

## REN21 Renewables 2014 Global Status Report: Latin and South America

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### Webinar Panelists

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### This Transcript

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### Sean

Hello everyone. I'm Sean Esterly with the National Renewable Energy Laboratory. Welcome to today's webinar which is being hosted by the Clean Energy Solutions Center in partnership with the Renewable Energy Policy Network for the 21<sup>st</sup> Century. Today's webinar is focused on the launch of REN21's flagship report, Renewable 2014 Global Status Report with a special focus on Latin and South America. One important note to mention before we begin our webinar 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 the technical experts.

Some of the webinar features today, you do have two options for audio. You may listen either through your computer or over your telephone. If you do choose to listen to your computer, please go to the audio pane in the GoToWebinar panel and select mic and speakers, doing that will just eliminate the possibility of feedback and echo. If you want to dial in by phone, go to that audio pane and select the telephone option and a box on the right side will display the telephone number and audio PIN that you should use to dial in. If anyone is having technical difficulties with the

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That number is 888-259-3826, and they can provide assistance. We encourage anyone from the audience to submit questions for the panelist. We do do questions by text, not my audio. So submit those to the question pane in the GoToWebinar and we'll present those to the panelist during the question and answer session. If anyone is having difficulty viewing the materials to the webinar portal, you'll find PDF copies of the presentation at [cleanenergysolutions.org/training](http://cleanenergysolutions.org/training). You may follow along as the speakers present. Also an audio recording of the presentation will be posted to the Solutions Center training page within a few weeks and will be added to the Solutions Center YouTube channel where you will also find other informative webinars as well as video interviews with various thought leaders on clean energy policy topics.

Now, today's webinar, its agenda is centered around the presentations from our guest panelists, Christine Lins and Arnaldo Vieira de Carvalho. These distinguished panelists have been kind enough to join us today to discuss launch of REN21's flagship report which is the Renewable 2014 Global Status Report. This 90-minute webinar will look in detail at the Latin and South America region. So we'll find out what renewable changes happened in Latin and South America over the course of 2013, learn which technologies are contributing to increased power capacity and also hear about how changes in policies have affected investment levels and market development in the region. Before speakers begin their presentations, I just want to provide a short informative overview of the Clean Energy Solutions Center initiative. Then following the presentations I when we'll have our question and answer session where panelists will adjust any questions submitted by the audience, closing remarks, and then a brief survey.

Now, this slide provides a bit of background in terms of how the Solutions Center came to be formed. The Solutions Center is one of 13 initiatives of the Clean Energy Ministerial that was launched in April of 2011. It's primarily led by Australia, the United States and other CEM partners. The outcomes of the initiative include support of developing countries and emerging economies, do 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.

This slide shows four of the goals that the Solutions Center has. The first goal is to serve as the clearing house for clean energy policy resources; second is to share policy best practices, data and analysis tools, specifically clean energy policies programs; third, the Solutions Center delivers dynamic services that enable expert assistance, learning and peer-to-peer- sharing experiences; lastly, the Center fosters dialogue on emerging policy issues and innovation from around the globe. Our primary audience for the Solutions Center is energy policy makers and

analysts from governments and technical organizations in all countries but then we also try to engage with the private sector, NGOs and civil society as well.

Now, one of the features that the Solutions Center provides is the no cost expert policy assistance. This is known as Ask-an-Expert. The Ask-an-Expert program has established a broad team of over 30 experts from around the globe, each available to provide remote policy advice and analysis to all countries at zero cost. So for example, in the area of geothermal, PV and solar thermal technologies, we're very pleased to have John Wright, principal of the Wright Energy Consulting Group, serving as one of our experts. So if you have a need for policy assistance in geothermal, photovoltaic, solar, thermal technologies or any other clean energy sector, we do encourage you to use this service. Again, it is provided to you free of charge. So to request assistance, you simply go to [cleanenergysolutions.org/expert](http://cleanenergysolutions.org/expert) and register through our Ask-an-Expert feature. We also invite you to spread the words about this service to those in your networks and organizations.

