

REN21 2013 Renewables Global Status Report: Focus on South America

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Webinar Panelists

Christine Lins Executive Secretary, REN21
Marcus Wiemann Alliance for Rural Electrification

This Transcript

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Sean Esterly

Global Energy Laboratory and welcome to today's webinar, hosted by the Clean Energy Solution Center in REN21. We are very fortunate to have Christine Lins and Marcus Wiemann joining us today. This outstanding group of panelist will be discussing the REN21 Renewables 2013 Global Status Report with the focus on South America.

One important note I'll mention before we begin our presentation is that The Clean Energy Solutions Center does not endorse or recommend specific products or services. Information provided in this webinar is featured in the Solutions Center's resource library as one of many best practices resources reviewed and selected by technical experts.

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We encourage everyone to ask questions throughout the webinar. You may do so by entering your questions into the question pane in the GoToWebinar panel. I will then present those questions to the panelist during the question and answer session. If you have difficulty viewing the materials to the webinar portal, you can find PDF copies of the presentation at cleanenergysolutions.org/training and you may follow along as our speakers present and I will send out that link during the webinar as well. Also, an audio recording in the presentation will be posted to the Solution Center Training page within a few weeks.

So, we have a great agenda prepared for you today that is focused on the REN21 Renewables Global Status Report with the regional focus on South America and before our speakers begin their presentations I want to provide a short informative overview of the Clean Energy Solution Center initiative and then following the presentation we will have a question and answer session and then closing remark and a brief survey.

My slide provides a good background in terms of how the Solutions Center came to be. The Solutions Center is an initiative of the Clean Energy Ministerial and is supported through a partnership with UN Energy. It was launched in April of 2011 and is primarily lead by Australia, the United States and other CEM partners. Outcomes of this unique partnership includes support of developing countries through enhancement of resources on policies relating to energy access, no cost expert policy assistance and peer-to-peer learning and training tools such as the webinar you are attending today.

Now, the Solution Center has four primary goals. It serves a clearinghouse of clean energy policy resources. It also serves to share policy, best practices, data, and analysis tools specific to Clean Energy policies and program. Third, is the Solution Center delivers dynamic services that enables expert assistance in learning and peer-to-peer sharing of experiences. And then lastly the center fosters dialogue on emerging policy issues and innovation around the globe. Our primary audience is energy policy makers and analyst from government and technical organizations in all country. We also strive to engage with the private sector, NGO, and civil society.

I want to be—my key features that the Solutions Center provides as its expert policy assistance. The asking expert is a valuable service offered to the Solutions Center at zero cost. We have established a broad team of over thirty experts from around the globe who are available to provide remote policy advise an analysis to all country and again at no cost. So, for example in an area with solar thermal technology we are very pleased to have [Indiscernible][0:04:38] of European Solar Thermal Electricity Association serving as our expert. If you have a need for policy assistance on renewable energy or any other clean energy sector, we encourage you to use this useful service. Again, this assistance is provided free of charge. To request assistance you may submit your request by registering through our Ask an Expert feature at cleanenergysolutions.org/expert. We also invite you to spread the word about this service to those in your network and organization.

We encourage you to explore and take advantage of the Solutions Center resources and services including that note the expert policy assistance. Subscribe to our newsletter for more information and participating webinars like this.

Now, I'd like to provide a brief introduction of our distinguished panelist today. First off is Christine Lins, Executive Secretary of REN21. Christine will be providing an overview of the key findings of the 2013 Global Status Report.

Then following Christine, we will hear from Marcus Wiemann of the Alliance for Rural Electrification. Marcus will provide an overview of the status of renewable energy in South America. Now, please join me in welcoming Christine Lins to the webinar.

Christine Lins

Thank you very much. Good morning/good afternoon ladies and gentleman. I hope you will be able now to see my screen what I've just shared with you. It's a big pleasure to be here again with you all for this presentation on Renewable Energy Status based on the REN21 Global Status Report 2013 with the special focus on South America.

So in a nutshell, before I go into this data on renewable energy just a quick word about REN21. REN21 is a multi-stakeholder policy network grouping international organization, national governments, science & academia, sectors, NGO, as well as industry associations with the technique of facilitate a rapid deployment of renewable energy globally. We have for example the government of Brazil in our network as well as the Alliance for Rural Electrification and this is my pleasure to welcome my co-presenter Marcus Wiemann take a very general [Indiscernible][0:07:28] to this webinar today. REN21 is producing an annual report, the Global Status Report that was launched in June that is an overview on global market overview, industry trends, policy landscape, and we also focus on rural renewable energy in developing countries. It is based on contributions from over five hundred people from all around the world which we'd like decentralized status and nature of renewable energy and covers all renewable technology as well as all sectors from power, heating/cooling, and transport and each year we have a special focus in the report in 2013 this is on System Transformation as we see that with high energy of renewables, the importance of integrating them in the system is becoming more important.

