your microphone is currently still muted.

Paula Edze

My name is Paula Edze. I'm the SE4All coordinator for Ghana. My presentation will be on Towards Universal Energy Access in Ghana: The role of sustainable energy for all initiative. We look at this page on Sustainable Energy for All initiative and summary for Ghana's country action agenda and progress toward achieving universal access. What we have is Ghana's country action plan and now has a progress made toward

achieving universal access to energy. Summary of the SE4All initiative and summary of Ghana's country action plan. As already mentioned, SE4All was initiated in 2011 as a global initiative that would mobilize action from all sectors of society in support of three interlinked objectives; energy access, energy efficiency, and renewable energy and the target for 2030 is to ensure universal access to modern energy services, to double the global rate of improvement of energy efficiency, and also to double the share of renewable energy in the global energy mix. Ghana as a country was the first to develop and launch her action plan in May 2012, working on three key objectives. These are based on sound science (1) promoting productive use of electricity, (2) to improve access to cleaner cooking options and we got three interventions [inaudible][0:18:31] wood fuel and improved cook stoves, increase access to LPG gas option and also institutional biogas for cooking; (3) is to provide access to electricity for remote communities using off-grid systems.

If we can look at the type [inaudible][0:18:52] productive uses of electricity. Looking at the key economic ends, sectors of Ghana and its contributions, focusing on the use of energy to increase agricultural productivity by use of innovation. So, we are looking at the solar, wind and mini-hydro [inaudible][0:19:16] to promote the use of solar dryers, palm processing plants and multifunctional platforms for grinding and milling [inaudible][0:19:35] in area of fisheries which is also included sector in Ghana [inaudible][0:19:44] establish modern landing sites, cold storage facilities and also promote aquaculture ventures [inaudible][0:19:58]. The fourth is to promote or create medium scale enterprises in the salt sector.

Objective number two is to improve access to cleaner cooking options - wood fuel and improved cookstoves. The working policy and legislation for promotion and development of a cleaner cookstove and also improving the capacity of local house to purchase and to increase production and the quality of stove that have already been manufactured in the Ghana market. The third is to establish wood fuel plantation for charcoal production. The charcoal is one of the key fuels used by Ghanaian, especially in the urban areas. So, organized and established a wood fuel plantations for charcoal production and this also has to do with the conventions of [inaudible][0:20:59] technology as well. [inaudible][0:21:03]

- Sean Esterly** Hi Paula, your audio is coming to a little quietly. Could you possibly speak closer to the microphone?
- Paula Edze** Okay. So...
- Sean Esterly** Unfortunately, I think we might have lost Paula from the line due to some technical difficulty. Paula, we can hear you again.
- Paula Edze** Hello.

Sean Esterly Hi Paula. Go ahead and try to continue. I have technical difficulties. We might have to move on to the next presenter.

Paula Edze Okay.

Sean Esterly Go ahead Paula and continue.

Paula Edze Okay. So, the fifth is research and development that engaging an end users in the production and design of cookstoves to ensure that [inaudible][0:22:32] to promote research and development in improving cookstoves and also wood fuel production for the cooking. It also builds the capacity of locals to leverage carbon financing. [inaudible][0:22:48] increase storage supply and also investment in the LPG infrastructure and also including access to the commodity. [inaudible][0:23:03] The second option is regulation of biogas for cooking which is promoting the use of [inaudible][0:23:17] selected schools, hospitals and prison, and the areas of access to electricity for remote communities using off-grid systems. We look at the different technology in lightning, in education ICT in remote schools, for health is also for light and solar PV for lightning and refrigeration of medical supplies or vaccines and also solar home systems especially the [inaudible][0:23:51]. The fifth is the promotion of mini-grid for [inaudible][0:24:07].

In terms of immediate access and target set by the government of Ghana, we move to achieve 90% of national electrification by 2016 and also increase the contribution of renewable energy by 10% or 500mw in the electricity generation mix by 2020. We also goal to have 50% of our population by using LPG [inaudible][0:24:36] by 2020 and also promote the use of cookstoves by 50% of the population by 2020. [inaudible][0:24:51]. The fifth is using biogas for cooking by 2020. In terms of improvement made so far, as we speak, we have 80% of national electrification.