So in summary, we just encourage you to explore and take advantage of the Solutions Center resources. Go out to the web page and browse the expert policy assistance, the database of clean energy policy resources, subscribe to our newsletter to learn about new events and new webinars and resources developed and participate in webinars like this.

Now, I'd like to provide a brief introduction for today's distinguished panelists. Our first speaker that we'll be hearing from is Christine Lins. Christine is the executive secretary of the Renewable Energy Policy Network of the 21<sup>st</sup> Century also known as REN21. She will be discussing key findings from the REN21 Renewables 2014 Global Status Report. Following Christine, we will hear from Mr. Arnaldo Vieira de Carvalho who is senior energy specialist at the Energy Division of the Inter-American Development Bank. He will be speaking to some of the more regional specific findings from the Global Status Report.

Now, with that, I'd like to welcome Christine to the webinar.

### **Christine Lins**

Thank you very much, Sean. Good morning ladies and gentlemen, good afternoon depending on which part of the world you are currently in. It is my pleasure to take you through the main findings of REN21's Renewables 2014 Global Status Report that was launched about two weeks ago in New York at the sustainable energy for all forum. It is a report that gives an overview on the global market industry trends, investment flows, policy landscapes. In the field of renewables covers all sectors from power, heating, cooling and transport as well as all renewable energy technologies, and also put the focus on distributed renewable energy in developing countries.

This year's report gives a particular focus on tracking development throughout last decade as we are celebrating REN21's 10<sup>th</sup> anniversary. The Global Status Report is based on contributions from a network of over 500 contributors, researchers and reviewers. As the progress in renewable energy is very rapid, it is needed to rely of increasing network of people who provides data and review in order to make sure that we give an accurate picture of the market [inaudible] [00:08:03] both on public and private data, data from the private sector and contains information up to early 2014. So it's really up to date as far as renewable energy development is concerned.

When we actually look at what happened in the field of renewables throughout the last decade, we see that this decade showed projected levels of renewable energy that surpassed many expectations, numerous scenarios, projected levels of renewables for 2020 that will already surpass the 2010. We have a situation right now, the actual development has surpassed expectations in many areas. Global installed capacity and production from renewables have increases substantially. Renewable power capacity, for example, excluding hydro power, so it's seven fold increased during the past decade. It increased, as you see there on the slide, from 85 gigawatt in 2004 to more than 560 gigawatt in 2013. This already shows the progress that was made not only in the field of insulations but, of course, also progressed in the field of significant cost reductions for most technologies, and an incredible spreading of support policies for renewables throughout all the world. I'll come to this in a minute.

What is the situation for renewable energy in the world? Currently it provides an estimated 19% of global final energy consumption. With this, the renewable energy share in final energy consumption remained about level with the previous year even if the share of modern renewables increased. This is on the one hand because the rapid growth in modern renewable is somehow tampered by both slow migration away from traditional biomass as well as a continued rise in total global energy demand. This already shows that promotion of renewables is important as highlighted also by the sustainable energy for all initiative of the UN Secretary General which talks about doubling the share of renewables by 2030 from 2010 levels. In order to reach this, increased efforts to speed up renewable energy deployment will be needed as well as action in the field of energy efficiency in order to curve energy demand. So there is still a lot of progress there.

What they're doing in the Global Status Report is giving an overview on the renewable energy champions. There you actually see the Latin American countries in this chart already quite prominent with Brazil in spots, Argentina, Nicaragua, Costa Rica and Uruguay. I'm just going to pause a minute in the first two lines. The first one gives the energy investment in renewable power capacity an absolute numbers. The first five countries are China, United States, Japan, United Kingdom and

Germany. As soon the investment level is put relative to GDP, we actually see an emergence of quite a different number of countries.

There you see Latin America quite prominently represented with Uruguay, Costa Rica and Nicaragua, so three out of five being in Latin America. This already gives a trend which we'll also see later on in the policy area, namely that emerging economies and developing countries are putting more and more focus on renewables both as far as investment is concerned and as far as policy frameworks are concerned. This is a very positive signal as these are the parts of the world where energy demand is still significant growing. There we see renewables are making it into the majority of these countries.