So, in a nutshell, to the findings where does renewable energy stand in the world at the end of 2011 and that's actually the only data for 2011, all the rest is based on 2012 data but as far as the share in renewable energy in global final energy consumption is concerned in the end of 2011, 19% are all final energy consumption well produced—well provided by renewables. You see that this share is more or less equally spread between our modern renewables and traditional biomass. We in the global status report give an overview on the twelve markets in different section and there you see that several South American countries such as Brazil, Argentina, as well as Mexico play in this top RE in different categories, solar water collectors, biodiesel, ethanol, biopower, geothermal and hydropower so quite the mix. We basically portray this because I think it's interesting for countries to find their position in the global picture.

As far as power is concerned, the renewables comprised about 26% of global power generation for basically and about 22% of global electricity is now less produced in renewables and I think what is very interesting that we see that renewables accounted for over half of estimated 280 GW of new electric capacity that was installed in 2012. So, on a global scale more than half of all the power plant that when you reveal for based on renewables whereas in some other parts of the world such as Europe it's because [Indiscernible][0:10:32] this 72% of all new power plant where renewables based in Europe in 2012.

As I mentioned before we do not only focus on electricity but also portraying the trend and developments in the field of heating and cooling as well as transport and there we see in heating and cooling we see a trend of transition in the use of larger systems and we see also the solar collectors are now used in more than 56 countries from all around the world for water and increasingly for space heating and in many applications also, for cooling purposes. As far as transport is concerned on the one-hand liquid biofuels are on the rise they provide the most frequent 4% of global road transport fuels in 2012 and we also see that more and more countries are putting in place policies promoting electric vehicles and often these policies are closely quite to renewable energy support especially on the local level.

So, let me quickly take you to a couple of technology findings. In the field of hydropower, 30 GW of new hydropower was added in 2012 and increases the global capacity by 3% and bringing installed capacity to nearly 1000 GW. We see that there is a growing prominence of joint-venture business models involving local and international partnerships as well as the size of project increases and I think also very encouraging for the sector and decision of the World Bank to fund again hydro-projects and of course Brazil they are playing a very important role actually as the China second country with the highest share of hydropower.

As far as solar photovoltaics is concerned we had a record in 2012, total global operating capacity reached the 100-GW milestone. So, if you look at this graph it took us about fifteen years to go from basically zero to 40GW and then we more than doubled in just two years, so you see the explanation growth of the sector. At the same time we saw prices for solar PV modules falling down more 30% in 2012 and we're also falling the years before which makes the technology on the one-hand much more affordable for many countries. On the other hand, of course this also had some effects on the industry and results some difficulty and some consolidation going on the industry. In Latin America we know that the solar PV demand is shifting from small off-grid applications to large-scale systems, this is especially the case in Brazil, Chile, as well as Mexico.

As far as concentrating solar thermal power is concerned, interest in CSP is on the rise, particularly in the Middle East and North Africa and also in Asia and Latin America. As far as Latin America is concerned, Argentina,

Chile, and Mexico have projects under construction or have indicated intentions to install CSP plants. Here as well, long time very stable development mainly in Spain as well as in California and then since 2008, America increase—of course it's much lower than PV but still we arrived with an installed capacity of about 2.6 GW in 2012.

As far as wind is concerned, in 2012 almost 45 GW of wind power capacity began operation the increased the global wind capacity by 19% to 283 GW. Latin America saw the most significant growth in wind power there both Brazil, Mexico, Argentina, Costa Rica, Nicaragua, Uruguay, Venezuela added capacity during 2012 and you really see the emergence of [Indiscernible][0:14:56] market in this countries with also very interesting support points.

As far as bioenergy is concerned, bioenergy use to produce heating, cooling, power, as well as in the transport sector. Also, there we saw a significant increase and again Brazil is playing in the top link. Bio-power capacity was up 12% to nearly 83 GW with notable increases in some of the BRICS countries.

I mentioned before already, liquid biofuels provided about 3.4% of global road transport fuels, so you see on this slide that the global production of fuel ethanol slightly went down by volume from 2011 while biodiesel production slightly increased.

As far as geothermal energy is concerned, we see both the spreading of applications to produce electricity but also the use of geothermal for heating generation and then clearly we might have a recall from before in the field of geothermal power basically you can see Mexico and as the top four country in the world.

As far as on solar thermal heating and cooling is concerned also very encouraging trend through the global solar thermal capacity reached and estimated 255 GW thermal for glazed water collectors and we see the trend to use solar resources to generate process heat for the industry. So a new and interesting field of education.

One of the reasons that many countries put in place favorable renewable energy policies is that they're becoming more aware of the benefits of the technologies and we see one of them being jobs being created. We see that worldwide renewable energy employment continues to increase and currently and estimate 5.7 million people work in the renewable energy sector with the bulk of employment remain concentrated in Brazil, China, India, EU, as well as the United States. There on the slide, this is actually data coming from IRENA, the International Renewable Energy Agency on a recently published Renewable Energy and Jobs report. There we see that the different technologies generate different amount of jobs but clearly, they're imparting to see that the job creation continues to be rising.