Sean Esterly We seem to be experiencing the technical difficulties again. I think at this point, we should move along to the next presenter. Hi, Paula?

Paula Edze Hello.

Sean Esterly Hi Paula. We still seem to be having some technical difficulties with your audio. We can try to come back at the end with I think at this point we are going to move ahead to Ishmael's presentation.

Paula Edze Okay.

Sean Esterly So, Ishmael, we're going to move on to your presentation. You are still on mute, if you could go ahead and take yourself off of mute. Ishmael unmute your microphone, you're still on mute. Ishmael, please hit the microphone symbol next to your name to take yourself off mute. We'll work on that. My apologies to attendees. We'll have this work out in just a second.

Alright, we're going to move along to Kwasi's presentation and then we can always come back to Ishmael after that. Kwasi, if you are ready, go ahead and take yourself off mute and we'll give you the slides right now, and Kwasi you should be receiving the slide capabilities. Please take yourself off mute and accept the capability.

Kwasi Agyenim Boateng: Okay. I'm ready now.

Sean Esterly Very good.

Kwasi Agyenim Boateng: So, thank you all. So, I'm readying my PDF. It is still coming up so can you help me with that one?

Sean Esterly Yes we are able to see it now.

Kwasi Agyenim Boateng: Okay.

Sean Esterly There you go.

Kwasi Agyenim Boateng: Okay, so like you heard me said my name is # [0:30:21.9] Watson. See, my presentation, what I am physically going to do is I am going to talk as if I'm talking to people who are, who want to have an idea of what the whole situation is like in terms of having SS point of view and practitioner in the ready markets here in Ghana and then we as looking for # [0:30:44.0] were established in 1993 and we are based in more than ten regions of Ghana with business operations in Togo, Benin and Liberia.

We have focused on the rural and off-grid areas and currently we have settled over some 50,000 customers in the past three years and our strategy has been that in visiting these areas, we have realized that initially the systems will go to the places with the solar systems. It is beyond the reach of people. People cannot wait for it so we said: look why don't we do systems, customized systems, small systems that people can come up with so typically we have systems ranging from 50 watts to 100 watts solar systems to even FICO systems which are about 20 watts, 15 watts, 10 watts and then solar lanterns. These are basically what we have offered to the market over the years.

Let me go straight to the operations having some of the difficulties for investors. If you are to come here as an investor or you want to consider entering the Ghanaian market then it is stationary here. What should be some of your expectations? First of all, there is these difficulties uncertainties of an imagined industry. The industry so now becomes an imagined one in terms of the renewable energy.

For instance, so, you have, I have here high risk, high uncertainties and then low uncertainties. On the high uncertainties I have, first of all, I consider things like bio-decisions that places where we are taking electricity too in the rural areas at par from the fact that the technology we

are taking there is new. The whole concept of electricity is also new to most of the people.

So, for instance, after supplying electricity, a solar system for instance, you would have to show the people how to operate their gadgets. A typical example is, under the Ghana Energy Development and Access Project, there are some villages we are sending electricity to, solar systems, and then as part of the package we supply DC televisions. And we realize that when you give that television to that person you also have to show that person how to operate a television. These are not people who can read and understand the Manual the Users-Manual so you have to show them how to use the television.

Now, that alone brings itself some uncertainty. You are selling to people—these buyers, they don't know a technology you are bringing to them, they don't trust it so much and this is a difficulty that anybody will have to surmount and then we have the commitment of stakeholders. Here, stakeholders I am talking about are subject to three bodies who are responsible for granting things like permits, licenses, certificates. So here, you can talk about Energy Commission and the Electricity Department and the Electricity Corporation and then even to some extent the Ministry of Energy who are responsible for all these things.

And, sometimes it is difficult to know what the commitment of the stakeholders are, what their concentration is for a certain time because these decisions are not only technical, sometimes changeably political also. Political in the sense that what has been the priority of a certain office or a certain regime or a certain government may not be the priority of another.

Currently, there is the Vision 2020, I think Paula [ph] alluded to it as part of Ghana's plan. My concern and our concern is, this not the first time we have seen such documents. Way back in the 1990's there are other documents like that for energy access but it was not pursued, it was not followed through so you can see that these uncertainties are also the—when it comes to the stakeholders and the institutions that are there to provide it.

