CLEAN ENERGY SOLUTIONS CENTER
ASSISTING COUNTRIES WITH CLEAN ENERGY POLICY

Energy Efficiency for Energy Access: Appliance Efficiency in Resource-Constrained Settings

—Transcript of a webinar offered by the Clean Energy Solutions Center on 17 February 2016—
For more information, see the clean energy policy trainings offered by the Solutions Center.

Webinar Panelists

Richenda van Leeuwen	Executive Director, Energy Access, UN Foundation
Pascale Giet	Senior Vice President, Rexel Group
Matt Jordan	Senior Manager, CLASP
Franck Legardeur	Marketing Director, Rexel Group
Harry Verhaar	

This Transcript — Because this transcript was created using transcription software, the content it contains might not represent precisely the audio content of the webinar. If you have questions about the content of the transcript, please contact us or refer to the actual webinar recording.

Tim Reber — Hello everyone. I'm Tim Reber with the National Renewable Energy Laboratory, and I'd like to welcome you to today's webinar, which is hosted by The Clean Energy Solutions Center in partnership with the Rexel Foundation and the United Nations Foundations Energy Access Practitioner Network. Today's webinar is focused on energy efficiency for energy access, appliance efficiency in resource-constrained settings. One important note of mention before we begin our presentations is that the Clean Energy Solutions Center does not endorse or—this resource is reviewed and selected by technical experts.

Before we begin, I'll quickly go over some of the webinar features. For audio, you have two options. You may either listen through your computer or over your telephone. If you choose to listen through your computer, please select the mic and speakers option in the audio pane. Doing so will eliminate the possibility of feedback. If you choose to dial in by phone, please select the telephone option in a box on the right side will display the telephone number and audio PIN you should use to dial in.

For anyone who is having technical difficulties with the webinar, you may contact the go to webinar help desk at 888-259-3826 for assistance. If you would like to ask a question during the webinar, and we certainly encourage all of our attendees to please do so, you may use the questions pane on the right side of your screen where you may type your question in directly. If you're having difficulty viewing the materials, the webinar portal, we have

some PDF copies of the presentation at cleanenergysolutions.org/training, and you may follow along as our speakers present. Also, an audio recording in the presentation will be posted to the Solution Center training page within a few weeks, and will be added to the Solutions Center YouTube channel, where you'll also find other informative webinar as well as video interviews with thought leaders on a variety of clean energy policy topics.

Today's webinar agenda is centered around the presentations from our guest panelists. Pascale Giet, Franck Legardeur, Matt Jordan, and Harry Verhaar. These panelists have been kind enough to join us to showcase their respective organizations' experience in the nexus of energy efficiency and access, to discuss work being undertaken under the broader umbrella of the Clean Energy ministerial global lighting and energy access partnership, also known as Global LEAP. And the new Energy Efficiency for Access Coalition, or E4A.

They will also provide collective best practices. Before speakers begin their presentations, I will provide a short, informative overview of the Clean Energy Solution Center initiative, and Richenda Van Leeuwen will provide an overview of the energy access practitioner network. Then following the presentations, we'll have a question and answer session where the panelists will address questions submitted by the audience, and finally close with a short survey.

This slide provides a bit of background in terms of how the solution center came to be. The solution center is one of 13 initiatives with the Clean Energy Ministerial that was launched in April 2011, and it was primarily led by Australia, the United States, and another Clean Energy Ministerial partners. Outcomes of this unique initiative includes support of developing countries and emerging economies to enhancement of resources on policies relating to energy access, no cost expert policy assistance, and peer to peer learning and training tools such as webinar you are attending today.

The Solutions Center has four primary goals. In terms of clearinghouse of clean energy policy resources, it serves to share policy best practices, data, and analysis tools specific to clean energy policies and programs; it delivers dynamic services that enable expert assistance, learning, and peer-to-peer sharing with experiences. And finally, the Solutions Center fosters dialogue on emerging policy issues and innovation around the globe. Our primary audience is energy policy makers and analysts from governments and _____ organizations in all countries, but we also strive to engage with private sector, NGOs, and civil society.

One of the marquee features of the Solutions Center is a no-cost expert policy assistant known as Ask an Expert. 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. For example, in the area of _____, we are very pleased to have Ibrahim H. Raymond, director of the Social Transformation Division with the Energy and Resources Institute serving as one of our experts. If you have a need for

policy assistance and rural _____ or any other clean energy sector, we encourage you to use this valuable service.

Again, the assistance is provided free of charge. If you have a question for our experts, please submit it through our simple online form at cleanenergysolutions.org/expert, or to find out how the ask an expert service can benefit your work, please contact Sean Esterly directly at Sean.Esterly@NREL.gov. We also invite you to spread the word about this service to those in your networks and organizations. And with that, I'd like to provide a brief introduction for today's panelists. First up today, we'll hear from Richenda Van Leeuwen, executive director for energy access with the UN Foundation. She founded and leads the work of the energy access practitioner network and also works on the secretary general sustainable energy for all initiative.

Following Richenda, we'll hear from Pascale Giet, senior vice president of communications and sustainable development with Rexel Group and the vice chairman of the Rexel Foundation. She joined Rexel in 2010 and is a member of the executive committee and created the Rexel Foundation in 2013. Presenting along with Pascale is Franck Legardeur, energy efficiency marketing director for the Rexel Group. His two decades of international sales and marketing experience helped him work to deploy and support Rexel countries with the implementation of energy efficiency initiatives.

After the Rexel presentation, we'll hear from Matt Jordan. Matt is a senior manager with CLASP. Matt leads CLASP, Clean Energy Access Program, focusing on leveraging energy efficiency to accelerate the affordability and social environmental benefits of access clean energy throughout the developing world. And our final speaker today will be Harry Verhaar. Harry is the head of global public and government affairs with Philips Lighting. He is responsible for the strategy, outreach, and stakeholder management on energy and climate change with a key focus on the roll of the LED lighting revolution.

And with those introductions to our panelists, I'd like to go ahead and turn it over to Richenda, who will be providing an introduction of the Energy Access Practitioner Network.

Richenda Thank you very much, and good morning, good afternoon everybody to everybody who is joining our webinar from all around the world. And first, a big thank you to Rexel Foundation for your support to this, and also to the other panelists. And I am not seeing my screen, so could somebody run my slides please?

Tim Reber Sure, sorry about that. We'll get your slides up very shortly. They should be up. Are you seeing them now?

Richenda I'm not able to manipulate them. Sorry, could you take over? Could you do this again please as we did last time?

Tim Reber Yeah, I think Stephanie will be running your slides, so you can just go ahead.

Richenda Next slide, please. And you can put it in full screen mode, please? Yes, could you put my slides in full screen mode please?

Tim Reber Sure, we're working on it. We seem to be having a couple technical difficulties. Apologies.

Richenda There you go. Thank you very much. Next slide please. So just to provide some basic background for those who may be new to energy access, just to frame it that we are really looking at trying to help support the needs of more than 1.1 billion people around the world who still do not have the benefits derived from having access to electricity either in their homes or communities, and particularly for this work, we have been primarily focusing on the application of decentralized off-grid solutions as part of the overall contribution to energy access, and particularly looking at appliance efficiency in that context where you have a constrained load requirements or constrained ability to provide services where you have a very limited load.