Also when you look at total capacities installed there as well -- you see Brazil and Mexico prominently represented. As far as the power sector is concerned, renewables comprise about 26% of global power generation capacity and 22% of global electricity in 2013 was produced was renewables. So basically 1/5 of all the electricity produced and consumed in the world is renewable space. As far new installed power capacity is concerned, renewable is accounted for 56% of new installed power capacity. We see that hydro power accounts for around half of Latin Americas installed electric capacities or we already see that hydro power is playing an important role in the region. We also see that the renewables are rapidly growing.

As far as heating and cooling is concerned, heat from modern biomass, solar and geothermal sources account for a small but readily raising share of supplying global heat demand amounting to an estimated 10%. We see also that in Latin America, heat is an important consideration of the shares from renewables in Brazil was 43% already quite high and renewable processes, fuel industries in Chile. So we see that these technologies are also picking up in Latin America.

As far as transport is concerned, liquid bio fuel is met about 2.3% of total transport fuel. We see that there is going interest also in other renewable energy options in the transport sector. We see, throughout the world, limited but increasing initiatives to link electric transport system witness renewables. Bogotá in Colombia, for example, rolled out South Americas largest all electric taxi fleet and announced planes for police fleet of 100 electric motorcycles. So also quite impressive examples from the Latin American continent.

As far as hydropower is concerned, about 40 gigawatt of new hydropower capacity was commissioned in 2013 increasing the total capacity around 4%. We see that there an increasing recognition of the potential for hydropower to compliment other renewable energy sources such as variable wind and solar power. Brazil, of course, is an important hydro country as it can also be seen on the chart. Brazil have the second largest hydropower capacity in generation with 85.7 gigawatts installed

equivalent to about 8.6 of global capacity. In Brazil a trend largest reservoirs and run off river projects to reduce land use in sensitive areas and improve sustainable can be observed. So there's also some interesting trends.

If I would have to characterize 2013, I would call it the solar year. Solar PV had a record in 2013 with about 39 gigawatt of capacity added bringing the total capacity to 139 gigawatts. For the first time, there was more PV capacity added than wind accounting for about 1/3 of the renewable power capacity. Solar PV is starting to play a substantial role in electricity generation in some countries especially in Europe, while the lower prices are opening new markets from Africa to the Middle East to Asia and to Latin America. We see that for example, in Brazil, the cost of electricity from rooftop solar was below retail electricity prices. We also see several project, PV projects, in Chile.

As far as wind is concerned, more than 36 gigawatt of wind power capacity were added in 2013. However, following several record years, the market was down nearly 10 gigawatts compared to 2012 reflecting primarily a steep drop in the U.S. market. Offshore has the record year with about 1.6 gigawatt added, the majority of it in the EU. Globally, wind power capacity by the end of 2013 was enough to meet an estimated 3% of total electricity consumption.

Latin America has a substantial share of the global markets for the first time, more than 4.5%. Very fast growth was actually observed in the region with Brazil and Mexico leading the way. Unsubsidized onshore wind generated power is cost competitive on a per kilowatt hour basis with new coal and gas fired plant in Brazil, Chile and Mexico. In Brazil, wind power was excluded from one of the national auctions as it priced out other generation sources out at the market. Brazil is nowadays number seven newly installed wind capacity and Argentina, Chile and Mexico also added wind turbines.

As far as concentrating solar power is concerned, also, there is an increase in the market. Total capacity reached about 3.4 gigawatts while the United States and Spain remained the market leaders. Markets continue to shift to developing countries with high levels of insolation beyond the leading markets capacity nearly tripled with projects coming online in the United Arab Emirates, India and China. We also see that Chile advanced towards its first commercial peak capacity and awarded 110 megawatts [inaudible] [00:18:46]. So we see the extension into new Latin American markets for CSP is continuing.

As far as bioenergy is concerned, demand continued to grow steadily both in the heat, power and transport sectors. Totally primary energy consumption of the biomass reached approximately 57 exajoules in 2013. We see that biomass is on the rise in the field of heating as well as in the field of hydropower where capacity was up by an estimated 5 gigawatts to

about 88 gigawatts. In the field on biofuels, Latin America is the second most important region with their production and consumption of ethanol after North America.