As far as investment is concerned, the [Indiscernible][0:18:03] 2012 was an interesting one. Global new investment and renewable power went down 12% from the previous year's record. I think we still have to keep in mind that this is still the second highest investment record ever. Installed capacity continued to grow. I mentioned plus 30 GW for hydro, 45 GW for wind, 30 GW for PV but investment went down which continued to grow—and capacity to grow which is also a site of forming technology cost I guess. What is very interesting, we saw a dramatic shift in the balance of investment activity between developed and developing countries in 2012. So this 244 billion are composed of 112 billion invested in developing countries which was an increase by 4% compared to 2011 and in the developed economies we saw a decrease of about 29% of investment to 132 billion dollars that must have lost then since 2009. I think this is very interesting on one hand and also very encouraging because clearly it's the developing, emerging economies that have the highest increase in energy demand and so that the places in the world that need the most increase in capacity and actually yields like you nicely see the increasing role of the America and North and South America put together are really an important focal area in the world than together with Asia and Europe and what we've seen also in 2012 clearly an emergence of investment in the Middle East with many countries putting in place policies and objectives to increase renewables usage.

As far as policy is concerned we have an interesting situation about 140 countries all around the world have renewable energy targets in place by the end of 2012 and about 130 of these countries have detailed policies. The number of countries for renewable energy targets has more than doubled between 2005 and 2012, so this is something that we continue to observe when producing your global status report and more and more countries putting in place such policies and again when you look at the map of the world you see the places with the darkened color are the ones with a number of different renewable energy policies in there in South America there is already a quite some coverage also we still have a couple of white spots still in the map.

I will finish with a quick outlook. You might be familiar with the UN Secretary General's objective and campaigns sustainable energy for all which exist three complimentary goals to be reached in 2030 on a global level, this is on one when ensuring universal access to modern energy services for all, doubling the rate of improvement in energy efficiency, and doubling the share of renewables energy mix. These goals has been outlined in a global tracking framework to REN21 along with other international agencies under the coordination of the World Bank and the International Energy Agency has contributed, so this doubling means an increase from 18% that was the baseline in 2010 and next, energy consumption was 18% from 2010 to 36% probably in 2030. So, there is a lot of discussion about how feasibility to reach this objective. This year is a different scenario that exists that might forecast for this year the

sustainable energy for all objectives must have 36% would be there where I'm now just pointing with my mouse, with my cursor. So, you see that conservative scenarios show that we would not reach this whereas not even moderate ones but high renewable scenarios and those putting your focus also in energy efficiency clearly indicate that the reaching of this objective are even surpassing a bit should be feasible and on the one hand it shows that it is important not only to look at supply but also to look at the demand side and put in place energy efficiency policies that can really have an impact on energy demands.

I'd like to share some graphs with you showing that in the past historic projections are often fell short. REN21 early this year launched a report called the Futures Report which analyze about 50 different global scenarios all around the world and there we just see that for example in the left, the International Energy Agency in the year 2000 projected that wind would generate up to 25 GW in 2010, so that is the blue bar and you actually see the actual installed capacity in 2010 in the red part where you see that they were wrong by a factor of ten—I mean I would not only say that they were wrong, there were many others including environmental NGOs that have completely underestimated the deployment of renewables and I think also the 100 GW PV number that we have seen before is really something that many people would not have projected couple of years ago. So, in conclusion, we see that there are scenarios pointing to the effect that reaching this objective is absolutely feasible however it will take about policy action because it will of course also mean that we need to double or triple financial flows into the sector and so this, to have predictable and stable policy frameworks are absolutely key. They are key for the industry and that is also key for investors. There is one element that I would like to direct your attention to that's the fact that the doubling of the share of renewables by 2030 will need to result in at least the tripling of the share of modern renewables. You might recall one of the graphs at the beginning of my presentation which showed that the current year is roughly composed of half modern renewables and the other half tradition biomass within sustainable energy for all. It is clearly not about increasing the share of tradition biomass therefore the modern renewables have to including sustainable head part has to increase even quicker and this also shows that you will need both centralized and decentralized renewables. So, we cannot only rely on the big projects, but we need them all basically and the phasing out of [Indiscernible][0:26:25] fossil fuel subsidies that will be absolutely closure and it was mentioned at the beginning, integration of renewables will become more important. With this brief overview on the global situation, I hand it back to the organizers and to the present issue. Thank you very much.

Marcus Wiemann

Yes. Hello. So, this is Marcus Wiemann. Thank you for Christine for this very nice overview on the renewable energy sector in South America. I hope everybody can understand me well. Well, I'm the general secretary of RET Alliance for Rural Electrification and it's my pleasure to speak

with you and to present to you the potential of quick renewables in particular with some focus on three countries in Latin America, Peru, Bolivia, and Columbia. Hmm. Hence, over the next period, I think there's some very good market development in developing countries and emerging countries also and maybe, we still look through all these. We're still looking on a lot of investments with the sector, but we see it in a more interesting meanwhile into the outward sector, which should be fifty percent of the—of activities done by a lot of stakeholders at the same time. You follow into the subject itself. I would like to introduce the alliance a bit more closely to you.

Next slide, please.

I'll get a bit of support from the technicians. So, this is the agenda. So, after some introduction to the alliance, we will have to be looking to the three countries and then, have a look also what is needed to further progress on this subject.

Next slide, please.