And therefore, the need to really be looking at the efficiency of appliances to be able to provide the maximum services to households and communities when you do have very much a low constrained environment. Next slide, please. Under the sustainable energy for all initiative, which has been run out of the United Nations by the UN secretary general along with a team of colleagues from around the world, we've been looking very much at different levels of service in tiers of access to electricity. It's not really a one-time proposition for many people. So we've been looking at everything from small stand-alone solutions that are typically just a half a watt to a couple of watts all the way on through a range of different types of configurations through standalone systems, micro-grids until you get grid connection capacity.

Again, because we see that the grid is not necessarily being provided in many remote rural areas, and so we've seen that these either pre-grid or replacement to grid at least in the short-term opportunities should be captured, and then again particularly looking at how appliances are part of the overall package of services because the more we can do with very efficient appliances, in fact, the more that we're able to utilize the limited electricity that is available usually through off-grid solutions. Next slide, please.

Again, just to provide a small overview of some of the solutions that are available, and particularly looking here at the United Nations Foundation with our energy work at the application in a mini grid context, as well as particularly on the isolated off-grid side. Next slide, please. Next slide, please. One area of particular interest to the United Nations Foundation before I start speaking specifically about the practitioner network is the issue of appliances in a healthcare setting. Here at UNF, we are working on initiative as a call component of the sustainable energy for all initiative looking to drive universal energy access by 2030.

And particularly, we are looking at the applications in healthcare settings where those clinics are either un-electrified or under-electrified, and seeing the range of medical appliances that can be utilized in those energy-constrained environments, and then really looking at how we can be driving

more appliance efficiency, particularly in a healthcare context. So we are working on this already in several countries at the ground level in Africa, but also have a more universal mandate working together with our partners, World Health Organization and UN Women, as part of the sustainable Energy for All Initiative specifically to be looking at how we can help to support better management of appliances and the utilization for healthcare applications, particularly again where we are looking at a range of off-grid solutions. Next slide please.

So a word on the energy access practitioner network, which is the framework under which we work together with the Clean Energy Solutions Center, we are a four and a half year old network comprising more than 2,000 different companies, organizations, social enterprises that have come together really focused on how we help to support the input of particularly market based solutions into solutions for energy access. Again, particularly focusing on the contribution of off-grid and mini grid solutions. We're less focused on grid extension even though we know that that is clearly the most typical way that governments have been bringing energy access to their communities. But we're really looking at how we can be complimenting that and ensuring that for those areas where grid is slow to come or perhaps in some cases is not coming, that those households and communities have other solutions.

And particularly, we are focusing on the application of renewable energy solutions in those settings. We have members from all over the world, and we are doing a range of work at the country level in terms of convening workshops, in terms of helping to support new partnerships for certain applications within the overall framework of energy access, and also again, bringing a range of very diverse stakeholders together to support increased action in support of the Sustainable Energy for All goals. Next slide please. So we work very closely with a range of different initiatives. You're going to be hearing from Matt Jordan shortly about the work of the Global Lighting and Energy Access Partnership, which we have been a partner in since its inception.

And also the newer Energy Efficiency for Energy Access Coalition. And again, really we're specifically looking at helping to drive the greatest application recognizing that even for people who don't have basic energy access, we have now the tools, the solutions that can help them derive more benefit from what they do have, things like the ability now to have a television because we're really looking at the service that is sub-ten watts or very efficient lighting that I know Harry will be speaking about from the Philips perspective.

So again, delighted to join with all of you, and looking forward to a very productive session in the next hour. Thank you very much. Next slide, please, final slide. And back over to you. Thank you.

Tim Reber

Great, than you, Richenda, and apologies again for those brief technical glitches. With that, we will go ahead and hand it over to Rexel to Pascale and Franck to really lead us off here.

Pascale Giet _____ for your presentations. My name is Pascale Giet, and I'm an SVP communications in sustainable development for the Rexel Group and have been vice president for the Rexel Foundation for Better Energy since it was launched in—

Tim Reber Sorry, real quick, we're seeing your split screen. Go to the top.

Male Can you see the full screen now?

Tim Reber Great, yeah, that's perfect, thank you.

Male Okay.

Pascale Giet So I'd like to take this opportunity to share Rexel's thoughts on energy efficiency and why we believe it's critical to securing universal access to energy and ensuring a more sustainable energy future. Rexel has a lot of experience in this area, both with the activities of the Rexel Foundation as well as with Rexel's own car business activities as a lending global distributor for products and services for the energy world. To provide some order in this—to this presentation, I will start by presenting the Rexel Foundation and some of its projects before I hand over to ____ with the Energy Efficiency marketing director for the Rexel Group, and he will focus on appliance efficiency, and the role appliance is of an improving nexus to energy. So at the end of the presentation, we have chosen to focus on the Asian region in order to give you concrete examples of both the foundations in order to prove access to energy efficiency, as well as energy efficiency solutions offered by Rexel to its customers, and our commitments to our own employees.

So let me start by presenting the Rexel Foundation. Most of you will certainly be aware of these facts and figures about the Rexel Foundation creation. One million to three people around the world still don't have access to electricity. Two and—and two to seven million people have to use as _____ for heating and cooking and _____ poverty is a growing concern in developed economies. With those figures in mind, Rexel and the Rexel Foundation for a better energy future work day in day out to bring positive responses to these challenges. The mission of the foundation is to improve access to affordable, efficient, and sustainable energy for all. Energy efficiency is definitely a big part of everything the foundation does. We believe really that energy efficiency provides the key to lower energy bills, reduction of energy, and to a change in behavior patterns.

So we have three types of programs through which we deliver on our mission. We support first NGOs engaging communities and driving out _____ energy consumption, so improving the quality of life. Second, we work with social entrepreneurs, supporting them in creation and implementation of innovative business models. And then finally, the foundation funds research and studies to help raise awareness on energy efficiency and climate change at a large scale. Since it was launched in 2013, the Rexel Foundation has supported close to 40 initiatives around the world with a rough balance between the three programs I've just described. The footprint of the foundation's projects is in line with the Rexel Group's own presence across the world to ensure an

involvement of our employees locally, and have linked to have a greater local impact.

Our foundation's focus for the coming years will be on the regions of North America, Europe, and Asia. Our approach is by natural collaborative. You know, that leverage all available skills and competencies and scale a project. In one of our key principle when we work on a project is to gather partners and build up collaborative approach with characters of the energy sector. So today, we work with more than 45 partners, including companies and the company foundations, social entrepreneurs, academic institutions, and nonprofit organizations.

I will not go into the details here, but just to say that we value all our partners, and that if you are interested in partnering with us, please visit the Rexel Foundation website and get in touch. The type of support provided depends on the energy maturity of the country. So looking at this specific project, we are involved, we—there is of course no judgment in the concept of energy maturity. There is _____ on the specific characteristic of the energy when you train in each country, meaning access to electricity rates, appliance equipment rates, population characters, you can—and so on.