Argentina nearly doubled its ethanol production. Argentina was number four in biodiesel production. In Brazil, biofuels has account for 13% [inaudible] [00:19:49] fuel. Brazil was number three worldwide for biodiesel production and number two for fuel ethanol production. So quite impressive figures where I think the Latin American countries are leading the way, showing what can be done.

As far as geothermal energy is concerned, also some increase. About 455 megawatt net additions came on bringing the total capacity to roughly 12 gigawatt. There, we see that Mexico was the fifth largest producer for geothermal power with 1 gigawatt of capacity installed. The count is about 2% of global capacity additions. Also there are different usages for both the production of power and heat. We see that there is increasing applications off to thermal energy beyond high temperature locations. The Latin America region in geothermal collectively has 500 megawatt installed capacity. So also they play quite an important role.

When it comes to solar thermal heating and cooling, capacities continued to grow, however, the market is a bit different there. We see that China is absolutely in the lead accounting for more than 80% of the global market. Brazil is number four in solar water heating meeting capacity addition in 2012. Number five, for total solar water heating capacity. In Chile, the mining industry has started installing solar thermal systems to meet its heat energy needs. We see in Chile inaugurated the world's largest low temperature system in 2013 which covers 85% of heat demand of the KB copper mine. We also see that Jamaica, Peru and Mexico use solar food fryers for processing fruits and coffee. Mexico, Argentina, Chile, Costa Rica and Uruguay a small but growing markets for solar thermal heating and cooling. In general, we see that we've made most progress in the last decade in the field of power generation from renewables. As far as renewable usage in the heating and cooling sector, there still some way to go.

A word on jobs. Global employment continue to increase as of the end of 2013. According to members from IRINA, the International Renewable Energy Agency, there are an estimated 6.5 million people directly or indirectly working in the renewables industry. 6.5 million direct or indirect jobs in renewable industry. Although employment continues to advance, the bulk of employment remains concentrated in just a few countries, namely in China, in Brazil, the United States, India and in some EU countries. Brazil is among the countries with the largest share of employment. I mentioned it in my list. In Brazil, the sugar cane based ethanol industry is the largest employer.

As far as investment is concerned, the second consecutive year of decline in investment can be recorded 2013. We had a situation where global investment in renewables power and fuel was estimated at \$214 billion or \$249 billion including hydropower investments larger than 50 megawatt. That was a decrease. The reason for this decline is on the one the hand policy uncertainty, in some parts of the world, especially in Europe, retroactive policy reductions, last but not the least, sharp reduction in technology cost. As illustrated on the slide here which compares the investment, annual global investment in solar PV capacity, that is the gray line, to solar PV global capacity additions. And even as global investment in solar PV declined nearly 22% relative to 2012, new capacity installations increased by more than 32%. So, of course, that is a challenging situation for the industry. As you can imagine, the steep cost reductions that we've seen in PV and to some extent as well as in wind make renewables attractive for many new markets in developing countries where there is strong need for electricity generation and where energy demand effectively is increasing.

What we also do, we look a bit into how investment is spread among the different regions. There are different trends at country level. In 2013, for example, Europe's renewable energy investment was down 44% in 2012. For the first time, China invested more in renewable energy than did all of Europe combined. We clearly see that 2013 brought a clear shift in investment, moving east to Asia and Oceania, as well as to the Americas excluding the U.S. and Brazil. We see that original investment for the Americas excluding U.S. and Brazil increased from \$9.9 billion to \$12.4 billion. Brazil saw a decline in investment for the second time running from \$6.8 billion to \$3.1 billion. The lead in the region and significant increase in investment were also observed in Chile, that was at 72% to \$1.6 billion, Mexico, Europe, Uruguay as well Costa Rica and Peru. As we've seen on an earlier slide, Uruguay, Costa Rica and Nicaragua were among the top countries for investment in renewable energy power and fuels relative to annual GDP.

When it comes to policy developments, the situation has really rapidly evolved over the last decade. In 2004 we had about 48 countries with renewable energy targets in place. Nowadays we have 144 countries. Out of these 95 countries are from developing and emerging economies. We have still a situation that most policies can be found in the electricity sector, from the power sector with mainly feed-in tariffs and renewable portfolio standards being popular. We've also seen, and I think this is a trend that was also observed in Latin America at public, bidding and tendering is gaining ground.