And then we also go to their aspect of institutional capacities. Currently, and I think, what is one key thing that we need to see in the Ghana market to develop so that we take off very well, is technology transfer. It is only recently that we have three institutions that are pursuing renewable energy as studies on the Koforidua Polytechnic and the KNUST that's the Kwame Nkrumah University Science and Technology and a private school that is the DENG Solar Training Center. These are the only places where people can do study for all the industry can rely on for manpower in terms of these technologies. So, that is also there.

And then, when we go to the other aspect of uncertainties the economic landscape is there for you to also consider if you are a victim in this and space as a private practitioner. The technology itself also is something that it worked out. People have seen systems lined as seen in villages. We go to other places where the systems are not functional. The systems work for, let's say, about a year or two and then you don't find the systems functioning again. That has been a cause of worry for the customers. So, this also becomes a difficulty that everybody will have to consider.

The barriers like I have said, the political barriers are there. The political will sometimes you find that it is not there so something is written in documents, something has been passed into law, advocacy being pursued and you can only allude to that lack of political will. Ghana, for those of you who are here and are considering entering a Ghana market, fortunately for us that Ghana market, Ghana is not a place where you can say that there is political instability, no, but what I am, I find to be concerned, that everybody should consider is political will. Who will pursue what? Energy policies are there, we have signed into a lot of agreements, we are partners with a lot of people but then you consider what will be the priority of the next government or the next person in charge.

For instance, currently, the discussion in Ghana is about getting electricity. So, it is not about which is cheaper or which is expensive it is about getting electricity. There is a par-rationing or low schedule arrangements going on so the concern here is about what adds up to the generation so that one too is there, but then, in all these you must also consider that Ghana's budget is highly supported by donor agencies and new development problems also have focus.

So, this year, for instance, the minimum challenge account is going to be implemented that will start a new light that is going to the electricity sector. In that way you can see that there is going to be a lot of development in electricity, extension and supply to light off grid areas. But, what happens if, let's say, in the next year, donor partners who are partners, most parts of our budgets they are supporting it, if they say: okay now, let's look at something else, water sanitation or are like equally important things, then, your plans for electricity also is stalled, so that is some of the challenges here.

Regulation has also been certainly a bottleneck. Currently, if you want to operate as a renewable energy practitioner you need a license from the Energy Commission. Apart from the license if you want to build and operate renewable energy plants of a certain capacity you need payments to sites, and about payments to construct and about payments to operate or sell.

I think all these processes are quite, maybe are too slow and the administrative budget are too much. It is also given a lot of problems to new startups and then the people who want to expand the operations. But,

I know some work is being done between the Energy Commission, QIC and the Ministry of Energy to make these processes seamless.

I have already spoken about the technical capacities and then the institutional support. I think we should still see some, a lot of support in these areas for the markets to really take off where, and then, anybody who is entering this space because he wants to be sure about expense for next year, support, you call banks, the leads we are bringing hear in Ghana are prohibited for finance and options and currently the interest, for instance, is about between 23% and 32% in borrowing and this is too much. The dollar is depreciating to the, the Cedi is depreciating and again the dollar and that is also a cause of uncertainty.

Going to the higher skill as you know recently, about two years ago, the new Energy Law was passed and we—last year the feed-in tariff was also affected. Currently, the cost of electricity averagely is about 15 Ghana peswes and the feed-in tariff rates that affected one is also 40 peswes. Now you look at this and you ask yourself who will go into this business. Whether you are paying 15 for this and the feed-in tariff is also 46, why should I buy from renewable energy? And mind you, solar has the best of tariff compared to the other renewable technologies. So, you are asking yourselves why would electricity-corporation, for instance, or renewable electricity department buy electricity from you for 40 and then sell to somebody at 15. Something has to change.

Okay, so, having said all these where are the opportunities. I have currently in the last weeks, we have seen that feed-in tariffs are rising, electric investment strategy are formalizing in place and it's used opportunity to people who want to enter the market. In that, there are categories of customers who currently, they are paying about 17 Ghana peswes for electricity from the main grid. So far, if you want you can start something like solar then you can say that you can sell at a profit because these people are already buying at a higher rate from Nomar [ph] Grid Electricity. So, that could attract some opportunity for people who want to enter the space and can also make their renewable energy market bloom.

