

The Role of Energy Efficiency in Promoting Energy Access

—Transcript of a webinar offered by the Clean Energy Solutions Center on 4 December 2013—
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Webinar Panelists

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| Amit Bando | Executive Director, IPEEC |
| Mark Hopkins | Director, International Energy Efficiency, UN Foundation |
| Sergio Segura | Mexico’s Commission for Efficient Energy Use (CONUEE) |

This Transcript

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Moderator

I’d like to welcome you to today’s webinar, which is hosted by the Clean Energy Solutions Center in collaboration with IPEEC, the International Partnership for Energy Efficiency Cooperation. We’re really fortunate today to have a great panel of speakers. We have Amit Bando from IPEEC, Sergio Segura, and we also have Mark Hopkins from the UN Foundation joining us. This great group of panelists, today they’re gonna discuss improving energy efficiency... I mean, excuse me, improving energy access through energy efficiency.

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Before we begin, I just need to mention one very important note. The Clean Energy Solutions Center does not endorse or recommend specific products or services—any specific products or services. Information that’s provided in today’s webinar is featured in the Solutions Center resource library as one of many best practices resources that are reviewed and selected by our technical experts.

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Before we begin, I’ll just quickly go over some housekeeping items. For audio, you have two options. You may either listen through your computer or you have the option to listen through your telephone and if you chose to listen through your computer, please select the “mic and speakers” option that’s located in the audio pane on the right side of the screen. And, if you chose to listen through your telephone, you’ll see that your tele—you click on the “telephone” option, you’ll see the telephone number and audio PIN will be displayed, and you can use those numbers to dial in. And, panelists, we just—a real quick gentle reminder to ask you to please mute your audio devices while you’re not presenting and this will prevent any potential background noises and things of that nature. For our audience, if you have any technical difficulties with the webinar, you may contact

the... go to webinar's help desk at 888-259-3826 and they will be happy to assist you.

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If you would like to ask a question, we ask that you use the questions pane again located on the right hand side of your screen and then you can use that to type in your question. And also if you're having any difficulty viewing the presentation through the webinar portal, we have provided PDF copies of the presentations at cleanenergysolutions.org/training, you can pull up the presentation there, and follow along as our speakers present. And we'd also like to let you know that an audio recording and copies of presentations are going to be posted to the Solutions Center training page and they will be available to you with—in just a few days.

Quickly going over the agenda, we have a really great agenda prepared today, and again it focuses on how energy efficiency can address barriers to energy access, which is one of the world's major challenges. Before our speakers begin, their presentations I'm gonna provide a short informative overview of the Clean Energy Solutions Center initiative. And following that, Amit Bando will give us a brief overview on IPEEC and the really very important work they do within that organization. Then after the presentations we're gonna have a question and answer session and a brief survey for our audience.

Okay. This slide, we're gonna provide a little bit of background in terms of how the Solutions Center came to be. The Solutions Center is an initiative of the Clean Energy Ministerial and it's supported through a partnership with UN-Energy. It was launched in April of 2011 and the initiative is primarily led by the governments of Australia and the United States as well as other CEM country partners.

Outcomes of this very unique partnership include supportive developing countries through enhancement of resources and policies that are related to energy access. We have no-cost expert policy assistance and we offer peer-to-peer learning and training tools such as this webinar that you're attending today.

We have four primary goals at the Solutions Center. First, we serve as a clearinghouse of clean energy policy resources. We also serve to share policy best practices, data, and analysis tools that are specific to Clean Energy policies and programs. The Solutions Center delivers dynamic services and enables expert assistance, learning, and peer to peer sharing of experiences. And the Center also fosters dialogue on emerging policy issues and innovations that are occurring across the globe.

Our mark key feature that we offer at the Solutions Center is our Ask an Expert Service and this is where we provide expert policy assistance to governments and policy makers around the world interested in

implementing or developing a Clean Energy policy. It's a very valuable service and we've established a broad team of 30 experts from around the globe who are available to provide remote policy advice and analysis again to all countries and the services provided at no cost. And we're very proud of our partnership and collaborations with IPEEC. IPEEC is one of our organizations that participate in this Ask an Expert Service. On questions of energy efficiency, we have a team at IPEEC who are available to help with answering policy questions. And again, this is a very important partnership for us and we're excited to be working with them on our mutual interest.

So, just to give you an example of our policy experts including IPEEC since we also have a focus today on energy access, Ellen Morris is the president and founder of Sustainable Energy Solutions and also Embark energy, serves as our expert on access. So, again, if you have any questions or needs for policy assistance on any areas within the Clean Energy sector, we encourage you to use this service. And again, this is provided free of charge to the requestor and you can submit your request through the Ask an Expert feature that's located on the Clean Energy Solutions Center website.

A few ways if you're interested in becoming involved with the Solutions Center Again, you can request expert assistance or you can ask for tailored technical resources made available for your country or region. Participate on these types of webinars. We encourage you to offer advice and suggest resources that we can share through our library and you're welcome to register for our newsletter.

So, just a very quick introduction of our panelists so we can move on with their presentations, first, we have Amit Bando who [clears throat] excuse me—is our first speaker today and he is the executive director of IPEEC. And right after I finished speaking, Amit is going to be providing an overview of IPEEC and he will also be moderating the question and answer session today.

We also will have Sergio Segura of Mexico's Commission for Efficient Energy Use also known as CONUEE. Following Amit, Mark Hopkins, director of international energy efficiency with the UN Foundation will be speaking. With those introductions, I'd like to welcome Amit to the webinar. Amit, over to you... Amit, are you... are you there?

Amit Bando

Greetings everyone. As suggested, I just wanted to quickly give you an overview of what we do at IPEEC and the fact that we are not only collaborating with the Clean Energy Solutions Center in energy efficiency issues as was mentioned but also with other organizations to link relevant issues related to energy efficiency, energy access, and of course the related connections to climate change issues, energy security, etc.