Yes. So, for those who are not yet familiar with the Alliance Rural Electrification, it's been formed that we were [Indiscernible][0:28:31] only international business association who promotes off-grid or decentralized renewable energy and technologies for rural electrification issues for developing countries and emerging countries also. As this presentation is done in English, I would also like to let you know that a number of information are provided for our website as mentioned by colleagues and the secretariat who are most very fluent in Spanish and I must admit that I'm not bad. So, if there are any concrete questions that you would like to ask us on the off-grid sector, please don't hesitate to contact us after the call.

Well, what is the main objective? In the end, we've got ourselves as business-driven knowledge-sharing platform as a mixed network platform to share these practices and to share good competencies with our worldwide unit of expert partners and global presentation of our big private dialogues. We engage to a number of countries on a regional level as well as on the local level. As we would see in the diagram there, we have implemented this, you know, so-called three-year strategy concept and as there was always some focus in the past in Africa, we thought that we should speak the good news and spread the good news throughout the world starting with Latin America in already July this year to getting to next year by July. So, this slide is not completely correct, we already started with the said activities. Right now, we're looking for technology topic to establish and extort, but there's—we think that's more hybrid case of domain and fraud. I think it's still related to the drug use, right? It's more hydro that we further develop that we got and would like to focus our companion to [Indiscernible][0:30:26] beyond that topic. Hmm.

Next slide, please.

The way we work is basically to work on three levels to support members and stakeholders from the one hand who promotes our members to public affairs support, which means that with a number of raised publications—some publications, position papers, and pains and anything that we got into this kind course market studies, we support the business itself. When it comes to the business and energy support, it's that also what—I think it's not today to organize webinars, it would do that as well, but also, we organize the events in the focused countries where we can have improvement on politics. That's traffic, which of course, be done with some [Indiscernible][0:31:22] whether than the last part was the membership supports through the alliances.

Next slide, please.

Just to give you and overview—who we are, we also march here for the business platform and mainly driven through the private sector who have joined increasing membership of more than ten percent plus this year, which is nice news. Hopefully, we can vote for the recent business especially if we are reaching more urgent goodies in new regions and [Indiscernible][0:31:22] new issues. Some are spread and some are [Indiscernible][0:51:55]. Please continue for the next slide.

How would we work? We work a bit similar. If I may say so, it's entered into one with a number of international organizations, which you'll see on slide number six now and we established a number of platforms that will be up in concrete exchange and basically, we would like to engage on the same level as in Africa and Latin America, which means that we would like to be the focus—a key for the point for institutions like the commission to get engaged with the local countries.

Next slide, please.

Why is rural electrification so important? In the end, we'll look into the global perspective first so we serve. When most of the un-electrified people found in Africa and Asia, but this one would see further. In the next slides, there are still—they're not doing that in America. So, you'll see a number of figures being carried out by international organizations with say at the end of it. A lot of investments will need to go into the rural developments or into the rural regions and so, we also think that we want you to record technology development in a better innovation. There are available in business models to make a business on the rural level feasible as well as much better and possibly to look forward. So, we recognize our reading and what those who observed be right the missions general assembly to see that they forced development [Indiscernible][0:33:52] 2015 agenda considers energy key engines. This is one of our topics for the lecture shots also. So, I think we are working on the right topics. Now, moving into what that quite further, please, next slide.

You would see that—well, as we see other [Indiscernible][0:33:52] for rural electrification as a complementary facilitator towards rural electrification and improvements. As such, you know, we noticed that sometimes, with extension, it's not always feasible to do different reasons either to the course of economic reasons or our topography, etc. So, there are already technologies available especially when it comes to hard realization. We need which to make efficient, effective, and no-cost solutions that will reject possible lines. This is one of our focuses to enable electric development in rural areas to enable us.

Next slide.

So, as said earlier, I would like to look a bit more into three countries to give you a perception of how developments are ongoing there. You should know that—well, others have developed a country assessment tool, which means that by the alliances of the part one hundred fifty and one hundred sixty countries, we are between continents. So, we would improve Latin countries as well and then, look into a number of different indicators where we approach the things are necessary to investigate or to understand to which countries had best potential for rural electrification. So, there are reasons like economic growth, there's correction, there are sorts of commitments as Christine had earlier to renew energy targets but also commitment in terms of budgeting to establish and we've been looking through all of this. When we saw the bigger countries, Brazil, Mexico, which had a strong input towards the focus on renewables and the great pot, but we observed also that there are no countries like Bolivia and Columbia with strong interests to expand their the rural electrification speeds.

Please next slide.

So, here, you would see a nice overview of those countries which already enjoy with trends and increase in electrification rates. So, if you look on the right hand, you would see countries Haiti to Peru and the trends from 1990 to 2010. The country mentioned first, well, enjoys or has the highest potential. Somehow, for rural electrification, Haiti, but of course, we're looking at the indicators also. I said earlier that we have Peru, an interesting country to us. I will look into those a little bit more in detail, but you can see that in America, it's such; hence, electrification rate of only six percent in total. If you're looking at rural areas, it's twenty-eight percent.

Please then, the next slide.