When it comes to these categories of customer events, we can say that we have least grid priority on these category of customers. But, we are talking of these industries and the banking institution, the factories, these are down south in Accra. And where you have the maximum solar yield is also in the northern part of Ghana and in Accra, you are fighting for land space. Land acquisition is a whole hurdle that is not easy to get through that one who is there. But, I think if one can break that jinx then you can consider that customer categories who are already paying more than solar could offer.

Okay, the micro FITs also looks promising if we can get the FITs. What we have currently is the normal feed-in tariff. But, the micro FITs will for instance, things below 50 kilowatts and if that can come on, the incentive

that the people can move through, where now people can think about giving two kilowatts five kilowatts on their # [0:45:12.3] and this would increase their access to electricity both in the cities and also in the villages.

So, in a nutshell, many of the issues that we are facing here in Ghana in the market and I think most of the market that are developed. I can see some people out from Europe, those of you who are from Europe, you also feel all these things and then by now you have someone to beat. I know there are efforts on the part of government to overcome some of these barriers—and then, it is not just a Ghanaian thing it is everybody's share in the business and I think together we can surmount this.

Sean Esterly

Okay, thank you very much.

Male Speaker 3

Thank you very much and we believe that we worked out Ishmael's audio so we will now be going and turn in that over to Ishmael for his presentation.

Ishmael

Good afternoon everyone. It is a pleasure to have you here and I am speaking, specifically on the sustainable energy networks of Ghana that I happen to be the in-charge here and it is going to be a brief presentation that—next slide please. Yeah, give you a brief—what I intend doing within this short time, give you a brief background of the establishment of the network, tell you why we seek in to achieve with a network and charge on the current status of what the network is—next slide please.

So, way back in 2008 we encouraged and realized that it is important for us to continue to push this sustainable energy agenda and that the twin pillars of highly renewable energy efficiency locked in behind the window, Ghana had a tremendous access rate. We have reached, at that time, we had reached 60% but we relied that the contribution of renewable energy and energy efficiency were not that significant.

So, as part of the—next slide please. So, we created, we knew that it was very, very important for us to bring all our efforts together because there were challenges as # [0:48:05.1] alluded to some of them. We realized that no individual could do it all by himself or itself so we recognized that there was a need for a concerted effort. So, in 2008—next slide please, in 2008 we created a loose network out of a project that we implemented called the Affordable Lighting Forever. We created a sustainable network, clean energy network, as a loose network that aimed at promoting clean energy systems.

And falling from that—next slide please, once we created that network, we sold out to, at that time the Renewable Energy Act was in the offering so we decided to come together and present our position as a group of NGO's Private Sector Access, to push for popular and general sensitive renewable energy law. So that gave birth to SENG and we got up to this project, advocacy project, to ensure that the popular issues and general

issues are addressing the law but we also had a mandate to ensure that the network is formalized in this so called project—next slide please.

So, when in the process of formalizing the network we realized that clean energy was a little bit restrictive in the sense that we are looking more at the renewables. So, we changed the name to The Sustainable Energy Networks so that it encompasses not just renewable but also energy efficiency as well and then we had an inaugural meeting April 2012. A committee was set up out of the meeting to put in place a governance structure including preparing a constitution. And then in the Q3, quarter three of 2012, we started collaborating with the Access Practitioners' Network, which culminated ultimately in the launching of the SENG in May of 2013 at the Fair's Country affiliates of the Energy Access Practitioners Network. Next slide.

So what we are envisioning as a network is Ghana, we'll envision a green Ghana within which the vast majority of consumers will be using sustainable energy. At the moment, it's still less than - I would say less than 2%. And the target, the national target is to hit 10% by 2030. So we are hoping that that target to be much bigger than what we have announced. So next slide please.

And our goal is to create - we want to create a network, a network that is very influential and to maintain an influential network of sustainable energy practitioners, service providers, researchers to - and we are committed to facilitating the accelerated deployment and utilization of sustainable energy systems to underpin poverty reduction and economic development in Ghana. Next slide.

And our objectives are - there are quite a number of objectives that we're seeking to achieve. We want to champion and advocate the formulation of policies and regulatory measures that will help tackle some of the barriers Kwasi touched on and ensure that the use of renewable energy and energy efficiency technologies are brought into the mainstream. One who promotes practical and affordable and effective best practices and strategies for adopting RE. Next slide please.