So if you start at the top of the slide, we can see that in developed countries, our support consists in fighting pure poverty, in creating energy retrofit of buildings and cities, and permitting renewable and efficient energy. In developing countries, we work on projects ranging from humanitarian aid to efficient and renewable energy services in rural area as well as support the training of future electricians. So for this webinar, we focus on initiatives in developing countries. Wherever we work and whatever we do, the energy maturity of the country, we are convinced that energy efficiency is absolutely critical to address.

I will now present to you a few projects to give you concrete examples in Asian countries. First, how to provide efficient energy through two specific projects. Then one emergency response, and finally, vocational trainings in China. These are two examples of efficient energy projects in Asia. First, we are supporting Mardelin, China's social enterprise since 2014. The project consisted in the selection of a solar energy power plant in an elementary school in the province of Hebei in China, and since 2015 or so, we are supporting the GoSol initiative, and transferring solar energy concentrated technologies to the disadvantaged communities.

This initiative encourages the empowerment of communities and local entrepreneurs, and _____ for green free and self-produced energy access. Our project include the long-term perspective. For example, when we provide energy efficiency in developing countries, we ensure that our _____ are responsible for long-term management of the installation, and the first project I mentioned, for example, Mardelin continues to update us with the economic, social, and environmental in facts on the project. And on their _____ to keep the solar energy power plant at its maximum efficiency.

Here you have another example, which is about emergency response we have led in 2015. In the wake of the devastating earthquake that struck Nepal on the ____ of last year, we joined forces with Electricians sans Frontieres and other partners to provide support with lighting solutions in villages of the _____ valley. This project is still going on. One of the outcomes is that around 12,000 person have access to energy at the end of 2015. The last type of project I would like to share with you is our support in energy in countries to structure the training of students in electricity and energy efficiency.

So we launched our first training project in 2012 in China. We now conduct several projects per year which ____ to provide trainings in developing and emerging countries. We'll come back later on our ongoing training actions in the subsection of this presentation. So if you wish, we will now start the second part of the presentation led by Franck on the link between energy efficiency and energy access, and Rexel's Group experience on the subject.

Franck Legardeur

All right. Thank you very much, Pascale, and let me start by telling you that I'm more than proud to be part of the company where we have such an active foundation. So good afternoon everybody, or good morning, depending on where you are located. So let me start by remind you a few definition to make sure we are all aligned with the same concept in mind. Let's talk about energy efficiency, what we are thinking about. It's aiming to manage and restrain the growth in energy consumption. This is all what we are looking for. Okay. Something is more energy efficient if it delivers more services for this energy improved or some services for less energy improved.

This is basically the definition of the International Energy Agency. On top of this, I would like to emphasize a fact that we're calling to, again, _____, energy efficiency seen are the world—the first fuel that acts _____. Okay, first is low _____ energy sharing between the people, and second is _____ represent a huge up to 50 percent of wind castles a reduction by 250. So it's definitely something important presented earlier by Pascale.

Now let's move to appliance. What is an appliance? An appliance is electrical equipment. Basically, it's a device, a machine that could be a cooker, a fridge, a phone, a TV that is used in the hours. Okay? So we are talking about these kind of appliances for house, again, but also in industry and commercial building, we talk about writing, again, and what else—but also drive and frequency driver.

So what is an energy efficient appliance? Basically, compared to a standard appliance, an efficient one will deliver more services with the same energy input or with some service with less energy input. That's all about—and again, the idea is to share the energy between all of us. So through the following pages, we want to share our Rexel experience in household appliances, but so in industrial or commercial application. What you see here on this slide is the value chain, the complete value chain, but again, we don't need to _____ on the right side where the consumer are using the appliances and where they are basically installed.

This is a very interesting area to focus for simple reason that first of all, the choice of an appliance is depending on the user. You as a user, you can decide to choose or to buy a different type of appliances. And we'll try to tell you which one you need to buy in order to optimize energy consumption. And the second point is when you go for an acquisition of an appliance, you need to consider that it's much _____ that working on the production side or the distribution side, which means basically a quicker return on investment. You can do a lot of things in house on the commercial building, which will generate of course much more cost.

By the way, we are not talking about the full value chain on the production, like the distribution, it's not the case today. We're only focusing on the appliance side. The new slide you are seeing here, either is talking about a couple of things which you will understand why energy _____ is _____ supporting energy access. And I would like, again, to come back on some of the constraints that I have to face emerging economies in Asia. Where needless _____ that increased production is facing great challenge to meet the world's demand.

Okay, and again, are calling to Yiya, electricity generation in southeast of Asia is predicted to triple by 2040. So as we can see, a huge growth demand. We will now talk about the grids, and there is two issues with the grids. First of all is the access, and not everybody is having access to the electricity, and if we consider Cambodia or Myanmar as shown on this example where 50 percent or more of the population—they do not have access to electricity, which is again showing that we can do much better in terms of energy sharing and developing electricity everywhere. In terms of quality, in most of the case, despite the fact you have energy, the quality is not there, meaning that most of the case, we are facing blackout _____. That is sure on the—sorry, that is shown on the graph on the right from the World Economic Forum.

This is basically some data that I _____ by business leaders and that are evaluating the level of quality from zero to seven. And as you can see in most of the case, it's not really well evaluated. On the other end, electricity users, consumer, have their own constraint. We have just mentioned quality expectation from businesses because it is a strong impact on production, but also for homeowners or household, and which are determinant for the leading of the people. If you consider household, the cost dimension should not be overlooked because it's quite expensive to buy a high efficient solution, and we'll come back to this point later. But more important, we could leverage some regulation that have been introduced in southeast Asia called MEPS, meaning Minimum Energy Performance Standard that again are one of the most cost effective energy efficiency measure.

That will be able to drive the choice of the consumer. So based on all of this, how does energy efficiency serve access to energy? Here, we are showing in fact three constraints mentioned in the previous slide to _____. Okay? The first one is demand/supply imbalance. Okay, this one is a grid quality issue as we just told, and the last one is question of money. How much are constraints for the homeowners? Energy efficient appliance, coming back to the point

one: demand supply imbalance. Energy _____ appliance enabled to reduce energy demand as we expressed in the definition or reduce its growth rate.

So when in particular need to consideration or to _____, meaning a lot of people connected together their devices, it's enabled to improve investment allocation by postponing, reducing investment in electricity generation means to be developed. It's quite expensive to put in place a complete network of electrician, distribution, and production. As a point two is energy efficient appliances, whether for household or business application, enabled to reduce the peak load. In a context of either low quality grade or small scale grade is this avoid and plan _____. And it can big time affect every user in different places.

And last but not least, energy efficient appliances enabled to reduce energy bills, and it's a key issue in accessing energy for a low-income household. Having said that, with our position, Rexel being a business player, but as I said earlier, tried to have a foundation in a company, we are working on improving energy efficiency. And I would like to share with you what we believe are the driver of _____ efficiency, and we are happy to _____ about questions and answer after this presentation, and as well with our _____, we'll complete this issue with our own observation.

So first of all, there is a lack of regulation, setting minimum energy standard in some countries to encourage business players to market more efficient appliances. Regulations can also be a great driver for improving and standardizing consumer information as it has been developed in the EU with energy levels. And you have administration on the right side of the slide. That could be used not only in Europe, but also in many other countries. There is point two; there is a great information that needs to be made to better market energy efficient product, especially in the case where the upfront cost of inefficient product is more expensive than the less efficient alternative.