So, what you'll see here, in the end, it the summary of forty countries in Latin America. Those who are in the diagram on the left side have the biggest difference between the rural electrification as such in those in rural areas. Those rural on the right side will have the closest development in those regards. So, those countries starting then from Haiti to Peru are more

on the left side and also—and we have Columbia as one of our focus countries. When it comes to regulatory framework, it's very promising.

Next slide, please.

So, looking into Peru itself. Well, as you see, the rural electrification rate is about sixty percent. It's the ninth lowest in Latin America so there are about 1.5 billion people or households un-electrified, but at the same time, we see thirteen thousand off-grid sort of home systems being installed. Also, we would see what—as we look into all types of renewables. We see the biggest potential for some wind in mountains and coastal areas. At the same time, hydro, which get well to our main topic for next year and biomass as a good potential for this. The policy framework itself. So, ninety-six percent is the rate that comes to mind to achieve when it comes to electrification. They installed already a national rural electrification, which we have until 2020. So, a ten-year commitment and they have implemented two funds to support these activities. They also have installed an executive body, a national rural electrification office, which is not always the case when we look into our global—from our global perspective into developing countries emerging markets. So, we see this as a very good sign that—well, responsibilities are clearly attributed to this office and so, work flows can be followed. Let's have a look into the next slide, which is Bolivia.

Bolivia has a rural electrification rate right now of fifty-five percent. It's the sixth lowest in Latin America. You'll see that about five hundred thousand households are un-electrified with [Indiscernible][0:40:15] the highest potential for PV and hydro. The target is not defined as for Peru, but with seventy percent from fifty-five and then reaching one hundred percent within the next ten to twelve years. I think this is also a very ambitious target that we are having with the members than to what players in this market should play the role. There's also the law of universal access to electricity, which was a policy for all. Objectives are to be explained by Christine. So, there's still a link to global frameworks and our system not only done by the law, but also by making available some funds, which is here, the FOCO fund to link directly to—well, hopefully, the best rural electrification solutions. Here, also, there is an organization driving this process, which is the vice ministry for electricity and alternative energy, which gets supports to this development and we have at the next slide, Columbia.

Columbia has the highest electrification rate of ninety-one percent. As said, there was a—it has not the highest need for electrification, but still, a number of households here of about one hundred thirty thousand are also un-electrified; hence, we see that through the policy framework, there is a strong commitment by the country as well to extend the scope of rural electrification rates to about a hundred percent within the next decade and again, there's a main organization driven by the government as well as the [Indiscernible][0:42:20] facilitators. When it comes to what kind of

renewables should play a major role, we see that the wind will have the strongest potential in Columbia.

Next slide, please.

So, coming to the last point, as a summary, next slide again. Of course, we should all work together on how to—next slide, please. Yes. Thank you.

On what—first of all to identify the main challenges in each country, which means normally of course, what's [Indiscernible][0:43:04] this conference for that it's openly institutional and with the political will and then, of course, it [Indiscernible][0:43:09] to transform or flow into local institutional frameworks and all is up to make funds and [Indiscernible][0:43:17]. This is not always necessary to directing support from the public center for all of that. It would blend into financing tools and so, in the end, it needs good information to push innovation like business associations to translate its push in those directions from the private sector to public and vice versa from the public to the private sector and this is why we are the expert. That's where it's connecting to one, I suppose and when we go into the last slide, please.

You would see a number of activities where we would certainly line to invite all participants in this call to join us or to follow us with our five-month [Indiscernible][0:44:07]. You're more than welcome to follow this more closely through corporations. So, first of all, we have established already small hydro task force and would like to extend it to have a bigger voice discussion in Latin America. So, we're more than preparing technology position paper on this and that's the first high land for us. We are very happy that we received an invitation by UNIDO so we will attend a meeting in Brazil by the end of the month where I will be putting the sector. So, we will add to detail into those market briefs on those three countries I just said. So, we have major corporations that we need together with Berkeley University. They have installed a so-called coordinate [Indiscernible][0:45:00] with a lot of experts and expertise to advance our papers, which will then be used in our campaign. So, with this, I think it's done. With its relevance also, it's our personal [Indiscernible][0:45:21] as we say, the perspective [Indiscernible][0:45:24] backup approach, which means that we want to get engaged with the local beneficiaries through the last action point, which is this Mancomunidad—I cannot really pronounce it very well. So, it's the last public point where it's interested to request more platforms to elaborate in Honduras, Guatemala, and Ecuador on how to promote rural electrification and we really want this [Indiscernible][0:45:58] to directly engage with the government.

Well, moving to the last slide, thank you very much for your attention so far and I think Christina and myself will be happy to take calls and to answer them properly. Thank you.

Sean Esterly Thank you Christina and Marcus with the great presentations. We did get some questions from the audience. So, I'd like to use the rest of our time to have a question and answer session and the first question is from one of the attendees that heard that Peru is calling for an international bid related to the installation of PVs for rural purposes. So, have you heard something about that and what do you think about the effort?