Sorry, slides are taking a bit of time too.

To provide an information to the citizenry to foster information on this area and to help promote capacity building and research. Essentially, if you remember the presentation Kwasi made, we're trying to see how we can help tackle all the barriers that are confronting the widespread dissemination and adoption of renewable energy technology. Next slide please.

So please go to the next slide.

Again, all of the other - the presentations will be available so let's skip the objectives and go to the next slide.

Ishmael

Okay, we're at current status of SENG. There you go.

Ishmael

Yes, so and finally we managed to [indiscernible 0:53:43] the backwards and forwards. We managed to register SENG in May 2014 and we have a membership of 120. If you are paying attention, you may have realized that it's slightly lower than what Aneri had shown earlier on. But it's because we are trying to regularized things and we're actually inviting all of the previous members to reregister. So that the number you see here, those who have reregistered once we formalized the network but the earlier number was the number of people who have been with us right from the beginning until this stage.

We have a Secretariat that has been hosted by KITE Mining Institution and we have their websites, <http://senghana.com>. You could go there to see some of the changes. Still a very new and a baby and a website that we're still trying to populate. And we would like to acknowledge a role here that the UN Foundation played because at a point within which we became a network and been able to get the net and registered and all of that. We received some tremendous support that actually helped us to get to where we are at the moment. Next slide.

So going forward, now that we are registered and we have the legal authority to work and operate as a network, what are some of the activities that we want to do, to see in the midst of the challenges that we have?

We intend making ourselves visible by getting ourselves involved in a policy discuss, policy debates going on. We want to be able to provide and position as a network on some of the policy decisions. We want to support a nationwide campaign to promote energy efficiency and conservation because we are in the middle of an energy crisis. Then more importantly, we need to raise the right amount of funds to drive our activity so we embark in a vigorous fund-raising activity this year.

Meanwhile, members are involved in various endeavors. We had about Kwasi working as a member of the network and KITE is the organization that I had, we are also very much involved. There are so many other private sector entities in the same network who are also actively involved in the promoting energy access of great areas. So next slide please.

So this slide is just talking about KITE, who we are. I think I will be doing a disservice to my organization, the association [ph] of our KITE so we've been at the forefront of promoting any access since 1996. And we've done a lot of research advocacy and we've developed a number of pilot projects that we want to - as we go into the future, we want to get into actual service provision, providing clean energy solutions in upgrade areas and also providing technological solutions in these areas.

So we are in the process of creating a social enterprise that would do that while they're current organization focuses on the research and advocacy where grant would do it. And for you out there who are looking for partners in country, I think you can find a good ally in KITE. You're welcome to partner us in those social endeavors. So I'm ending my presentation here.

Male Speaker 2 Great. Thank you very much, Ismael. We are going to go ahead now and try Wisdom's audio to see if we can get his presentation from him.

Wisdom Hello?

Male Speaker 2 Hi, Wisdom. Yes, we can hear you.

Wisdom Yes, sir. I hear you. Okay. Just right to it. Hello? I have a problem.

Male Speaker 3 You analyze it.

Male Speaker 2 Wisdom if it's up...

Wisdom Okay.

Male Speaker 2 Great.

Wisdom Hello? Hello?

Male Speaker 2 Yes, we can hear you. Go ahead, Wisdom.

Wisdom Okay. Yeah, let me use this opportunity to thank you very much for the excellent setup I will be speaking briefly on the Universal Access to Modern Energy Services. Their issues, progress and next steps of the electrification in Ghana.

And if you take a look at this slide. I mean, look at the Per Capita Energy Consumption and CO2 Emission in Selected Countries. You will notice that Ghana and many more of the African countries have very low per capita energy consumption compared to industrialized and most developed countries, which tells the need for us to increase our access to modern energy services.

The next slide also looks at the significant contribution of wood fuels, which our term combustible renewables as the chart indicates. It's also very high and it has zero consequence on the environment and #[1:00:58].

With this in the background, Ghana's energy policy in line with SE4ALL, looks at increasing access to modern energy services and achieving universal access to electricity for productive use by 2016. We also look at diversifying the energy mix so that we deploy solely relying on our large hydro and the natural gas, which has presented challenges. We want to

explore the environmentally friendly indigenous sources including renewables.