And this comes through the TCO perspective. TCO meaning total cost of ownership, meaning we need to consider not only the cost, the upfront cost of the appliance, but also consider the energy this appliance will consume in your lifetime. Because if we just compare the upfront cost, in most case, we will choose for the cheaper, and this is something that we need to change in our mind and try to educate people about understanding the value of the total cost of ownership.

On top of this, there is a financial consideration because definitely if it's more expensive, more people would not have access to this one. So we need to explain again the TCU approach, and also raising for electrical installers and end user. Not only end user needs to be aware about this, but it is a role to educate our contractors and explain to them what the value of _____ an inefficient solution. And the concept of energy efficiency, but the first part. Okay, there's also one on sizing properly on appliances. And on the last one is on existing financing that are wherever in different places all over the world through subsidies provided by either development or utilities.

Okay, now we have a—wow, let's start—we are two example, but we wanted to share with you, which are _____, but due to the time constraint, let me maybe go to the first one, which is in fact presenting you here a full glass factory located in India. Okay? So this is a factory that is operating and running 24 by 24, and 365 a day. And Rexel used to serve _____ its customer for different devices, metal yard cable and _____ and so on. When we had the chance during one of our visit to meet the decision maker and we brought to his mind the capabilities we would have to help him on optimizing his bit of energy and definitely reducing his consumption. Okay? So he was okay, and needed us to do what we could to work through, which is very basic, quick audit, just going through and looking at what devices are installed, and seeing very quickly where we could bring our value.

For you to know, a glass furnace started—will never stop. Will stop only at the end of its life. So it was critical to find a solution where we would be able to bring solution, but also consider that the factory will be also operating. So our _____ was _____ basically on the full metal cooling fan of 160 digital watt where those fan are used to basically provide some cooling on the little structure, which is outside of the furnace. The running of those fans depend on the capacity of the glass we are producing. It is fully loaded, and while it is fully loaded, the fans are running at 100 percent. But if it's not fully loaded, the fan are still operating for simple reason that we want to avoid what we all a blackout if we start again the fan.

So the idea was despite the fact that this factory and those fans were equipped with soft metals, avoiding the big of restaurant when we started with all, this idea to look more details and to provide what we call a viable frequency drive that was in fact providing two added value. The first one is was still avoiding the in rush picture end that is generating often what we call a random tripping, and thus blackout. And the second one, which is even more important, is that was not existing before with our sub-driver. It's delivering the energy according to the demand of the fan. So much less energy consumption.

So a couple of numbers when we did this one. It was setting of 265,000 kilowatt-hours. It was saving about two million of Indian rupee, and it was a very short payback of four months. So at the end of the day, management was much more happy because it helped them to save energy in all areas of the manufacturing and also the _____ become a kind of green company. Since we have done this one, we are working with them on developing further solution in the different plant and factories they are having. Okay? So let's move directly to one key point that I was just looking about, which is education and training.

Because if you are not educated, you don't know what you can do, what you can save. So within Rexel, we have launched simply what we call the Rexel Academy, which is covering different points again, but the Rexel Academy is now having a dedicated energy efficiency in earning modules. That is open to most of the employee of Rexel. Today, we are giving access to 18,000 employees to those different modules where each of them can any time

during the day, they can go and start different kind of module. We have three different levels. We have one which is very basic for everybody that needs to understand what is about energy efficiency, and we have two different level four people that are becoming more expert.

So which is allowing, again, Rexel employee to know what they are talking about as soon as we are talking about energy efficiency. Sooner or later, this will be also open to our network of customers and partner, and I'm here talking about the contractors mainly. Okay? So now I will give the floor to Pascale for the last example carried out by the Rexel Foundation.

Pascale Giet Thank you, Franck, for these examples. For our last example, as already mentioned before, the Rexel Foundation works in partnership with Snider Electric and its foundation at developing all modernizing training program by providing deductive hits. So we are working on such programs in Thailand and Vietnam in order to drive professionalization of future electrical installers, and ensure that knowledge of energy efficiency. Now I think I have to stop my presentation, so Franck and myself will be happy to answer your questions in the Q&A session in the last 30 minutes I think of the webinar.

Tim Reber Wonderful. Thank you both. We had a couple questions come in during your presentation, and we will definitely get to those at the end of the Q&A session. So without any further ado, we'll go ahead and move on to Matt Jordan.

Matt Jordan Thank you. Can everybody hear me?

Tim Reber Yeah, loud and clear.

Matt Jordan Excellent. Thanks for having me. I enjoyed the presentation so far. My name is Matt Jordan. I'm a senior manager at CLASP. We're an NGO with over 15 years of experience in product energy efficiency and market transformation. Since 1999, we've worked in over 50 economies with policy makers, industry players, and others on every aspect of appliance efficiency. Our mission is to reduce the negative social and environmental impacts of the resource consuming products and systems we use every day. I lead CLASP's clean energy access program, which focuses on leveraging the energy efficiency—the ability of energy efficiency to accelerate the affordability and social and environmental benefits of access to clean energy throughout the developing world. CLASP was responsible for the Clean Energy Ministerial's Global LEAP Awards Program, and we've developed and managed several Global LEAP off-grid appliance market development initiatives on behalf of the US Department of Energy, Energizing Development, Climate Works Foundation, and other Global LEAP partners.

CLASP also advises and supports the UN Foundation's Global Alliance for Clean Cook ____, The World Bank Group, and others. I've been asked to speak today about the Global LEAP initiative support of the Global off-grid appliance market, as well as a new coalition, Efficiency for Access, or E4A, being led by the US Department of Energy. A quick overview of Global LEAP. The Global Lighting and Energy Access Partnership is the Clean

Energy Ministerial's Energy Access initiative, and it's led by the US Department of Energy. Global LEAP was launched as a commitment to the SE for All Campaign, and its programs and initiatives support the growth of sustainable commercial clean energy access markets throughout the developing world.

Global LEAP catalyzes markets for clean energy access products and services through records focused on supporting quality assurance framework. For off-grid energy products and services, which build consumer, investor, and policy maker confidence, enabling the uptake of super-efficient off-grid technologies, which reduce energy supply cost and facilitating programmatic, policy, and research collaboration among energy access stakeholders. Global LEAP is deeply engaged in supporting the development of the global off-grid appliances marketplace.

Global clean energy access and sustainable development goals simply can't reach their full potential without a strong competitive market of highly efficient, appropriately designed and priced off-grid appliances, and this is exactly the challenge that our work in support of Global LEAP focuses on. The problems of energy access are similar to those that many young markets face, particularly in emerging economies. Many of the largest barriers can, I think, be distilled down to the interrelated issues of ability to pay, willingness to pay, and cost. The market for high quality super-efficient appliances directly addresses these last two. Willingness to pay and cost. While market forces and emerging financing options like micro finance, mobile money, pay as you go, et cetera, help address ability to pay. By providing the reliable, meaningful energy services that off-grid consumers demand, high quality and appropriately designed appliance products create and sustain demand for off-grid energy, increasing off-grid consumer willingness to pay.