We are a high-level forum that provides that leadership on energy efficiency and our goal is to identify and facilitate relevant policies and programs so that we can actually promote rapid deployment of energy efficient technology. So, this is done through identifying as well as coordinating activity such that there is faster uptake of policies, programs, regulations, etc. So, in this context, we work closely with the private sector providing a bridge between what the private sector needs and needs to do as the prime owners of technology options, financing options, but at the same time, the private sectors cannot operate in a vacuum on its own. It needs the support of government action, government programs, solidify the action etc. And our role at IPEEC is to ensure that these concerns on both sides are addressed in a coordinated cooperative manner.

As suggested, we report to the highest levels including the Clean Energy Ministerial and other summit such as G20. We work closely with UN system particularly the UN SE For All or UN Sustainable Energy For All which I'm sure Mark and Sergio will mention but this, as many of you know, is a flagship operation that has been launched recently and looking forward, ensuring that the pillars of energy access or rather energy access is addressed through three prime pillars—improvement in energy efficiency, increase in the use of renewables, and looking at these within the context of energy access through financing mechanisms to policies and programs that coordinate with national action with international cooperation. So, this is where our role as partnering with the industry is an important one.

Next slide will show us our membership on 16 countries. You have the list up there. I won't go through it. As you see, we're trying here to essentially capture the thinking of the major economies that together constitute about 80% of world GDP and energy use. And, the thought here is that these countries in of themselves are doing things that are useful, that are helping rapid deployment of energy efficiency options, programs, and technologies but together, there could be much more meaningful action. We're relatively recent in terms of being established and it's formally since 2005. Our secretariat is based in Paris from where I'm speaking currently.

With that I think we are ready to... Is Mark gonna go first? I believe Mark is gonna go first with his presentation followed by Sergio and we're hoping that the presentations will then generate some questions which I will then try to use as a way to moderate the discussion. I encourage you all to send your questions through and rather than try to answer each question individually I think what I will try to do is to collect the questions that are of a similar nature and frame them as a unified question for discussion and for the panelists to jump in. With that, onto Mark.

Mark Hopkins

Thank you Amit, I appreciate your introduction. So, I think I'd just start out in... I would start out and say that I work here in the energy and climate team at UN Foundation. The UN Foundation is an NGO that has a

relationship with the UN, we work to help the UN from the outside, and our mission is to try to help the UN deal with chronic global problems, and of course climate change and energy access are two major global problems that need to be addressed. For the most part, we in many ways work, I would say kind of behind the scenes, to support various efforts that are going on. And specifically, much of our team here is focused on trying to make sustainable energy for all and its three objectives to ensure that they're all accomplished.

And so as mentioned, there are two objectives of sustainable energy for all. Access objective and the energy efficiency objective have a relationship as, just say renewables, but we'll speak today about energy efficiency. I do always like to state though that under Sustainable Energy for All, the energy efficiency objective is a global objective and that means that all UN member states need to address this objective. It key... The access objective is I would say primarily an issue in 60 or 70 countries around the world with relatively low rates of energy access or rates lower than ideal certainly. And, efficiency has a role to play there but, we could be as successful as absolutely possible in all 60 countries with energy efficiency and we would not reach the objective, the overall global objective.

So it is, in some cases various policy makers have viewed the Sustainable Energy For All effort as "Oh, that's for energy access, that's for just the developing world, that's just for those countries that have limited access," but the reality is this is a secretary general's initiative to emphasize need for all UN member states to work together to try to accomplish these goals. So, it's the least developed countries, it's developing countries, it's the emerging countries, it's countries coming out of transition, it's OECD countries, and it's all UN member states so I wanna emphasize that. But, energy efficiency, in my thinking, does have a role to play in enabling greater energy access. If we go to the next slide.

So, as we've been thinking about this issue and working with others on what ought to be done over the next 17 or so years to 2030 and we were to accomplish these goals. We've been thinking about how energy efficiency can help deliver access and there are, at least in our thinking at this point, three general... general ways.

As this slide illustrates first of all, you can use energy efficiency in a sense to extend the grid and by that I mean whether it's improving the energy efficiency of production systems or deploying energy efficiency in end-use applications which is of course a whole range of options there in terms of buildings and industry, and that especially are served by the electric industry. There is an ability to make the once existing system... when we think of end-use and generation transmission distribution all together, more efficient using better... more efficient technologies and energy management practices and that would—could free up energy that could be

used to... and extend the grid and provide power to those without with the existing facilities that one has.

So, this is one approach that countries can consider and it is very much the lowest cost option that country policy makers consider when they're trying to provide greater access. Second is the whole idea of improving energy services. Here, we were talking about especially often in countries in the slum areas where you have poor service, maybe power where you have some access, maybe it's tapped in illegally to electric system, you maybe have four hours of service a day, there was often nonpayment, you have very dangerous situations with wiring, etc. Energy efficiency programs to modernize that distribution and end-use systems can provide a whole range of benefits hopefully to increase the amount of energy available overtime to during any time period certainly improve the reliability and safety.

So, efforts in this case... energy efficiency could be used to provide more access to those without but also extend the access, the amount of access people have where in situations [Indiscernible][0:21:22]. Lastly, the whole rural energy efficiency can play in enabling remote applications of power and here, we're thinking about village in rural... primarily rural applications, villages where you're installing... there's installation of renewable systems, mini grids, etc. and so it is vital in terms of the performance of these systems but also... in reducing the cost that we ensure that those applications have in the end-use technologies the absolute most efficient tech—appliances or technologies to minimize the demand on renewable systems as much as possible.