As of early 2014, over 55 countries had tendering schemes in place. There is a situation that renewable policies are also deployed in the field of heating and cooling with 19 countries with the obligations. About 63 countries all around the world with biofuels obligations but, really, the power sector is the most popular one. We've seen in the past year revisions



and retroactive reductions in some countries, mainly in Europe and U.S., some stop and go policies which are difficult. In early 2014, a minimum of 19 countries in the Latin America region had support policies. Out of which, 14 had [inaudible] [00:28:12] generation. Eight countries in Latin America had net metering loss by the end of 2013. So also quite some advancements there.

The Global Status Report also shed some lights to distributed renewable energy. There we see that energy access and the use of distributed renewable technologies increased. Over the years on all developing continents except Africa, the growth in population electrified is bigger than the growth in total population. In Africa, however, as can be seen there on the chart, the population growth rate exceeds the rate of electrification and there are only 43% of the population electrified. We have an emergence of new business and finance models for rural renewable energy markets.

We have technological solutions such as mini grids and ICT applications that are gaining ground. In the Latin America region an estimated 24 million people have access to electricity. Brazil is among the leading countries for large scale off grid renewable energy programs to address energy access and sustainability. Brazil completed its Light to All program, completed in May 2013 providing 15 million in rural areas renewable energy electricity. Argentina was among the countries with notable public-private partnership projects with solar home systems. Honduras included dissemination of clean cook stoves in its national scaling of renewable energy program to name a capital of initiatives.

In conclusion, I would say that the global perception of renewable energy have shifted considerably. The past decade has set the wheels in motion for a global transition with renewables. Despite all these efforts that are documented in the Global Status Report, it is clear that we need to move faster and more deliberately if we are serious about doubling the global share of renewables by 2030 as well as about ensuring access to clean and sustainable energy for all people 2030. For this to become, it will be important to shed light on integration of renewable energy systems, it will be important to create a levelized playing field for the entire energy sector. We still have huge amount of subsidies for fossil fuels in place that, by far, outweigh renewable support. Also, we have to make more programs, as I mentioned before, in the field of heating and cooling and transport. As well as we have to improve the situation on data monitoring advancements in achieving in renewables which I think we addressed at the beginning. For all this to happen, close cooperation between all actors from public and private sector will be needed.

With this, I would like to close my presentation. We are particularly honored to have Arnaldo on the IDB with us here today to provide further insights into renewables development in the Latin America region. Thank you very much.

**Arnaldo Vieira de Carvalho** Thank you very much Christine, and thanks for the invitation to participate in this webinar. Let me start with a data from other sources that compliment and confirm the results of REN21. This graph this shows for 2011, so two years before REN21 just presented. How was the renewable energy share in both total primary energy in the blue columns, and in power generation in green columns, for Latin America, World, European Union and several other regions and countries. So that confirms that Latin America is well ahead from everybody else, two times bigger share of renewables both in power generation and in total primary energy consumption.

Now, let's see about the future. This data comes from the International Energy Agency scenarios. In blue is the scenario called current policies. In green, the 450 scenario, the one that is required if we want to limit the increasing global temperature to 2 degrees centigrade. The numbers correspond to the additional power generation in Latin America and Caribbean in 2035 compare with 2011. It comes not in the capacity but in the power generation. For instance, you should see the hydro share for the current policies. We're going to 480 kilowatt hour per year additional generation in 2035 and a little bit more in the 450 scenario. That's interesting because it shows that both scenarios are about the same and reflect the future increasing trouble we're going to face to increase the hydro participation. Now, the last hydro is the biggest contribution in terms of expansion of system in the coming 20 years for Latin America.

The most interesting comment here is that as you move from the current policies to the 450 scenario, the biggest change is not in hydro but in natural gas, so meaning that if we want to limit the growth in temperature 2 degrees centigrade, we should not use natural gas in Latin America for power generation according to DIE calculations, as well as reducing a lot of the expansion of coal power plants from 50 to just 1. To compensate for that, of course, wind has to grow, but especially photovoltaic. We need to have three times as much solar photovoltaic to meet the demand. More than that, it would be the energy efficiency contribution. We need about 270 kilowatt hour per year in terms of energy efficiency to meet the demand. So the conclusion is that for the future Latin America has to rely much more on renewable energy if you want to meet those targets.