Marcus Wiemann Okay. I guess that relates to me. So, in fact, I'm not hundred percent up-to-date on that topic to be honest. What we're in right now is that we prepare these latest policy activities to bring them really up-to-date so that we'll be happy to take [Indiscernible][0:45:58] and when you ask what do we think about it, I mean it certainly shows really that we selected a very good country as there was a strong interest to do more and not force as necessary the fellowship towards this one, but again, please forward this information to me. We'll be happy to take this outward. Thank you.

Sean Esterly Definitely, I'll forward that through e-mail to you Marcus and the next question from the audience is most of Brazil's planned new hydropower consists of controversial large sands in the Amazon, thirty-eight thousand megawatts planned by 2021. So, does REN21, differentiate between large and small hydro and how does it design sustainable hydro?

Christine Lins Okay. Thank you very much Sean for the question. In—there is some differentiation between [Indiscernible][0:48:17] hydropower in statistics and the figures, but in the general, we are of the opinion that there is no universal definition of large and small. The most important is that any kind of technology or any kind of renewable technology is used in a sustainable way as it's more likely [Indiscernible][0:48:31] together with some environmental NGOs. [Indiscernible][0:48:31] have developed this sustainability protocol that is used at different sites and we now have actually this year's global status report on sustainability spot check that is on sustainable hydropower where we basically give an overview on the latest research and where the discussion needs basically spending when it comes to sustainable hydropower so I would invite the person who has answered that question to look into the field status report that can be downloaded from our website www.REN21.net/chr where you can, on page thirty seven, find the sustainability spot check on hydropower that gives in a very quick overview the current taking about this topic, but once again, we are together with our industry partners clearly defending the need of sustainable use of any technology be it hydropower or any others.

Sean Esterly Thank you Christine and Marcus, maybe you could just add a little bit on why these focus on small hydropower for Latin America.

Marcus Wiemann Yes, I would like to answer the question as well. So, certainly, when we open for the potential of different types of renewables, first of all, when it comes to rural electrification, we thought it's necessary to bring a new perspective into our own [Indiscernible][0:48:31]. So, very often, discussions are focused on some of that [Indiscernible][0:50:54] and small

hydro. Of course, I'll follow up, but maybe don't get the attentions. So, we might risk the potential for this solar solution. Let's say they are already sustainable also and by meaning, I'll look into the countries. Of course, we see very different efforts looking into small hydro and we'll just stick at the end of last week that was the so-called [Indiscernible][0:50:54] international campaign against big IO solutions. We presented much in fact. Of course, we think again as a compliment to global [Indiscernible][0:51:47], but still, we need the recognition to do more and to [Indiscernible][0:51:55] and so insulation globally and so I have to balance the interest between different regions, balance all the needs between the cities and the rural regions. We could work to further focus on the small hydro. Thank you.

Sean Esterly Thank you Marcus. Marcus I believe this next question is also directed a little bit towards you. How attractive do you see Ecuador for rural electrification with renewable energy sources?

Marcus Wiemann Of course this is a very spontaneous question. What we have done is again, we looked into a number of different indicators. I'm happy to look closely into those and to provide detailed information. As such I can certainly say that there's no country in Latin America which does not enjoy [Indiscernible][0:53:06] in rural electrification on the rural development project. This is why we want to focus there, if it comes to giving numbers as far as I can recall we have selected about six or seven countries with [Indiscernible][0:53:22] where we should more focus on and [Indiscernible][0:53:25] was amongst them. Again, it would be nice if I could get in touch with the person who asked the question to get very close details, more details on this subject [inaudible 0:53:37] documentation on the others. Thank you.

Sean Esterly All right. Thank you, Marcus. That question is similar to the one we received earlier on rural energy. I will definitely forward those to you. The next question is a little more broadly talking about REN21 and just the Futures Report. It states that early predictions on the evolutions of renewable energy have largely underestimated their contribution. What do you expect from the projection prepared in REN21 Futures Report? Do you think the possibility of that happening again is likely?

Christine Lins Thank you very much for the question because it allows me to actually present that even in the Global Futures Report we did not make our own projections. The Global Futures Report combines and elicits about 50 different scenarios from all around the world. It basically is a report that gives you overview of current thinking about the future of renewable energy. We interviewed about 170 people both from the private and the public sector about their opinion on the future of renewables, both very conservative opinions and very progressive ones. The report really gives an overview on this so by itself it does not come up with its own scenario but really gives an overview of current thinking. It can again be done only from our website www.ren21.net/gfr Global Futures Report. There you'll

basically find on one hand the names of people interviewed and then on the other hand also this analysis of many different scenarios.

Sean Esterly

All right. Thank you, Christine. Next question. It looks like it's more aimed towards Marcus. It is taking into considerations that most Latin American countries already have high electrification rates. Would there be any opportunity for off-grid removal energy system to be applied in grid-connected area?

Marcus Wiemann

It's an interesting question. It's a competition issue at the same time. Generally of course when we [Indiscernible][0:56:12]... Well there are two answers. One is only that solution which supports renewables should be the right one. To conform [Indiscernible][0:56:22] was approved to renewables and the petitions and market price-based approach should be the right approach. At the same time [Indiscernible][0:56:36] and some developing countries like Germany, my home country to see that you can dare decentralized energy solutions again in more and more attention. It's brought on other question on [Indiscernible][0:56:47] energy's ultimate way. I could imagine that it's the start that we should first focus on energy access and services but at the same time the more accurate we have is calculating fuel prices, providing energies to all sites with renewables [Indiscernible][0:57:21] decentralized energy solutions which could then be installed at some stage in less rural areas. Thank you.