I often say that when you really look at the price drop in renewables that have occurred overtime, there's an... the whole element of that in terms of the renewable technology itself say, photovoltaic [Indiscernible][0:22:38] or wind systems and become less expensive overtime but really when you think about it, the energy efficiency improvements in end-use is probably the greatest cost-saving driver in reducing cost of renewable energy systems. You know, if just as a comparison if you had a photovoltaic system and it's hooked up to a 100-watt incandescent bulb, if you instead hook up to a LED bulb with compact, we're talking about a shrinkage in the system's eyes by a quarter of what it would've been in probably a quarter of the actual cost of the system because you lowered the demand on the... in the end-use.

So, that's... Efficiency has a role to play in that area too in remote applications and in the whole systems.

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So, I wanted to highlight a case study that has been done that I've been particularly impressed with that directly links improvements, in this case in slums in Brazil, to actual outcomes in terms of improving energy

access. Here, this effort was put together by the International Copper Association and of course the ICA has overtime, maybe the last 20 years, been a big supporter of a range of efforts around the world to improve energy efficiency and support those kinds of activities, also USAID, AES utility in Sao Paulo, and a number of product manufacturers, and of course the local community organizations who were also involved in this.

In this case, in this disadvantaged community, you had a situation and it's sort of illustrated by the photograph here, which is what we'd see in many poor areas in cities around the world where you know, you had overloaded transformers. They were old or old inefficient. You had of course many illegal hookups, theft of power, nonpayment, so you had a lack of street lighting and of course was dangerous. Often at night no lighting and do you add the end-use and highly inefficient lighting, incandescent lighting and appliances to the degree people in these situations have appliances often maybe, refrigerator or something, you know, very... maybe it was second hand sent from Europe or the US, old 1980 version, highly energy inefficient.

So, if we can go to the next slide.

This effort was, I think, a real model for what can be done. They've... One of the keys was a strong involvement of the community, community groups, community organizations to... if they're buying an involvement in this in the sort of awareness campaign about what was gonna be done, why it was important, what the benefits would be to people. There was a whole effort in this community to go right in and install more efficient transformers, re-cable, install public lighting, get rid of these... and sure I think one of the biggest things is try to do the wiring correctly so it's much less danger. They got... went into homes and of course rewiring, installed meters, CFL, there were solar hot water systems put in a number of places, and replaced refrigerators with high-efficiency refrigerators—all in an effort to try to take what was pretty much in disaster in terms of safety and inefficiency, and in this community provide decent basic efficient services.

And so, you know, they removed these connections and rewired. One of the results was they now have a 90% rate of customer payment, from a very much lower rate from before. On average, households were saving 200-kilowatt hours and in some cases these can represent 50% reduction in use and consequently potential cost if you're actually paying. Here, I think is... this pilot has been scaled up in a number of places that have utility in others and there's now... this approach is at least half a million households and businesses. So, this otherwise is an example I think of how energy efficiency and combined with other... with both safety end of things, kind of improved in not only the household, households but also the community at large.

One of the things I didn't hear was lighting in public parks, a number of parks so people can actually begin to use them and in the evening... so that sort of a community improvement message. Could you go to the next slide?

So, however, as we worked on this with Sustainable Energy for All, we have... there are a number of problems and barriers to wider use of energy efficiency for access and... so I wanted to highlight these three. I'm not saying these are the only three but are ones that have... we have seen here.

So first of all, when you're thinking of "Oh it uses energy efficiency to provide more access" this conceptually makes a great deal of sense and one can, in the literature, find many examples of energy efficiency projects done by utilities, a whole range of organizations, households, businesses that have documented energy or cost savings that often [Indiscernible][0:30:49] but as you search around, at least this has been our experience when we spent... somebody spent about a week on this, there are virtually no documented cases where you have an energy efficiency project whether production or NGOs where then, it directly links that to that freed energy being used for access.

Now, there are many projects that probably that result did provide additional power that may have been used to provide greater access but, you... when you really look at evaluations, studies, case studies etc. of projects around the world, you can find very very few, virtually, that directly link these to these two issues. So, in many ways, this idea is I think correct but it is sort of conceptual at this point because we don't... do not or have not in the past, made these linkages and we have not really proved and can state in any kind of quantifiable way that direct relationship. We did this EE project here. That released... freed up this much power, this many households and this was the result in terms of expanded access.

So, our recommendation here and I've directed this for a meet in IPEEC's consideration because as I said, I think it's very important in these issues that this isn't just an effort with the developing world but it's the...also the OECD countries. IPEEC members I think could make solid contributions here by, in this case, developing evaluative methods, undertake field projects, analyze results, and disseminate them, which link actual energy efficiency improvements freeing up power, and then to provide greater access. I think we need this kind of focus because we lack that kind of proven analysis.

Second is lack of technology options. So, obviously there is in many ways, many many many energy efficiency... energy efficient and used technologies that have been developed and deployed and they're to be deployed more and more everyday in buildings and industry applications, and probably everybody on this webinar can when I enlist many of us; however, when you come to thinking about a rural village who have a

photovoltaic system and you want to have what I might call super low—super high efficiency technologies to integrate with the system, you're pretty limited in the lighting, of course. In fact, in the literature, you'll see examples of all of the compacts where we installed LADs. Those kinds of examples, but beyond that, there are very few what I would call commercially available ultra end-user options with just a quick search around the internet looking for super high-efficiency refrigerator one can find those often perhaps used [Laughs] for people off in the mountains that are out somewhere and they have photovoltaic systems, they have this refrigerator and it's designed to minimally absolutely minimize energy consumption. The reality at this place is expensive as a regular refrigerator. So—and then, you go beyond that. We are working now and the regional government is supporting—yeah, supporting us to organize a rural appli—a renewable energy efficiency application for rural women's health clinics in Africa and so, one of the issues we're dealing with is for the different kinds of technologies you have in a health clinic, just the basic ones. There are only ones really designed for what I'd say kind of western application where you have—you're wired into a grid and the power and demand that this might take or—it's not a big overriding concern as opposed to when you have very limited amounts of power coming from photovoltaic wind system or some other kind of renewables. So, there is this lack of even any much information on any health clinic end-use technologies that will probably ultra low with systems. So, I think IP [Indiscernible][0:37:21] member states from the developing world need to thinking about organizing public or private partnerships to develop these new applications that are specifically designed to integrate into stand along renewable energy systems. Obviously, it seems to me that these national labs have a long history in developing new sorts of technologies. There's great interest in a number of similar types of organization in other countries, in India or elsewhere, that this would be potentially—I think the [Indiscernible][0:38:09] University project to try to bring together what we call GA countries and then, BRIC and other countries into a—and then, along with number, I think there is number of private sector companies in these areas that would also be—have an interest in partnering along the development of appropriate end-use technologies for world renewable application.