And for renewables, renewables energy, the policy is to increase contribution by 10% for grid, mini grid and off-grid applications and we expect to achieve that by year 2020.

We also have the policy to reduce the share of combustible renewables or the share of wood fuels namely firewood and charcoal in the energy mix to levels below 50% and the SE4ALL emphasize this.

Another policy objective in line with SE4ALL is to ensure and promote the use of efficient end-use energy appliances for electricity, wood fuels and petroleum products.

And being all these, our focus is to stimulate or encourage the private sector to participate too.

Taking a look at our energy access, which is the main focus of my presentation, you will observe that we have had tremendous progress as far back as 1990 when access was just around 20-25%. Today, as we talk or as of December 2013, access rate has increased to hundreds to high level of 76% with well over 6,800 communities currently connected. You will also observe that the increased electrification rate is more pronounced in the south than in the north and efforts have been made to ensure that the north impact also gets its fair of electricity access.

I have said this, let me also say that about two thirds of the country living in the north consumes just 10% of the electricity that is generated and this calls for the need to promote productive use in adept stimulating agriculture development and Small and Medium Enterprise in the northern sector and this is why it is one of the main focal points of our SE4ALL initiative.

In terms of our progress for renewable energy, I must say, we have made significant progress since we enacted the renewable energy law and this law provides the fiscal incentives and regulatory framework to encourage private sector investment. We have provisions such as the feed-in-tariff, purchase obligation, net metering, off-grid electrification, promotion of clean cook stoves and establishment of renewable energy fund will be, that will be the key role to support most of the social-related protests particularly for protests for off-grid electrification in focus to it among others and in being this, that it's also a provision to establish a renewable energy authority.

For now, we have put in place a number of institutional # [1:06:32] the energy commission that rules are clearly defined, the rule of the PURC, the EPA, the Ghana Revenue Authority, the National Petroleum Authority, the # [1:06:48] are putting in place the right symmetry instruments to

ensure the smooth implementation of the renewable energy law. We have a few documentations which are currently ready, most of them are with the energy commission. In terms of ongoing activities for the wind energy, we have been able to and take assessment. Assessment is actually ongoing at 13 potential sites where measurements have been taken for 60 and 80m height and also taken are Biomass Resource Assessment for power generation, feasibility studies, for now, for three hydropower sites. And we believe all these act to stimulate and attract the private sector to come and invest in it. We have also presented the Cabinet enough to get approval, to seek parliamentary approval for setting up a Renewable Energy Fund which will we hope will be used to support these projects to make them sustainable. I'm sure you're all aware of the 2.5MW solar installation in the northern part of the country which is operational #[1:08:25].

We have the Feed-in-Tariff gazettes and I must say that, now, we have well over 37 companies that have been granted Provisional Licenses by the Energy Commission. Solar we only, we have more than 2,000MW installed, I mean, applications and the figures go down as you can see on the screen. I will emphasize that the Provincial Licenses does not endorse the capacities requested by... I mean, the Energy Commission and the regulation agencies will have to do due diligence to establish the appropriate capacity that is required for development. But, for now, in a nutshell, I would say that, in terms of renewable energy, we have around 57% percent contribution from large hydros and one would look at the modern renewable energy within the large items, a lot of the contribution currently stands at 0.21%.

And, the progressions we have for, by 2020, targets looking at hydro potentials up to about 300MW, utility waste also close to 300MW, utility biomass waste to energy related, we're looking at almost 100MW capacity. Again, and another 100MW capacity for solar and distributed generations looking at rooftops and solar systems, wind systems for self-consumption to reduce electricity consumption we are getting close to 50MW.

Having said this, let me add that despite the efforts of the ministry to increase access to grid extension that has still a number of communities that are unlikely to be connected to the national grid in view of the geographic location. And, in view of the fact that we have a target date of 2016 to achieve universal access which is, very proves of our policy to ensure we provide Mini Grid and off-grid solutions to such communities until such a time that grid electricity is extended.