Sean Esterly

All right. The next question is a little broader. It can apply to just Latin America, South America, or it can be applied more broadly. The question is, is Shell gas a barrier or an enabler for renewable energy?

Christine Lins

I'll try to answer this. What is happening right at the moment with Shell gas, I think it's very specific to the United States. We don't see so far similar development happening in any other parts of the world. That's partly due to ownership structures and to other people visions. I would not only answer the question related to Shell gas but to natural gas in general. We see natural gas providing flexible usages is in generally considered as enabler of lodged shares of reliable renewables. We do see that there are some complementarities. However, having seen that natural gas prices significantly came down in the United States [Indiscernible][0:59:01] this of course puts more difficult position to renewables as energy prices that we have right now do not really reflect all the external costs and not internalize all this external costs. The situation is still a bit distorted. In general, I think the question that is very difficult to answer. In general, on a global level, I think however on the long run and especially with the increase in energy demand which was seen in emerging economies and developing countries. I believe it is not an either or but it is a both end in their community. Natural gas and renewables are more compatible than nuclear energy or renewables for example.

Sean Esterly

Thank you Christine. The next question uses Peru as an example but I think it can also be applied more widely. The attendee states that in the

past few years Peru has improved its level of electrification considerably, do you think that the productive use of electricity has played a role in this rapid development?

Marcus Wiemann

I think this is addressed to me again. Interesting points. First of all I think it's always important to look into the energy issue from different perspective which means that when areas talk about the necessity to provide for excess energy at the same time promotes local production cycles which will enable global business [Indiscernible][1:01:03]. Whenever the industry or the private sector was able to create local productions to make use of renewables and at the same time want to increase living conditions I think, just to move forward [Indiscernible][1:01:23] as long as it's a sustainable business case in mind.

What we need is a good [Indiscernible][1:01:32], a very good development in that regard and certainly the production site has its role there. Maybe it's still linked with the biggest development than I put into the diagram I showed earlier to you, so to see that the electrification rate has increased from 69% to 85% so it's really considered increase. Most would still relate to the consumption site. I would say the production is increasing.

If I may just add one more sentence on the early question that she had asked, certainly I believe that it's increase of the different energy sources, should compete with each other but then they choose to be considered at externalities or external cost to be considered and as long as this is not completely investigated what would be decided about the production [Indiscernible][1:02:35] subjects. I think it's very difficult to say that even though there's a price decrease to be observed in the United States but this is the full scope of what we need to look into. Again, as we are very often asked the project in rural areas to provide for food because they will be subject to studies from full scope from starting the project until [Indiscernible][1:03:08] implementation and maintenance. I think this needs to be on the same way for these sharers. If it's the right group follow-up and the market site has been [Indiscernible][1:03:17] here but to continue the approach. Thank you.

Sean Esterly

All right. Thank you. This question is directed to you Marcus but I think Christine might be able to weigh in as well. It points out that without the financial backing of the government for national utility, a lot of projects are often too risky. There's too much of a financial risk. Which risk mitigation mechanism do you suggest or propose to overcome this obstacle?

Marcus Wiemann

This is the subject which does not need [Indiscernible][1:04:12] the risk as such I think we need to focus on different levels. One is it's a political framework which needs to be stable. The second point is that the business more than itself needs to be consistent. I think it's very important to make the financial sectors so the development things as well as commercial

things but we're in still young market, how it works, what are the utilities in there, what are the connections between the different levels of these markets so to give them the right understanding with the right group [Indiscernible][1:05:08]. This investigative rating again, I think just in comparison to business models which show traditional sectors, it's just the level of history and experience to investigate here and with a certain unit and with a certain something that we are working honestly. Give better guidance to those who have to decide on financial needs. When it comes to the [Indiscernible][1:05:37] I think there's [Indiscernible][1:05:39] in wanting to talk into support team and to ask for performance and to see what have been done [Indiscernible][1:05:47]. The private sector should have been interested by itself to develop complete solutions. Saying so, we are speaking about what has happened everywhere, smart solutions including on the one side.

To come back to your question and to look into the smart or to provide for smart solution when it comes to energy frameworks and also into blending [Indiscernible][1:06:13] between existing schemes and also with commercial piece of work, financial tools. That would be my answer to you. This all depends certainly on the local conditions. This is why it's... of course sometimes difficult to find direct solution for different countries but again, so just to summarize and [Indiscernible][1:06:43] frameworks would be to stabilize the salient points to it, with this business modeling and then on the other hand try to [Indiscernible][1:06:50] clear understanding the finance support on how it's [Indiscernible][1:06:56] them to actualize regulation of the [Indiscernible][1:07:04] site which is sometimes I suppose overestimated. Thank you.