Lastly, just with the lack of policy focus, I sit—I go to a lot of meetings around the world and certain meetings where policy-makers talk about, you know, working on expanding access and almost all the discussion is about either a renewable energy project, some wind system, concentrating, creating solar goes on bioenergy or whatever and that is often the policy focus. Build this system, hook it up the grid, hook it up to the mini-grid, hook it up to a house, or whatever it is. That's the focus. And the role of energy efficiency is, I would say, hardly ever incorporated into those kinds of decisions. It is—and what I mean by that is that, it is we—policy-makers often separate the production from the end use and they focus on the production aspect and the end use is not an integrated component of

this whole effort. I'm not saying everywhere and everybody does that, but for the most part, end-use efficiency is not incorporated in—especially these more and more renewable projects and it doesn't make—to me, it doesn't make sense to spend what you often is – a good bit of money to put in place a renewable energy system when you haven't minimize the demand that the end-use applications would require. That has to go together and policy-makers, I think will be much more successful if they can incorporate both ends of this because almost always, the deduction and end use through higher efficiency is less costly than it will be to build a larger renewable system with power existing energy inefficient technologies on the end use sense.

So, our recommendation once again that IP—well, to all UN member countries is we really need a campaign and I say this in a small C way, but it's a, in many ways, a political campaign, but not in partnership in any way, but a campaign to reach policy-makers too and I have the word “Require” here. I don't think—perhaps require is a little strong, but to certainly put in place policies that will incorporate energy efficiency into access—decision making in access programs. I think it is often overlooked and has a lot of potential in reducing—improving—expanding access at a lower cost and with reliability. So, that is my presentation and I think that this is something that we are continuing to work on here and we're working on the overall sustainable energy as well as on energy efficiency, which as I said is applicable to all countries and then, we are also working in many ways on the special role energy efficiency can play in UN member states that have limited access and having need to provide freer energy access to those without and energy efficiency has a special role to play. This role is frankly not as on the developed world agenda in terms of the activities and programs internationally and that it's not really a part yet. It's modest. There are a couple of things here and there, but we need a much broader engagement between the developed countries and the developing countries on this energy efficiency role it plays in providing access. Thank you.

Amit Bando

Thank you Mark and I think the points you made particularly with respect to documentation and lack of specific technology options in the energy efficiency area followed by the fact that it needs to be refilled and increase focus on the policy support needed and hopefully, we will have some further time to discuss, but as Sergio goes through his presentation, I think he'll start to form some of these from his experience and community experience in Mexico. So, I see some questions already coming in. Hopefully, attendees will start sending questions along those lines, but Sergio, the floor is yours.

Sergio Segura

Thank you very much Amit. I would like first to thank for this opportunity to share what Mexico has been doing on promotion of energy access and energy efficiency.

First, I would like to jump in and start my presentation. Taking what Mark said in one of his final recommendations and it has to do with the fact that many energy efficiency projects, documents say energy savings and some co-benefits, but virtually none connect the energy efficiency to energy access. With that, I would like to say that although in Mexico, energy efficiency policies have been in place for more than thirty years, it was very recently that we started to analyze the relationship of the world energy efficiency in promoting energy access. So, with that end, I would like to jump to my presentation and very briefly present to you what I'm going to talk about today.

First, I'm going to provide a very brief overall context of energy access in Mexico and the priority that the Mexican government has put on these issues. Second, the role of energy efficiency in promoting energy access as a priority for Mexico's government. I will also speak very briefly on that and then, I will focus on the ongoing activities related to energy efficiency and energy access that the Mexican government is carrying out specifically what CONUEE, my commission—the commission where I work, are doing and I will present the final slide with my conclusions and my views on energy access and what can be done on—or what we recommend for other governments of member countries to look at from the Mexican perspective.

So, from that, the overall context in Mexico. Since the mid-twentieth century, Mexico has been characterized for having an urban population—an increasing urban population, which resulted from important migration from rural areas in search of better opportunities as well as employment and quality of life. Therefore, the demand for increasing municipal services or systems such as water pumping, public lighting, public transportation, air conditioning, infrastructure related to public spaces have concentrated the energy consumption mainly on electricity in other fields in large cities, which have generated that energy supply is not offering the same opportunities to the rural areas. With that—in this sense, nowadays, with this information from 2011, 2.3 percent of the population in Mexico has no access to electricity service, which represents three million people without access to energy. Of that, I would like to highlight that most of this population without access to electricity is located in forty thousand isolated communities, which are one of the most poor communities not only in Mexico, but in Latin America and the Caribbean and mostly are indigenous communities, which do not share the same cultural background as well as the same customs with Mexico.

So, with that, I would like to start to show one of my first conclusions. Cultural values are important in terms of considering energy access and energy efficiency policies. It cannot be—this kind of policies cannot be implemented in a unique way. So, well, also in terms of the access to other fields, the access to LPG and energy is concentrated in large urban areas. The residential sector represents twenty percent of total final energy consumption and is growing not only in urban areas, but also in rural

areas; whereas, probably, many of Latin American countries and from other countries in Asia, a large portion of energy consumption comes from [Indiscernible][0:50:55] with all the environmental health risks impacts that this has for local communities and of course safety issues.