We have made a lot of significant progress as far as the off-grid solar PV electrification is concerned. We use the private sector as the main driver. Wilkins Engineering has been one of the key private companies installing solar systems and different pricing models who work with a number of adept private term companies involved in this business. And, most of our

targets, looks at solar lanterns, solar home systems, battery charging systems in which we provide subsidies. We also look at solar vaccine refrigeration for health facilities, solar systems for public institutions such as security outpost, schools and adept agro facilities in communities where there is no grid. We tried to support this institution to have access to grid energy. There's a loft map which shows the extent of how the systems have been distributed. And the map on the right shows the locations that are particularly on the islands. The green flags are the schools. The white flags are the hospitals. The flags are the streetlights that have been installed there. We have ships, compounds, and battery-charging facilities, all installed in most public places.

So, in brief, I will say that, that despite, a lot more to be done and we have this priority in these targets which we're thankful to achieve by the year 2020. We have targets for mini grid electrification, targets for solar home systems, targets for deploying solar lanterns. Let me add that we have successfully deployed 20,000 solar streetlights through a subsidies bill and that has significantly reduced the dependence on currency and most of the #[1:14:05.6]. We hope to achieve 2 million lanterns by the year 2020. We targets for upgrade of public facilities including the schools, clinics and security outposts. We also have targets for putting up panels with solar water pumps, Biogas, solar crop dyers, etc. to support Small and Medium Enterprises particularly in the agricultural sector.

Having said this, let me add that despite the positive impact that has been achieved, honing the introduction of these systems, that there's still a number of challenges. And most of the challenge have to do with the sustainability and the affordability of the Renewable Energy Technologies. We see #[1:15:17.4] highlighted on some of these. For instance, it is... Even though the renewable energy resource itself sustainable, the technologies to ensure continuous use of these technologies tend to be unsustainable. Most of them are simply abandoned because their target do not have their necessary resource, belong to the lower resource group They cannot afford to pay for the actual cost of replacement. In some cases too, for now, most of them products have to imported and that also has challenges when it comes to repair of the systems. And then, they also add that, when they try to import these products, it tends to, we try to encourage tax exemptions in some of these components. But, it goes final to discourage local entrepreneurs, from grid into local assembly and this is one of the mega challenges our #[1:16:32.9] company faces.

So, in conclusion, let me say that Ghana is committed to the achievement of Universal Access to electricity by 2016 far ahead of the SE4ALL target. Our focus, for the electrification, will be on the productive use of the electricity to create wealth and improve the standard of living of, particularly, the whole people . So that we can have the #[1:17:17.2]. All about communities where they are so far from the grid and a law likely to be reached who will be giving them the off-grid renewable energy

solutions as pre-electrification options until such a time until 2030, when we are able to extend grid to most of the communities where it is technically feasible to send a grid. Add that the operationalization of the Renewable Energy Fund and the establishment of a Renewable Energy authority, we believe is one key solution to manage the off-grid sector in order to guarantee its sustainability and to ensure that sustainable resources are used in a sustainable manner for #[1:18:20.5] period.

So, I will love to end my presentation by appealing to the UN Foundation and the other development partners to support particularly most of our social- regulated projects which are not economically viable for them but set up to really drive it and there is no support and we'll be very glad to have most of the support, to make up that difficult challenge of disseminating renewable energy to the people in Ghana.

Having said this, I would like to say a very thank you and look forward for questions.

Male Speaker 2

Very thank you, welcome. Since the audio seems to be somewhat cracked, we will go ahead and try to finish up Paula's webinar now. So just, please give us a moment to pull up Paula's presentation.

Paula

Hello? This is Paula and sorry for the #[1:20:08.2]. So, looking at #[1:20:11.8] would have been presented by my senior colleague go to there SE4ALL Action Plan for Ghana. #[1:20:22.8] three key objectives. We're looking at promoting productive use of #[1:20:28.9] highlighted by the #[1:20:31.3]. And also the promoting access to cleaner cooking options by including sale of or promoting sustainable raw production and the use of #[1:20:44.2]. Second, and another option is to promote increased access to LPG for cooking and also promote institutional biogas for cooking in public institutions such as hospitals and resorts. The third objective for Ghana is to provide access to electricity for remote communities using off-grid systems that is highlighted by #[1:21:08.9].