What can we do? Hydroelectric remains the most important contribution of renewables in Latin America. We have to look for solutions that would have less environmental and social bearings to implement it. One is the hydrokinetics. It's a technology that does not require the construction of dams or channels or any divisions the river flow so it don't interfere with the river flow. So it have much less social and environmental impact. These pictures referred to a prototype that is in operation for more than two years in Montreal right in front of the city. We have a plant capacity of 95% so much, much higher than what we used to see in hydro power plants. Of course, this technology requires some conditions that you don't find in normal hydroelectric power plant. You need to have high speed

where you're going to install those turbines and also depth of at least five meters to avoid interference with the flow of transportation. The concept is that it looks like a wind farm but under water. You can see the picture on the right side. That project is planning to install 20 of those turbines below the city, in the bed of the river.

The next slide shows other concepts for the same hydrokinetic technology. You can see a variety of different options investigated for hydrokinetics, the same technology that's used for sea currents, marine energy. Of course, in the river, you have much better conditions and much higher capacity factoring storms and saltwater. So it might be much feasible to install this technology in rivers and not in the ocean in the beginning.

So what else we are doing at the IDB to help Latin America to move to high percentage or high share of renewables besides hydro? We're funding several wind farms. This is one of several examples of projects we have funded in Mexico. This is a 250 megawatt installation. The owner is Acciona Energia and the offtaker, the energy buyer is Cemex. It's a \$525 million investment. Several institutions have funded this investment. The IDB with \$45 million and several other that is listed, including the CTF, the Clean Technology Fund, that's very favorable fund that's helping the penetration of wind, solar efficiency in Latin America and some selected countries. Another example in Chile, also an IDB loan, that help make investment of \$80 million for 25 megawatt plant of solar photovoltaic owned by SolarPack and selling electricity to a mining company in Chile with a 20-year PPA contract. I also listed down there in the slide, a very recent loan that was approved just 10 days ago, also for Chile that's called Crucero, a photovoltaic farm that is providing 73 megawatts, also in Chile. The link is for the press release of that loan just approved.

Not just the large countries like Brazil, Mexico or Chile are working on renewables. We are also working with several other countries. This slide shows a program we have financing for Nicaragua that is co-financed with seven other financial institutions listed in the note down there that helped put together \$420 million loan to the government of Nicaragua. That includes access -- providing access to electricity for the population without that service but also green investments that is for power generation of renewable energy and all sorts of technology, thermal, wind, solar, biomass and several others.

I would like to talk about Nicaragua because it's a good example of a drastic modification on their energy mix. So that figure shows how much was the share of renewables in the power generation mix for 2012 in Nicaragua with just 40% in 2012, and that's including 9% with wind, that's probably the highest share of wind power in the mix, also 7% coming from Bagasse already in 2012. The estimates for 2013 in Nicaragua is that wind power is already providing 15% of the total power generation [inaudible] [00:41:15] very high level, almost reaching what you see today in Spain.

Anyway, from 40% to the plant in Nicaragua is increasing to 80%, so doubling the contribution, the share of renewables for power generation in just five years. Of course, it's a small country compared to other countries. Anyway, doubling all the penetration of renewables for power generation is a very strong target that is being reached. In longer term for 2026, the plan is even further, going to 93% of renewables in the total power generation in Nicaragua. Not just Nicaragua but also we can mention other good examples in Central America, for instance, Guatemala in 2012 also already generating 12% of their power generation needs from Bagasse Guatemala, Bagasse. In El Salvador was the rate in 24% with geothermal. That was already mentioned in the REN21.