Well, in this graph, I just wanted to place that most of the fuel consumption in the residential sector is located in the south. It has to do with also the distribution of economic benefits and the way the economic—the Mexican economy has been working over the past two decades. Most of the north of the country is the most urbanized part of Mexico where the GDP is growing, where end users are going, but in the south, the south west, most of the rural areas' agricultural activities are associated with lack of energy efficiency and access of energy policies. Also, in terms of population, as I mentioned before, those populations with less people and indigenous people are the ones who have the most lack of access to electricity.

Well, the role of energy efficiency in promoting access as a priority for Mexico. I would like to mention that this issue was—the discussion on energy access and energy efficiency and renewable energy started in Mexico not very long ago. Just twelve years ago, we hosted in Mexico an energy efficiency and access forum together with international development bank in which we had the opportunity to outline and start to define some the guidelines, some of the policy issues we have to consider in Mexican policy for the years to come and especially environmental and energy policy in relation or related to energy access. In this sense, the regulatory programmatic framework in Mexico, which deals with energy efficiency, is established in a number of policy instruments. First of all, the national development plan, which establishes the overall framework of all policies in Mexico and it establishes of course cross-country actions in several sectors. The second one—the second level of regulatory and programmatic framework is established by two specific laws. Well, we have two specific laws and we're only going to refer to two of them. One is the national sustainable energy law, which was enacted in 2008 and gives CONUEE, the National Commission for Energy Efficiency, with the responsibility to implement energy efficiency policy in Mexico and their general law on climate change and this special program, which establishes specific responsibilities related to medication, to adaptation to climate change for states and municipalities. With this, I'm starting to deliver one of the other conclusions that I have and I will make my point from this. It's that local governments and local authorities play a very important role in terms of the implementation of energy efficiency and energy access policies in Mexico. Some guidelines sent from the Mexican government have to do with sustainable housing provided with quality service and of course, access and this is something that has been recent and very important in terms of policy. Now, all public policy documents in Mexico especially the national energy strategy and the sectoral program for energy recognize that access to energy is a very important means to improve the

quality of life of the population and a very important mean to provide the necessary conditions to improve well-being and also, the Mexican government recognizes and that's just—the whole spectrum of the policies that are being carried out right now is that energy services bring conservable benefits not only in terms of environmental protection of saving energy, but improving the quality of life, energy security, and other things as we call it a social inclusion and what we could call benefits.

I would like to just highlight a specific program, which was developed since the first of these administrations and has to do with the development of priority areas. Priority areas are those with one hundred twenty-five municipalities with the highest poverty index in this program in which the national commission for energy efficiency and ministry of energy participate includes projects related to building, improving electricity networks as well as improving infrastructure and other opportunities for rural communities. In this sense, the renewable crosscutting guidelines for energy policy related to energy access and this program directed to priority areas, I would like to say that it's focused mainly on three main issues. One has to do the regulatory and institutional strengthening and by regulatory, I mean that it not only has to do with how the government and how the national utility prog—provides the electricity service, but how do we engage the private sector in trying to be part of this providing services—of energy service to those communities where the grid is not present. Of course, this is an issue I mentioned before. There has to be a very close linkage between federal state and especially and particularly municipal authorities because we have seen that in Mexico and in most countries, most of the policies related to energy access related to energy efficiency and most of the decisions have to do with what the municipal authority can do. They are in charge of making decisions regarding...

I will jump to the next slide. They have to with all these elements. First water infrastructure. The municipality in Mexico is in charge of water pumping, drainage, and treatment systems. It's also in charge of street lighting. They also have to be in charge of urban residues collection and the possibility of generating electricity from other sources different than the grid.

So, I will go very fast right now. As I mentioned, we are the technical body of the Mexican government in charge of enacting energy efficiency policies. Our objective mainly is to mitigate climate change and to strengthen economic competition. We are in charge of enacting energy efficiency standards and particularly developing the national sustainable energy program, which I will focus now. It has three components related to energy access and energy efficiency. The first one has to do with street lighting. We are operating right now a national project on energy efficiency for street lighting systems in which we provide technical assistance and we help the municipalities to obtain financing from the national development banks and other resources of financing in order to improve their lights—street lighting systems or to build their systems—

their street lighting systems. We are also working with the national water commission to improve the energy efficiency of the water operating organisms, which operate in Mexico especially related to pumping in agricultural systems and those areas in which water is not available right now.

Finally, in terms of what we do to substitute conventional fuels with solar energy. We are in charge also of establishing the solar water heaters programs in order to provide with those who don't have the money to finance a solar water heater. We provide incentives. We provide the conditions too for people that would be—for the poorest people to have a solar water heating system.

So, my conclusions. Very fast energy efficiency access plays a key role in the current and future energy policies. It has to be seen as a crosscutting issue, which involves not only energy or environment-related policy, but also involves a very important way the role that municipalities play, you know, and I will close with energy access and energy efficiency must consider equity and cultural circumstances particularly with the indigenous and regional populations. Sorry for being so fast, but I will gladly answer all of your questions. Amit, back to you. Thank you very much.

Amit Bando

Thank you Sergio and Mark with both good presentations and I think they touched on exactly some of the questions that I've been seeing here. In fact, one that has been thrown up by a couple who are listening are the issues of the fact that often in developing countries in particular, we have a situation where most of the energy needs for rural areas is for cooking and the energy could—the needs are just as important for the nontraditional nonelectric types of energy and so, how do we address the issue of energy access within that context recognizing that most of what we are talking about in terms of access is access to electricity, you know, whether off grid or from the grid. So, again, maybe, one of you could make an observation on that. I know Sergio that you sort of touched on that indirectly in your presentation particularly when you were talking about recognizing the culture values and so forth. Maybe, a quick comment on that and I know Mark has some examples of the work that the foundation is doing on cookstoves and so forth, but a quick comment from each of you maybe would be useful.

Sergio Segura

So...