And, the productive uses of electricity, it occupies #[1:21:14.5], necessity to promote on the increased irrigation activity to promote irrigation through the help, technology's help solar, wind and mini-hydro. Also we looking at in the area of agro-processing. The #[1:21:49.3] in the fisheries #[1:21:51.6] to establish landing sites that will be used specifically. And also, provide #[1:22:01.5] cold storage facilities for the fisheries resources. And promote other kinds of ventures which is #[1:22:09.5] Ghana. The fourth and the last is to use energy is to create medium scale enterprises for salt production. #[1:22:21.3] process to clear the options in the area of sustainable charcoal production and in #[1:22:31.1].

The technique is for... Regulation #[1:22:39.2] on the policy and legislation for promotion and development of the clean cook stove sector. #[1:22:47.1]. We are also looking at improving the technical and financial

capacity of stove manufacturers to increase production of cooking stove and also the quality. And all that cuts down all the emissions and also make them safe to use. We are also looking at establishing wood fuel plantations for charcoal production that is for tackling the issue of often fuels for cooking.

A key thing that we will want to do an area of a cooking is to raise them public awareness of cookbooks to, which is to, might move the Ghanaian market to read some awareness campaigns to boost them. And also, pilot advanced biomass cookstoves in public institutions. We have some development that is working. They're also looking at promoting by engaging end users in the design of for that to make it suitable for whatever use uses for. Those feedback and choose for the market. Some of them are not suitable for certain dishes, that is dishes. The idea is engage them end users in the design of these products. The R&D also building the capacity of the locals, to manufacturers to leverage carbon financing to be able to increase their capacity.

In the area of LPG, the local issues of supply, regulation, investing in LPG infrastructure, and also improving consumer access. The tight option in the cooking fuels is to promote the use of institutional biogas system for cooking in selected schools, hospitals and prisons. Termination that this has done in the past as challenges and to be able to have this and promotion of biogas system for cooking. Objective three is to tackle the issue of like who didn't. Energy for education and promote them for health as residential, island communities and also, promote the use of non-helium renewable energy for island communities.

As already mentioned, targets that have been set by the government of Ghana. That is 90% of Universal Access by convention, by 2016, to increase the contribution of renewable energy by 10% in the electricity generation mix of Ghana by 2020, to have 50% of the Ghanaian population using LPG as by 2020, and also to have 50% of the population using some form of improved stove for cooking. is to have 200 public institutions using biogas as the main cooking fuel.

is 76% but we are close to 80%. In the area of renewable energy use we have about 0.22% that is looking at off-grid at 0.8 MW and Grid connected solar at 3MW and biomass at 2MW. Off-grid systems have about 41,000. In the area of biogas, have just secured some funds from the CSF using the before the promotion of biogas systems in Ghana. So, these biogas in Ghana. In the area of improved cookstoves, we have estimated about 800,000 which active living used by households as cooking technological, cooking. For LPG, as of

2010, almost 18% #[:28:49.9]. In the past few years, especially with the introduction of LPG program that is #[1:28:57.1]. With the support of the #[1:29:05.1], storage, and transport company of Ghana and the Energy Commission. What I envisioned #[1:29:16.0] and that is the name and it is #[1:29:21.8]. Thank you very much.

Male Speaker 2

Thank you Paula. Glad we were able to pick the audio and pick your presentation and I sent out a message by the question pane to all the attendees but unfortunately due to technical difficulties today which, again, I apologize for, we will not be able to get to any of the questions. But, I will email those out to the panelists so that in time they will be able to address those and respond directly through email.

And now, very quickly, I'd just like to ask attendees to participate in the quick survey we have. It's just three questions, to help us improve. First question is, the webinar content. Provide new useful information and insight. And, the next question, were the webinar presenters effective? And the final question, overall, the webinar met my expectation.

Alright, thank you very much for answering our survey and again, in behalf of the Solutions Center, I'd just like to thank the panelists again, and to the attendees for participating in today's webinar and we will be making all of the presentations available at the first website displayed, the first link displayed on that slide which is cleanenergysolutions.org/training. In addition, we are posting webinars to the Clean Energy Solutions Center YouTube. And we will be posting an audio recording as well to the Solutions Center Training page. So, please feel free there, to go out there and look at all the different Clean Energy Solutions Resources available. And also, share those with your colleague and those in your network or organization. So, that, I'd like to hope everyone had a great day and we hope you feel at Future Clean Energy Solutions Center that. And this concludes our webinar.