Christine Lins

Yeah, if I can maybe add to this. I think the single most enabling factor for attracting investors to the renewables market is stable and predictable work policy frameworks. We have seen all around the world that wherever government put in place clear conditions and stable rules. However, it looks like investors and money is flowing into the market. I think Brazil with its standards was very successful. We have [Indiscernible][1:07:41] South Africa where the government has put in place tenders which were very successful. We have other countries that focus on feeding there so there are lots of different support systems or systems but what is important is the stability and the predictability.

When it comes to off-grid solutions, I think there is still a need to make a case for innovative business models. TIA has projected that in order to achieve this universal access for all by 2030 annual investment in energy access which is currently at \$9 billion US dollars per year needs to increase to \$48 billion US dollars per year. So, a significant increase. I think for these development banks on one hand should think of facilities and ways to help raise investment and I think also there is more research that needs to scale up successful existing business models with micro bridge, etc. that need to be further promoted. As I pointed out and depending on the different scenarios you look at, we will have significant

need to increase financing annual investments in renewables and in order for this to happen, policy stability is absolute key. We had in the past year a couple of examples especially in Europe and also to certain extents in North America where work policy changes were reviewed detrimental to the industry, that shies away the investors and that creates insecurity. This in the long is detrimental for any market.

Sean Esterly

All right. Thank you both. Another question which applies to South America but I think could be applied more broadly if you run into this scenario at all, Christine. The question is, did you identify any situation in rural areas where power needs or energy needs could be addressed and discussed instead of specific electricity need? The example they give is using wind for water pumping. Was there ever any scenario where there wasn't electricity need but they did need renewables for, say, water pumps or uses like that?

Christine Lins

I think that there are several studies pointing not the electricity production factor but actually the linkage of renewables to commercial usages and there are several studies that showcase how electricity produced with renewables can improve living conditions, can create local businesses, how it can contribute to desalination of water to water pumping, to agriculture. Actually in the global tracking framework we have [Indiscernible][1:11:06] management for all. We have also tried in the energy access, check to address the linkage of energy production to usages. There is I think [Indiscernible][1:11:20] there.

Sean Esterly

All right. Great. Now, that's all the questions I had from the attendees for today. Before we take our quick survey, I just like to give you Christine or you Marcus the opportunity for any additional or closing remark that you'd like to make.

Christine Lins

I would again like to thank the Clean Energy Solutions and the facility. I think today's webinar, it was great to present the findings of the global status report with specific focus on South America. Stay tuned. Stay with us. Those of you who are working in the region and have particular access to data, we are always looking for additional contributors to the global status report in general but also to our decentralized distributed renewable energy in developing and emerging economies. Should you like to contribute, please send us an email which is at www.ren21.net. Thank you very much. Over to Marcus.

Marcus Wiemann

Thank you Christine and thank you for all the questions. I think we have touched on a very important subject. Certainly, this is fully in line with [Indiscernible][1:12:54] 12 months looking on Latin America. As I said earlier, it's these three countries. Of course, the webinar cannot be used to have full insight into the content but certainly more into our countries also. What does it mean? Anybody who has an interest to be engaged in these countries, please contact us directly. Contact us. [Indiscernible][1:13:21] on the difference between the organizer also but the second point is if you

have further interest to engage on [Indiscernible][1:13:37] engage in other countries in Latin America we are a small team. We are going to [Indiscernible][1:13:41] so we are trying to look into what is necessary from the start but something intelligent from both ways possible. We can go from that point also.

When we mentioned earlier even in my last summary I think certainly when we will include Asia, Africa and Latin America we'll see [Indiscernible][1:14:08] for less potential for growth towards Latin America. At the same time, we had produced recently the latest update of best practices. We are working on [Indiscernible][1:14:20]. There you will surely find very soon more information on our website when it comes to best practices. It was our aim to develop with this new catalog of business cases and overview of innovative technologies throughout the world. You will find already a number of nice examples and disclosure that will be launched next week on the 15th at the [Indiscernible][1:14:53] which is German development ministry meeting on the 15th of October. Of course, it will be available on our website. Thank you very much.

Sean Esterly

All right. Thank you again to Christine and Marcus. Now we would like to take just a moment to ask our audience to answer a very brief survey. We have three short questions for you to answer today. I just hope that improves the webinar, gather your feedback, and improve in the future. Andrew, if you could go ahead and display that first question and that question is, "The webinar content provided me useful information and insight." The next question please, Andrew. "The webinar's presenters were effective." The last question... "Overall the webinar met my expectations."

All right. Thank you for answering our survey. I would like to remind that I will forward along those two questions that we promised, forward them to Marcus and Christine. On behalf of the Clean Energy Solutions Center, I'd just like to extend a thank you to Christine and Marcus and to our attendees for participating in today's webinar. We had a great audience today. I very much appreciate your time. I invite our attendees to check the solutions center website over the next few weeks if you'd like to view the slides and also listen to a recording of today's presentation. We also have previously held webinars on there. You can check out the other REN21 regional focus webinars. Additionally we invite you to inform your colleagues and those in your networks about Solution Center resources and services including the no-cost policy support. I hope everyone have a great rest of your day and we hope to see you again at future Clean Energy Solution Center events. This concludes our webinar.