Mark Hopkins

Sergio, you go ahead.

Sergio Segura

Okay. Thank you Mark. Well, yes. I mentioned that as a very important issue because the Mexican government and particularly the ministry of energy have seen that not all the problems are solved with providing electricity to local communities. Being that, most of the energy needs are covered by the use of wood for cooking. Most of the final energy used at

least in Mexico is for cooking. In that sense, we are undertaking with the help of a nonprofit organization who deals with bioenergy. We are undertaking a program to help communities to bear—make a better use of forestry residues as well as to implement whenever possible whenever the cultural values allow it to implement programs, to have more efficient stoves. As I believe in, some countries have been successful such as India or other countries in Asia, but in that sense, I would like to just make a quick remark that in Mexico probably, an efficient stove is not probably the best solution because it has to do with other issues such as security without having a conversation or a local gathering around the fire—around the stove. So, we have to consider cultural values. In that sense, we cannot take this—let’s say the fuel from them. We have to make it more efficient. I don’t know if I answered the question, but we addressing this issue being that in Mexico we have approximately fifty-two to sixty different cultural perspectives in our indigenous communities or rural areas.

Amit Bando

You’re great. I think you sort of pointed—gave some pointers. Mark, if you have some add-on to that.

Mark Hopkins

I—yes. I did not include that in my presentation and I should’ve. So, we have—here at the UN foundation, for the past couple of years, we had a major initiative a Clean Cookstoves Alliance, which is being supported by the US government and a number of other governments and organizations around the world. If you go to unfoundation.org, you can—or you can get a link to it or you can go directly to the websites that Global Alliance has, you know, www.cleancookstoves.org. It’s a very extensive program of committees working on a whole number of issues related to the adoption of cleaner cookstoves and Sergio mentioned that this is—it is an often difficult complex problem and it relates very much to cultural situations, but there is, of course, highly inefficient and poorly ventilated. Cookstoves have an enormous health impact around the world and there are some excellent technologies and solutions and so, the Clean Cookstoves Alliance is bringing together all the people around the world and organizations that are working on this and trying to rationalize the whole system and get to try to focus on it to deliver solutions to people that are compatible with their situation.

Amit Bando

Great and sort of a slightly focuses question and it then broadens out to another one was related to the Brazil project that you mentioned Mark...

Mark Hopkins

Mm-hmm.

Amit Bando

...and which is a question was would you have any indications on what kind of funding was provided and did the government provide all of the funding and more specifically I guess it broadens out to a couple of questions regarding that in terms of what were the level of private sector involvement, was that through cash, through any kind of in-kind support and then the broader question is do you—and this may go to both panelists, do you see the involvement of the private sector as playing a

pivotal role in any sense? So, we'll start with Mark and then maybe we'll go to Sergio.

Mark Hopkins Well I have to say that I don't have the details on the funding levels. Well I believe there was government cooperation. My understanding of this initiative is part of the International Copper Association Program around the world to help communities especially the today's community to realize the benefits in this case of copper but more specifically to show examples of if you install equipment, if you rationalize the system, you can save people money, make it a better community, and help the utility and improve payment, etc. So, I believe the International Copper Association was the major player here however they link to the utility and the utility was involved in this. I think they were the two major funders but I think importantly from my understanding—I'm talking about this its in many ways this was a pilot that the utility has continued to expand but I would say in addition I know they had some other manufacturers I think sort of water systems and refrigeration folks, lighting folks involved in this. So to my knowledge this was not a government initiative, this was a private sector led initiative to solve or to show an example to pilot a solution to a chronic global problem in disadvantaged communities around the world.

Amit Bando Great but I guess in a way you are saying—I mean the role of the private sector was key here...

Mark Hopkins Yes.

Amit Bando ...so in a way they are the drivers so that sort of addresses that one question in this instance at least that in fact they did play a pivotal role and I wonder if Sergio you would want to expand on that in terms of in Mexico's case and whether you see that as an issue, obviously you do but what specifically the government might be doing.

Sergio Segura Yeah, thank you Amit. Yeah, certainly financing of Energy Efficiency Measures would lead to access to energy is a key issue in terms of Mexico's government and especially when it comes to municipalities is probably most of other developing countries. Municipalities in Mexico have very limited resources to provide public services especially those who are the smallest municipalities which are located in rural areas and in that sense I would like to split the financial issue in two. In terms of the largest municipalities and probably the largest cities we don't see financing as an issue but the opportunity to engage public-private partnership, so in terms of what happens in the larger or land areas which have their marginal sectors that could be part of a public-private partnership. Still the government has still much to do in terms of the smallest communities where financing and energy efficiency project might not be as profitable or it can only create five viable for a private organization or private company. So, in that sense Mexico's government and particularly the National Development Banks still have much to do in terms of how to finance or how to find the right financial skills for the

smallest communities to provide with energy efficiency services as well as renewable energy projects.

Mark Hopkins

I would just say I completely agree with Sergio. I don't want to imply because this effort in Brazil was primarily private sector that would be the answer to this ill-chronic problem rather its an example of the private sector taking as an initiative but I think in any kind of long-term solution in that sort of problem or the access problem is going to take a strong government, the national and local government involvement and hopefully there is—Sergio mentioned I think this is an area with a lot of opportunity for governments to engage with the business community, with various financing institutions, and with the civil society on efforts to make improvements.

Sergio Segura

Exactly.