By reducing the amount of energy needed to provide meaningful energy service, super-efficient appliances dramatically reduce costs in the prices consumers pay. According to a study supported by Global LEAP from researchers at Humboldt State University, Lawrence Berkeley National Lab, and the University of California, the upfront cost of a typical off-grid energy system can be reduced by as much as 50 percent if super-efficient appliances and right size solar PV and batteries are used while delivering equivalent or greater energy service.

It's worth noting here in this graph that in the super-efficient scenarios, the appliances are substantially more expensive. They're advanced technologies. Nevertheless, the savings reaped from the avoided energy supply costs more than make up for that additional cost. This dynamic has very much proven out in the off-grid lighting market. The off-grid solar lighting market simply doesn't exist as it does today without the LED, and it's not that the LED is a special technology, it's that it's a super-efficient technology. The energy savings enabled by super-efficient LEDs have fundamentally changed the economics of off-grid energy and made the off-grid lighting business model much more viable.

This is a relatively under-explored topic area, and a lot more analysis is needed, but similar impacts should be seen and very well may be transferrable to any access context where first energy efficient solutions are, and second, energy supply accounts for a significant proportion of project or consumer first costs. Simply put, energy access is fundamentally an economic question, and energy efficiency fundamentally changes the economics of energy access.

The bad news is the mainstream appliances available today can consume far more energy than many off-grid clean energy systems are able to supply or that off-grid consumers are able to afford. Moreover, mainstream appliances are often not designed appropriately for off-grid application or harsh environments, different usage patterns, and technically challenging energy loads can impact an appliance's performance and longevity. But the good news is that off-grid energy markets are scaling, and as they scale, we're seeing dynamics similar to those of off-grid LEDs play out for non-lighting appliances. Recent technology advancements and design improvements enable super-efficient off-grid appliances to consume 50 to 70 percent less energy than mainstream appliances today, and by 2020, we expect them to consume up to 80 percent less energy.

And as the off-grid market continues to scale and off-grid energy companies mature, we're seeing smarter and more targeted design of off-grid appropriate appliances. This will allow many more off-grid consumers to power appliances on off-grid energy systems, enabling increased market penetration and greatly improved energy access outcomes. The upshot of all this is a larger, more dynamic off-grid energy access marketplace, one that increasingly delivers life changing modern energy services to households and businesses who don't have them.

Should the right appliances continue to be developed and find their way into the off-grid market, a Global LEAP study due out this month projects that the annual market for off-grid fans, televisions, and refrigerators alone could grow from an estimated $524 million per year in 2015 to $4.7 billion per year in 2020, an 800 percent increase. The difference is shown here between the 2015 current and the 2015 potential figures is the difference between the present day off-grid appliance market and a counter factual of what the present day off-grid appliance market could be if only more highly energy efficient appropriately designed and marketed off-grid appliances were on the market. This is to say the relatively immature state of development in the global off-grid appliance market is a barrier to energy access.

So why is this market underdeveloped? What are the challenges in the market? Well, they're very much the challenges that any young BOP market face. Off-grid energy service companies struggle to identify and source great appliances, and they often don't have the resources, human capacity, or expertise to develop their own. Appliance manufacturers often aren't familiar with the off-grid marketplace or aren't familiar enough to design and market their products effectively. Moreover, many of them don't know that the market exists whatsoever, or they simply don't think it's a viable opportunity.

Investors and MFIs like the information they need to target investment and policy makers lack the data they need to target and scope policies or programs. The good news is there's no lack of demand for the right off-grid appliances. Throughout the value chain, people want these products to be developed, marketed, and sold. The challenge is the market ecosystem needed to make good on this demand is disorganized and under developed. It's not a matter of lacking demand. It's a matter of lacking information and market infrastructure to enable that demand.

So what's Global LEAP doing about it? Through a variety of targeted programs, Global LEAP is working to address the disorganization in the market by filling information gaps and enabling faster, better, and for market action. I'm going to do a quick run through of some of the things we're working on in support of the Global LEAP initiative and the off-grid appliance market. It's really difficult to target meaningful action in a market if you can't reliably compare products, and until recently, no test method for off-grid TVs and fans, two of the highest demand, highest impact off-grid appliance categories existed.

New Global LEAP test methods for off-grid TVs and fans are in the final stages of development and are being beta tested at labs all around the world. Look for the first versions of these methods to be announced in the coming months. The current drafts are available on GlobalLEAPAwards.org and are open for comment. The Global LEAP Awards identify and promote the world's best off-grid appliances, evaluating them on the basis of quality, off-grid appropriateness, energy efficiency, and cost.

This is proven to be a highly effective program, giving off-grid energy companies a jump-start in their search for grid appliances and giving appliance companies a clear point of entry into the off-grid market. The latest round of the Global LEAP Awards was announced at the White House in October and received more than 40 total nominations, which is a number we're very, very excited about. Winners and finalists of this round of the Global LEAP Awards will be announced at the seventh Clean Energy Ministerial this coming June.

A new program we're calling Global LEAP RBF couples the Global LEAP Awards with results based financing incentives. To mitigate risk for early mover off-grid solar and appliance companies, and join best in class off-grid appliances into the market at scale. For those of you who are familiar with RBF programs, this may not come as a surprise, but this is a big, tricky, complicated program. But we have very high hopes for it, and the early indications are positive. The pilot year incentives, which are targeted at Bangladeshi solar home system companies who participate in the Apol program, open later this month. This is just a quick snapshot of that program, sort of showing all of its moving pieces and what they're intended to accomplish. We're partnering with this program on this program with the US Department of Energy, Energizing Development, and IFC. And as I mentioned, the pilot year incentives launch later this month on the 28th of February in Bangladesh.

It's very much our hope and intention to roll out this program to other geographies as soon as we can. The Global LEAP off-grid appliance data platform provides easy access to appliance test and market data, attacking gaps in market intelligence directly and systematically. The approach is simple. We test products and we share the data with the companies and policy makers who can use it. This approach has worked as a market development and transformation strategy in other product markets all over the world for decades. It just hasn't been done for off-grid appliances yet. I really think this program is a game changer, and the response to it from the off-grid marketplace so far has really been phenomenal.

A quick overview of this program, with pilot funding from the Climate Works Foundation, we've been able to do early stage work on the platform. We're sampling products from the market, testing them, organizing the data, and sharing it with the off-grid marketplace. This sounds very, very simple, but the implications are profound, and I really think this program is a step change in the market. If you'd like a walkthrough of what we've been able to do with this program to date and the product data that's been produced, please be in touch.

Global LEAP market research and program data informs smarter action throughout the value chain. Global LEAP has led a suite of market research and intelligence efforts to date. For example, as I mentioned, a big report titled, "The state of the global off-grid appliance market," is due out later this month. Please be on the lookout for that as I suspect many of you will find it useful. Through one-on-one introductions and networking events, Global LEAP introduces appliance manufacturers, off-grid companies, and investors, catalyzing new business partnerships. For example, 65 companies attended the Global LEAP off-grid appliance networking event held in Dhaka, Bangladesh last summer.

This may seem so simple as to not warrant mention, but at this stage in the market's development, this kind of business-to-business matchmaking has been hugely productive for the companies that are participating. And finally, Global LEAP provides support to public and private institutions that are setting off-grid appliance policy related to standard certification, bulk procurement, and more. The result of all this is that companies and institutions throughout the marketplace from appliance manufacturers to off-grid companies to policy makers to investors get the information they need to make smarter, better informed decisions about off-grid appliances.