Amit Bando

Yeah, things from both of your presentation that aspect is getting highlighted, that more so than in other linkages, the specific linkage between energy efficiency improvement there are than how that can then directly impact energy access, we need to really emphasize one as Sergio mentioned the specific cultural values and differences that need to be taken into account and hence the need to work within the context of specific communities, locations, and so fort but that then takes us to the next step which is what you guys are both suggesting that it is critically important to ensure that the private sector and government partners and other stakeholders including some society have to be involved particularly have you started out saying Mark that in others lack of documentation. There are often not clearly identified technology options so that means that we need to focus on this need to identify these things with a cooperative approach. So that sort of things to be coming and in that context I think you're also entering indirectly a question that has come up from a couple of different listeners which is—their comment is that often the slum dwellers in developing countries are the ones that need access yet are not able to get access and what we hear the headline stories are about “Shining gross” and “Huge trajectories” and “The growth passed” and “Energy being provided by the teams to somehow bypass those that are in critical needs in urban slums” so I think Sergio's description about how Mexico is rapidly urbanizing is something that is true of many emerging economy. So, and any comments on that particular set of question or any additional thoughts you guys have.

Mark Hopkins

Well I would just say one thing related to that and I think the Mexican government has been I think a global leader on these kinds of issues for some time. Sergio mentioned beginning at first for about 30 years ago and have accelerated greatly in the past few years and so the Mexico it seems to me has, one, put in place quite a number of efforts overall to promote energy efficiency to improve productivity in the country and that's been very admirable that dealing with working seriously on climate change but then also a very strong emphasis on trying to in various ways its being

accessed. So, in many ways I think Mexico what they've done is a model for many countries so I enjoyed Sergio's presentation because in many countries today in the developing world they will not be able at this point to demonstrate that level of effort but that is a level of effort that is needed by all countries that have limited access issues.

Amit Bando

Great. Yeah and actually one of our audience member points out that there is a program that he's aware of in Brazil where the electric utility is installing new meters in the slums and then using those meters to directly control energy usage and use those energy efficiency gains to provide wider access to the slums and I think this is very much in line with what Mark you were saying and I think the question was are there similar programs that we are aware of elsewhere that are operating on a larger and upscale or is this something that is still very new and recent. I don't know if you guys have any thoughts of that.

Sergio Segura

I would like to just add an issue that has to do with the expansion of the energy services to this marginal communities and it has to do with a greater challenge that we face in at least the Mexico in our perspective that has to do with the information in energy efficiency opportunities. Well the national utility in Mexico is conducting a program to regularize, to have all this users—we call them gablitos, which are hanging from the grid to have a meter and have to pay the bill but still what still is a challenge and I already mentioned this, how do we provide them with information on the energy efficiency opportunities they have once they have electricity because once they have electricity they start to buy, they use refrigerator, they start to buy, they use television, or they buy two or three TV sets. They start to use electricity very widely. In this sense, most of this communities do not have access to internet, they only have access to the television, the information the television provides but then again the Mexican government as probably many governments in developing countries has limited resources to put on commercials on television to provide this information, to this community, so I would like to raise this issue because its very important, not only have an access to electricity but optimize this access by providing this communities with the energy efficiency opportunities they have. We have found that most of the communities that live in these slum areas and these marginal areas don't know what compact fluorescent lamp is so they still buy incandescent light bulbs. So, in that sense it's an issue that I wanted to raise. I don't know you have a thought on that Mark.

Amit Bando

Go ahead.

Mark Hopkins

I mean if I can comment. So, in preparing for this webinar we looked at a lot of different case studies and one that was very interesting that is discussed was Eskom the utility in South Africa, their efforts on improving energy efficiency as part of their overall plan and I will get in the details of that but to mention what I felt was perhaps the most intriguing and important thing in the case studies and that was that the cost

of their efforts were then from a regulatory standpoint incorporated as a cost in the rate structure so that the utility was reimbursed for the money they spent. This is I think very key, is I don't how successful we are going to be on the end-use sufficiency area unless we involve the utility sector to expand the concept of utility to not be thinking just we are a utility that collides power but rather we are a utility that provides people energy services. In some case that's power, in other cases it is efficient end-use, it is a collaboration with the city on street lighting – but that is probably is not going to happen unless you have a regulatory system in which those cost can be incorporated into the rate structure and the utility is repaid. So, you know and there's examples in US and other places of doing that and so the key is expanding the business model, the utility sector, so that their responsibility does not stop at the meter but incorporates in various ways the total energy system and has benefits to utility, it certainly has benefits to end users, to communities if we move in that direction and I think that kind of approach where the utility for instance is engaged with the customer on the issues of informing them about energy efficiency, helping them move towards more efficient technologies, etc. and the business model to be able to incorporate that into the system I think that is a big part of the answer.

Amit Bando

Right, so essentially in addition to talking about multiple benefits in the user side which you talked about, so the indirect benefit you also need to look at from the utility side and sort of incorporate a new thinking into their business model but one sort of a quirk and I just want to throw it up, someone suggested that in a lot of countries most of the marginalized populations are tapping in illegally into the system, so any thoughts on what could be done to promote energy efficiency within that segment of the population which could be a large chunk in some economy?

Mark Hopkins

Let me just say we'll send the case study for the Brazilian project to the [Indiscernible][1:27:10] maybe can be posted but from what I know about that project going in and rewiring and putting in meters, etc. they significantly raised the payment response and in many ways part of this tapping in, yes it can be we have money, we couldn't pay, etc. but largely it is because of poor energy services by city, by utilities in slum areas, so people are in a situation where it isn't like here in the US where you call the utility and they come out and they wire your house, they put the wire up to your house, they put in a meter, its all safe, its done the exact. Often in these communities don't happen or the homeowner though not truly owns it but whatever they have they are responsible for those hookup cost....

Amit Bando

That's right. I think that's a very important point that often these people that are tapping in illegally so if you really add up the cost they're paying higher cost for accessing the same energy and often would be more than happy to pay legally for a reliable, safe supply. I think you're right and that goes for energy as well as water I believe from numerous study that have been done across such areas.

Mark Hopkins Others are saying the utility pretends to pay providers power and we pretend to pay.

Sergio Segura [Laughs] Exactly.