The real benefit, of course, is that through these smarter alignments of market forces, off-grid households and businesses get access to more diverse, more affordable, and higher impact modern energy services. A quick note on Efficiency for Access, or E4A, which is a new coalition led by Global LEAP and SE for All to harness the power of energy efficiency to accelerate universal access to energy. It was launched at COP21 late last year, and E4A's Year of Action will culminate later this year at COP22. E4A is actively seeking partners and commitments. For more information, visit EfficiencyForAccess.org.

Thank you to the UN Foundation, The Rexel Foundation, and The Clean Energy Solutions Center for organizing this and inviting me to speak. Please feel free to reach out with any questions about the work I've described today. I'm looking forward to the Q&A.

Tim Reber

Great, thank you very much. Another good presentation, and again, another flurry of questions that we'll hopefully get to during the Q&A at the end. So without any further ado, we'll move onto Harry.

Harry Verhaar

Okay, good afternoon. So it's good to be in the same revenue with so many likeminded friends. So I'm responsible for public and government affairs globally for Field Lighting, and a large part of the work that we do there is to advocate the relevance of energy efficiency, and also addressing climate change or development challenges. So what I would like to do in this part of the webinar is to briefly reflect on the broader relevance of energy efficiency just quickly, as we also have COP21 and the World Global Forum. And to show some of the solutions that we are working on, very much in line with the previous speakers, and then lastly quickly to touch upon how we work on a lot of things that accelerate market uptake over efficient solutions as a sector, as an off-grid sector.

So let me go to the next slide. So here, actually, you see a connecting dots between developed and developing countries. The huge relevance of energy efficiency and moving forward. If you look at the three global challenges, population growth and demographic changes, and so some countries with aging populations, others with a lot of youth here, and fourthly, _____, and high percentages _____. Then urbanization, then the rise of the middle class. This is putting a lot of constraints on resources, and this is on the full resources, energy materials, food, and water. We zoom in on energy. The big issue, if you take a step back, is that due to these global trends, the energy demand keeps on growing by about three percent per year, and this is twice as fast as the rate of improvement in energy efficiency that we accomplish.

And energy efficiency improvements are based on building some new buildings, renovating some of the existing infrastructure, and switching to more efficient appliances globally. So we see that at least we need to double the rate of energy efficiency improvements if only to stabilize global energy demands and greenhouse gas emissions. This translates into two areas. So one, the need to accelerate renovation of existing infrastructure, and where that exists is mostly if you take it a little bit like in _____ countries, and then the need to leapfrog where new infrastructure will be built, and also have their people get access to energy.

Then we also walk the talk, and a commitment to be made at COP21 is we will become carbon neutral by 2020, so also implementing efficiency, and we will be using all our own facilities. And as many of you know and certainly you've done a lot of _____ and that is on the call, we continue to lead the Global Lighting Sector Transition, which was years ago responsible for 19, almost 20 percent of electricity consumption. So quite significant, but also you have to work with other sectors' buildings, appliances, district heating, transport and so forth so that we all get moving in that same direction.

So like I mentioned highlighting, the second parts are leapfrogging, our mission as Philips—quite similar, not surprisingly, is that we will do everything we can and work with all of you to eradicate light poverty. What is interesting is that not only we are a lighting company, but as soon as grants and _____ electricity in the current OCD countries, the first service that they addressed was also there was electric lighting. And the first appliance, the very very first mass electric appliance was the incandescent light bulb, _____ of which we are making so much effort to face it out globally because it's so inefficient. But that was the first terms that people are quite ____ and on which our company was founded.

If you look at the role of lighting, had not only lighting is changing to LEDs, but there is much more happening, which makes it I can tell you exciting to work in the lighting space. So we're moving from analog to digital solutions, also moving from standalone products to employees that are connected and are smart and that you can manage, that you can measure, but also where you can show the light when and where it's needed.

But also we're moving from products and replacement cells through distribution and to systems and services and looking at lighting and how it functions in its ecosystem. And I'm showing you this because the analogy with off-grid solutions where we provide access to energy and access to lighting is very interesting and has a high analogy. So then we leapfrog to solar lighting, so people don't even need the grid, and they become zero energy. So we ourselves are focusing on quite some solutions.

So lanterns, which are you could say the first version of lamp _____ being like petroleum lamps, but then without the fuse and the petroleum, but with an LED and a battery, and then moving on, like some of the other speakers shared, also to solar alarm systems and other solutions. Similarly, we are taking a community perspective, and provide lighting for a community that can be for a marketplace, but also for healthcare facilities where we are working with each end of the team on healthcare centers where we also have solutions. And you see that in the upper right corner of the slide where we provide more energy, and then just need it for lighting, so that also a health clinic can use additional electricity to power healthcare equipment and to _____ vaccines and so forth.

So really taking a community perspective. What we should not forget, and I'll share a few examples later on, if you look at lighting, then in developed markets, about 25 percent of all electricity for lighting is for residential use. And that perspective is really important to work on solar lenses and solar home systems and so forth, but 75 percent of electricity for lighting is for non-residential. So for offices, for retail, for factories and for out office street lighting. So that is why we're putting a lot of emphasis on solar energy street lighting. Because the thing is that it will make not realize so much, but all these people that are going to be urbanized in the next decades are going to be in those countries, and it's not only China, but that's also India, Africa, and so forth. So also there we need to prevent such a huge demand created on _____

that not only it becomes economically non-viable, but also it endangers the possibility for social economic development in a broader way.

So you will recognize in this version of the graph has an area looking at products and systems, but also then however _____ operating in its ecosystem. And that includes they are working without _____ models, and I'm really intrigued there maybe as a side remark into what utilities can do and becoming part of the solution. You see, quite a lot of the utilities across the world that are afraid, are very cautious at least on energy efficiency because they think they are at risk of sounding less _____. But I would say first utilities have an enormous role to play in switching up these models from selling electricity to becoming energy service providers in off-grid markets.

I would say that utilities have a very intriguing and interesting role to play by connecting not through corporate cables that go through Wi-Fi, and those distributed customers. Why wouldn't they become customers, and then also utility can play a role in providing financing over the monthly bill at the higher initial investments? They're typically always going to be related to more sustainable solutions like this case, solar and _____ lighting. So good solar lighting is needed for a number of reasons. In summary, you could say to enable social economic development and to allow education, to allow small medium sized enterprise, and all the right _____. You see your _____. And that is part of a program where we have actually donated 100 of those community light centers.

Yeah, simply to create for just an example that will inspire more commercially based business models. And this circuit pitch is lit up by four solar—the lanterns that I showed you earlier, so you can see the technology has really matured, and it provides the same quality of light and the same amount of light as in a normal—you could say a modern sports stadium. So just a few things here. So we'll be putting a lot of emphasis on the quality of the technology. We've seen a lot of products head out and just handicraft, and they initially provide some light.