Amit Bando Yeah we have a couple of time for a couple of questions and I'm going to throw up and one that came up was Sergio specifically, do you as a—in your presentation, are you aware of what the interest rate might where that might be available to the low-income dwellers for accessing some of the programs that are currently there and secondly are you implementing some of your programs that in a way be of cooperation with other particularly international agencies or regional agency.

Sergio Segura Mm-hmm. Okay on the first one, I'm not aware of the interest rate however as my colleagues of the street lighting program and what the pumping systems program see it that's a bit of a problem because they have the perception that is a very high interest rate so that's why we are looking into exploring new financial skims especially with private banks because still the government loans the national development and the public service bank [Indiscernible][1:30:28] still charges for a very high interest rate. On the other question, specifically on these three programs I mentioned. The street lighting program we are working with SEED specifically to improve the way we deliver economic analysis of the program we deliver for municipalities. What we do is we do a pre-diagnosis of the situation of the municipality. We identify energy efficiency opportunities and then with that we give it to the bank, in this case, [Indiscernible][1:31:16] the National Development Bank or other financial institution. We have software that help us do this previous analysis and we are working with SEED to improve this tool with the tool they have developed. In terms of the water pumping systems project, this a joint effort not only by [Indiscernible][1:31:44] the National Water Commission [Indiscernible][1:31:48] but also has the participation in terms of technical assistance of [Indiscernible][1:31:52] from Germany and the International Development Bank and this is a group that was created later last year in order to identify the common program for different agencies to deal with energy efficiency in water pumping and water distribution systems. Finally, the solar water heating program, we are working very closely with UNDP. UNDP has an international market transformation initiative directed towards solar water heating systems and it operates not only in Mexico but in Lebanon, Albania, India, and Chile as well and we are part of this effort. This initiative is working with us in defining the guidelines, the national programs will have and they are supporting the program with studies and technical analysis on how the market could be transformed in four different ways. First, is institutional land legal strengthening, the development of standards. Second, the financial schemes because in this sense most of the financial schemes will come from private financial institutions and the third one and the fourth I have to do with information to end users because in Mexico the solar water heating industry has been here for 40 years but its not been very

widely used and we are trying to promote it. So, that's a very broad perspective on how the international corporation has been supporting this three programs.

Amit Bando Thank you very much and again thank you both for the presentation and also a big thank you for all of the people that joined in and we got a bunch of questions that I said I tried to summarize things where we got to most of them. I'm sure there are couple of specific questions that we missed but given the short of the time I hope we got to most of them. So, I'm now going to hand this over to Vickie for some final comments and a wrap-up. Thank you.

Mark Hopkins Thank you.

Vickie Healey Great I mean thank you so much. Yeah, gentlemen thanks to all of you those for a great presentations and the audience had some super questions and Amit thank you so much for moderating that was a terrific format that you went through. So, with that we are going to wrap up with a really short survey just through your four questions with the audience to give us a little bit of feedback on what you thought of the webinar and we do take your feedback and recommendations very seriously because we like to know where were doing things well and where we might be able to improve but just before I jump over to that I did want to offer an opportunity to our panelist for any final closing remarks they'd like to make before we move to the survey.

Amit Bando Mark.

Mark Hopkins Once again I guess I've said a number of times and emphasize that sustainable energy for all initiative by the secretary general is not just for developing country it is for all UN member states under '93 to actively engage on all these issues in order to get to the objectives that were outlined in this and so I think anything we can do to increase the global governance on energy efficiency and all kinds of different institutions around the world, non-profits, government, IFI's, and the private sector work on energy efficiency, its critical to create a governance structure who already join together in a collaborative and coordinated effort to work seriously on accomplishing this objective.

Vickie Healey Thank you Mark. Anyone else?

Sergio Segura Yeah, well thank you. Well just two quick comments. One is that although energy efficiency has been around for past few decades and proven to be the most economic way to mitigate climate change and to provide with better opportunities for energy access for a number of communities, still we need campaign to do in the developing countries and especially Latin American, the Caribbean countries with regards to information to be end user as well as to engage in all relevant stakeholders in the process which starts at the local level. We've seen that in terms of energy efficiency, in

terms of mitigation, climate change, the local level, the municipal authorities, local governments have a key role to play in these areas. Energy efficiency is not exclusively a national policy responsibility it now goes to local and state governments to act on energy policy and support the engagement of other relevant actors with regards to energy efficiency policy, access to renewable energy for electricity generation or other end users and well that's pretty much what I wanted to say for conclusion. Again, thank you very much for giving us this opportunity to present what Mexico has been doing over the past few years in terms of energy efficiency and trying to link this energy efficiency programs with energy access and we have some work to do over the coming years. Thank you.

Vickie Healey Thank you Sergio and just again we very much appreciate you sharing your story of what is happening in Mexico so you know we're very grateful to all of our panelists today for taking the time to present this very valuable and terrific information. So I will quickly—Heather do you want to fill up the first survey question for us.

[Silence][1:39:34 - 1:39:59]

Vickie Healey The survey question is, overall, the webinar met my expectations.

Vickie Healey Great. Thank you so much everyone for taking the time to answer our survey. So, just real quickly I'd like to say that on behalf of the Clean Energy Solution Center and IPEEC I just again like to extend a very hearty thank you to all of our expert panelists, Mark, Sergio, great presentations. We appreciate our attendees for participating in today's webinar, you've been a great audience with terrific questions and again we appreciate your time and I also just want to quickly invite attendees to check the Solution Center's website over the next few days. If you'd like to go back you can view the slides again and again we'll have an audio recording of today's presentations and we also have audio recordings of previously held webinars. In additionally on the website you'll find the information on upcoming webinars and other events that may have be of interest to you. So, we invite you to inform your colleagues and those in your networks about the Solution Center services, webinars, Ask an Expert and all of the other types of resources that we offer and also with our collaboration with IP, which we are very grateful to be working with them. So, with that I just like to wish everyone a great rest of your day and again we have to see you at future Clean Energy Solution Center events. This concludes our webinar.