Look attractive from a British power perspective, from a grid—British price perspective. But they don't last that long. So it's not only LED that should be long lasting, but also the solar panel _____. Sometimes have an upgradable software. That's why we do a lot of work. I'm going to explain how all of that works, but it's a lot of detail involved in making standalone solutions, hybrid solutions that can for part of the day be connected to the grid and stand alone and _____ solutions. Also in indoor lighting, quite a lot is happening, and we are there, also focusing on systems that are connecting to the other appliances, quite a few that were shown by previous speakers. So also there had been more smartly is we are making that now in _____, but really also to leapfrog to the interfaces and managing their lighting enterprises in their homes or in their work environments.

This not only requires technology here, but it also requires advisors creating projects on designing light as a part of an infrastructure or a community. _____ also requires financing. So a year and a half ago, we launched an entity called Philips Lighting Capital, and that is also where we are looking at how

can we finance in our case solar lighted heat solutions for individuals, for companies, for public entities, and for communities. Just a few project examples before I go to how we collaborate as a sector. So here you see a project in a village in China in Guiyang. It's a project that we did with The Climate Group, and this village is completely off-grid. So they had no light before, so what you see is all solar energy lighting.

And I can tell you the villages are really happy, and there it meets the developing in a faster paces in the past. Street lighting. Importance of this is then zero energy street lighting, and also you're released a public authority from the requirement to investing in corporate cables. So it's not only leapfrogging in the appliance, but also in the whole infrastructure that would otherwise be connected to. This is another project in Indonesia. Same comparable light system. Not so many differences to see, but also in industrial facilities. So this is in India at the Unilever facility, but then also for the facility, and then the reliability and the access to rely on lighting then allows them to have proper security, but also to work throughout _____.

And as a company to be efficient. And this is a facility in Egypt. So we see actually in the last two years a fast growth of solar energy lighting also for infrastructure, for roads and streets. Then a few words on how we work as a sector. I really do believe it's important to show leadership as a company head, to do and to follow through on your vision and what you promise. But I think also it's important that we can accelerate as working as a sector. So five years ago, we cofounded with a lot of upstarts, with UN, with the IFC, the Global Off-Grid Lighting Association. And The Global Off-Grid Lighting Association is working in a number of areas, so of course in developing technology quality standards, but also on policies, _____ advice.

Actually, all that it takes to accelerate and to—yeah, to accelerate development of a quality-based market with solutions that are not only technically sound and energy efficient—because we see the reasons for that, but I think also with people who have less spending power, they are making consider a choice. So if we disappoint them by low quality solutions, then actually we would even slow down the uptake of the appliances that we are all advocating so much.

What is interesting is that last year, we launched this handbook, you can find it online. I've included it in the web _____ there, but also in the last quarter of 2015, we co-hosted with IFC the fourth Global Off-Grid Lighting Conference in Dubai. And I remember well just a couple years ago, I was also at the second conference in Nairobi five years ago, and there you could really see we were all advocating why this was needed, many of the speakers. And you can see that a lot of the products there are almost in the corridor or kitchen tables, how it works, and wires and handicraft. And you could really see that in a couple of years, the whole sector came of age because we have professional speakers, people who want to talk about the house, the business models, show really high end solutions in very remote and rural areas connected via Wi-Fi via the internet, managing energy.

It was really, really impressive, and there were 500 people there, and I presume _____ people listening online were there. So we are very much happy these are the areas that GOGLA is working on. There are now 70 companies, and the largest part of the off-grid lighting sector, I remember. So we worked together with some of measuring energy access. Because once you get measured, you can get on, on funding, on advocating, and usefulness and the need to a lot of kerosene subsidies. But also a lot of things that can hinder market development, like VAT and import duties. We've seen examples where a country sees a growth in a sector, in appliance sector, and they think, "Hey, this is really interesting. Let's put higher VAT or import duties."

Where it's actually the productive use of more efficient appliances will bring them economically more income. So those are also things where we can help as a sector in advocating. We have some success there in different countries in Africa where _____ countries, and then it moves away from the desire or practice of input duties and so forth. Also looking at mobilizing investment, particularly in off-grid lighting companies that are in need of cash because of their growth rates. Quality products and quality assurance are what we very much discussed today, but also in protecting IP as well as in the last point, in starting off with more circular mobiles of doing things where you could say in western countries, we are now looking also from a materials perspective and how can we clean up and how can we reduce a mountain of waste.

It's also relevant and in countries where people get access to electricity that we also from the beginning had designed. This business model is such that our products are repairable. We use what is available, and they—the models are circular. So that's a little bit what I wanted to share maybe as a summary, and we see—I think all of you will think the same, but still I wanted to make this point. Energy efficiency is crucial for social economic development. It's really about leapfrogging, so even from different perspective, we shouldn't think that those kinds can do—have technology that other countries are moving away from, that we need to leapfrog.

It's important to take an ecosystem perspective, and also lastly have the most surprisingly partnerships I keep because nobody can do this alone. But by working together, we can really do this at the speed that is required. And not only to provide to technical global challenges here, but also to get those people, get within socioeconomic development aspirations that they I think very righteously aspire. So thank you very much.

Tim Reber

Okay, wonderful. Thank you, Harry, and again, a big thank you to all of our panelists. We have a ton of questions, and unfortunately, I know we won't have time to get to all of them, but we'll get to as many as possible. And those that we don't have time to get to, we will go ahead and send that to the panelists so each of you can provide e-mail responses. So without any further ado, we'll just go ahead and dive right in. So the first one goes to Rexel. So given the large potential benefits to women's health and economic empowerment, are there any high efficiency cook stove options out there

specifically referring to electric cook stoves? Obviously Bio Mass cook stoves are a hot topic right now, but how about electric power cook stoves?

Franck Legardeur This is Franck speaking. I'm not sure I understood clearly your question. I do apologize. Could you please repeat the question please?

Tim Reber Sure. Given the potential benefits to women's health and economic empowerment, what electric high efficiency electric cook stoves might be out there as a potential option for energy access?

Franck Legardeur Well, our—to be honest with you, we don't really work on this kind of a solution today or links to cooking or kind of that could be used in that area. We'll be happy to reply in support for any lighting solution or any other one, but for these kind of appliances, we don't have a right now solution to provide to be honest with you.

Richenda This is Richenda if I could just step in for a moment. I know our colleagues at the Global Alliance for Clean Cook Stoves, which is hosted—founded and hosted by the UN Foundation is looking at this whole question of the ability of induction stoves and particularly to be able to provide cooking solutions. The challenge there is to date, there has not been—and I don't know—I'm not the technical person to say whether physics prevents it, but there has not been a push or appliance that has come up that has shown the capacity to be more efficient than the—or at least significantly more efficient than the induction stoves that are currently already available on the market.

And therefore, that limits their utility in an off-grid setting. Unless you have higher load capacity, perhaps in a larger mini-grid or in a grid environment, then to date, we have not seen a significantly more efficient induction stoves. I know it is something the alliance is looking at, and perhaps Matt or others at CLASP who have the technical background can comment on the feasibility of driving significantly higher efficiency there. Thank you.

Matt Jordan This is Matt. I can't really speak to the relative efficiency or performance of induction stoves, but there are some really interesting electric enabled stove technologies on the market. I've seen what I believe is called a rocket stove that is sort of a pillar where there's a small electric fan at the bottom of it that drives air up into the flame that burns very, very efficiently and very hot, very quickly. It's a really, really cool technology. I think one of the barriers to that technology's uptake is that it is relatively costly and cook stoves consumers aren't accustomed to spending very much on their cooking technologies.

I think also I haven't really seen solar home system or mini-grid companies couple their products with this electric driven but also biomass driven stove. There are some interesting technologies out there, and I think there is an opportunity to—for the cook stove's field to couple more strategically with the emerging off-grid solar market, but it's still the early days.

Tim Reber Okay, wonderful. Thank you. So moving on, we had a couple questions, Harry, during the - _____ presentation about the risk of theft and how you cope with theft for street lighting systems, if there are anti-theft mechanisms

available. So Harry, and anybody else who might be interested in addressing that.

Harry Verhaar Yes, so mostly, the battery is put underground so that it cannot be stolen, and the panels are high in the post. I don't know statistics on theft, but it's really something that we indeed look at and what can be secured so the system is not dismantled.

Tim Reber Okay. So there seems to be a lot of interest—we have several questions coming in for the Rexel Foundation about plans to expand globally. We had questions about expanding potential work in the Himalayas, in Brazil, in Africa, and Bangladesh just to name a few. So I don't know if you can talk a little bit about future plans to expand and possibly partnering or collaborating with folks active in those regions.

Pascale Giet Yes, thank you for the question, I will be happy to answer. As I mentioned this before, we really want the project to be in line with the footprint of the Rexel Group, meaning we'll be happy to have some project in Asia because we are in all the countries, but in South America, we are not anymore. So just as an example, if you want to apply—if you have any projects that you would like to submit to the Rexel Foundation, there's a form to fill on the website that you just have to send to the Rexel Foundation at Rexel.com/Contact, and then will let you know regarding the geographic—it's eligible—but also if it of course matches with our KPI.

And so having said that, of course we would be very happy to get your different results and get the opportunity with the different attaches of this conference to dive in there in the project as long as it's in line with our positioning.

Tim Reber Great. We will also, again, make the presentations available, so contact information for all the panelists should be available on the presentations on the _____ Center website for those interested in reaching out. This next question is regarding Global LEAP. Are the awards focused exclusively on off-grid appliances or as globally _____ testing and performing due diligence on micro scale generation devices, such as solar lanterns or cook stoves.

Matt Jordan So to date, the work of the Global LEAP Awards has focused exclusively on off-grid appliances, and for a variety of reasons, household off-grid appliances. We've done work on LED lighting appliances, we're doing our second television competition right now, and there's an inaugural fan's competition going on right now. There's already been a great deal of very, very good and very, very effective work regarding market transformation for solar portable lanterns, for solar home system kits, and for cook stoves. Lighting Global does great work on solar portable lanterns and solar home system kits.

The Alliance for Clean Cook Stoves does great work on cook stoves, and Global LEAP and the Global LEAP Awards—well the Global LEAP Awards, I should say, have focused only to date on off-grid appliances, and there's—because of all the other good action and support of the market, there's no

plans right now to sort of expand that. That said, Global LEAP does support quality assurance work on other technologies, including mini-grids, and some of Global LEAP's funding goes to support the work of letting Global on solar portable lanterns. And other—you know, solar home system kits, et cetera. So Global LEAP is involved in other technologies, but the Awards program is focused exclusively on off-grid appliances for the time being.

Tim Reber Great. So this next question sort of follows up on some of that. It's a general question for all the panelists. While there's a lot of work and effort being spent looking at off-grid networks, electricity access, and energy efficiency, are there particular standards that markets are working towards? What is the level of engagement with each of the organizations with standards development organizations?

Matt Jordan I can address that, this is Matt. Speaking for CLASP, we're very, very involved in grid connected appliance standards and label development. That's sort of our historical strength and what we've been working on for most of the last 15 years, and we're big believers in standards. They're very, very important to create competitive, even playing fields for manufacturers. On the off-grid appliance front, I am of the opinion that it's a little too early to know what a standard would look like, and there are no, to my knowledge, centrally placed institutions who are driving and charging very hard toward an off-grid appliance standard. Now that said, we've gotten some early indications out of Bangladesh and _____ that they're interested in developing an off-grid appliance standard for televisions and fans, and that's a very, very exciting development. I would hope that that standard could and would be developed in such a way that it's transferable and harmonized with other global efforts.

Because I think it's really, really important in emerging markets to create as few barriers to entry as possible, and disharmonized standards can create pretty significant market distortions.

Tim Reber Wonderful. I don't know if anybody else has thoughts on that front or we can just move on. So we do have time for just about one or two more questions, and it's kind of another general question. Maybe Richenda might want to touch on it. Appropriate regulation is indeed quite important. To maximize the effectiveness through effective monitoring, verification, and enforcement is also necessary for those regulations. So what are the barriers to effective regulation and monitoring verification enforcement efforts, and how can those barriers be overcome?

Richenda Matt, that was a question for me?

Tim Reber Well I think it was—yeah.

Richenda I think, sorry, just to say I think that one of the—it's not an intrinsic barrier, but this is a rapidly moving market area now, so part of it is education. Part of it is knowing how these changes are taking place, so what appliances are on the market. Sometimes we see regulatory efforts can be or government programs can be sort of taking one particular appliance, which may have been relevant five years ago, but particularly in the off-grid context may not be

best in class today. So one of the areas I think as a sector we need to continue to work on is really helping to ensure that we are educating stakeholders, again, broadly engaged on off-grid energy access to know what is considered best in class.

And I really salute the work that Global LEAP and CLASP and others have been focusing on, particularly in terms of trying to help showcase what are the super-efficient appliances available today so that we can ensure that people are aware of what is now considered best in class.

Tim Reber

Okay, wonderful. So I think we have a ton of questions still. Unfortunately, we're about out of time, but again, I will remind everyone don't fear, we'll be sending all the questions out to the panelists along with e-mails, and hopefully providing them with an opportunity to answer all the questions via e-mail offline from this session. Again, remember, the presentation as well as contact information will be posted to the solutions center website. So with that, we'll have to close up the question and answer session and move on. Before we close, we do have a very brief survey for you and would like to ask everyone in attendance to please go ahead and answer a couple of questions for us. So if you could please answer the first question on your screen right now.

Okay, great, thank you. And the second question. Great. Third. All right, number four. And the final one. Great. Thank you so much, everyone, for answering that survey. So with that, on behalf of the Clean Energy Solutions Center, I'd like to extend a big thank you to all of our expert panelists who gave great presentations as well as to all of our attendees today for joining us. We appreciate everyone's time. I invite all of our attendees to check the Solutions Center website if you'd like to view the slides and listen to a recording of today's presentation as well as previously held webinars. And additionally, you'll find information on other upcoming webinars and training events on the Solutions Center webpage. We're now posting the webinar recordings to the Clean Energy Solutions Center YouTube channel as well.

Please allow about one week for those recordings to be posted. We invite you to inform your colleagues and others in your network about the Solutions Center resources and services, including our no-cost expert policy support through our ask an expert program. And with that, I'd like to thank everyone once again and invite everyone to please enjoy the rest of your day or evening as the case may be, and we look forward to seeing everybody again at future Solution Center webinar events. This will conclude our webinar.