So let me talk a little bit about Climatescope that is product of [inaudible] [00:42:34] that belongs to the IDB group that every year publish a ranking of countries in Latin America regarding the environment for attracting investments in renewable energy and also efficiency benefits. So that ranking, Sean, is for 2013 showing that Brazil was number one, Chile number two and Nicaragua number three. So you can see that the effort Nicaragua is doing was reflected in this ranking. The year before, Nicaragua was number two. So it's still keeping among the first ones. We're going to launch the Climatescope 2014 in three months more. We already have some good results that I can mention now. For instance, the number of policies promoting renewable energy in Latin America is constantly growing. From 2011 we had 80 policies in the countries of Latin America, in 2012 110, and for 2013 149 policies promoting it. So there's a huge increase of legislation helping this trend. You can download the full report in that link when I have a new version in the coming months.

Christine also mentioned biofuels in Latin America where Brazil, Columbia and some other countries are showing good results [inaudible] [00:44:14] for other countries. Let me compliment that with another market for biofuels that we are working with and we believe is going to be a huge potential for Latin America to participate. That is biofuels for aviation. The motivation of this effort is because aviation needs to find a solution to reduce carbon emissions because they have been pressured by several entities, international entities, to reduce their carbon emissions because aviation is the sector that is growing much faster than any other energy consuming sector. This graph shows what would be the increase in carbon emissions from 2010 if there's no improvement at all from the sector, in the red light. If we have additional effort to improve operational systems in flights, in airports, we could reduce a little bit.

With further improvements in aircraft, technology could improve a little but it's very hard to reach carbon neutral growth that is the target from 2020 on. So the only way of doing this according to the industry that has been studying this for several years, is exactly alternative fuels. Of course, you could also combine with market tools like carbon credits but the main share has to come from the change in the fuel from jet fuel, fossil jet fuel,

to renewable jet fuel. ASGM International that's responsible for approving the standards to be used in international aviation has already approved several standards allowing for renewable jet fuel that could be made from oil, vegetable oils. Just last week, a new standard was approved for jet fuel made from sugar cane. Of course, Latin America has much important sugar cane is very efficient raw material in the region and we-known in every country of the region. After 2030 the industry is proposing a 50% reduction of the carbon emission. So very ambitious target. The only way, again, to reach the target is with biofuels.

We have been helping several studies and planning a physical analysis together with Brazil, Mexico, Argentina and calculating how much would be the reduction of carbon emissions. Also promoting some flights to demonstrate the feasibility, the technical feasibility. Today, as you know, we have the FIFA World Cup going on. About 200 flights between the whole series are using biofuels to mitigate the carbon emission due to increased transportation of the soccer fans. Also, flights going to COP 20 Lima transporting the official delegations using biofuels, and even Rio 2016 Olympics, also there are several plans being planned. There are also some flights already done using sugar cane that I just mentioned before during Rio+20, and also the first commercial flights in Brazil using biofuels last year. We have the IDB working with airlines, the fuel manufacturers to increase efforts with Embraer for instance. This picture is from the Azul flight using sugar cane biofuels back in Rio+20. These pictures here are from the first commercial flights in Brazil that happened last year.

So let me move now to SE4ALL objectives and efforts, Christine mentioned that as well. On renewables, the target is doubling renewable energy. This is comparing the world and Latin America regarding those three pillars. We have Latin America much less people, of course, to be connected to the electricity services or who want it. On renewables we have already, like I mentioned before, 30% in 2011, and just 44% is needed that I've mentioned earlier. So it would be not realistic in Latin America to double renewable but to have a good possibility of reaching the 450 scenario.

What IDB is doing regarding SE4ALL? Back in Rio+20 we committed \$5 billion to those three pillars in five years. We have already spent \$2 billion so we probably will get to the \$5 billion in the five-year period as promised. President Moreno of the IDB is member of the global SE4ALL advisory board. Christine mentioned that just two weeks ago we had the third advisory board in New York where we could announce further efforts to help Latin America countries to reach those SE4ALL targets. IDB is the regional hub for SE4ALL. We are about to announce regional 2014 meeting probably in the first week of October in Santiago.

So I'd like to invite you to join us. Finally, I mentioned that 10 days ago we had the SE4ALL advisory board meeting where we announced to

support every country in Latin America that needs a plan to reach universal access to modern energy that, of course, we'll include a lot of connections using renewable energy. The less portion of the population in several countries will not be served with grid extension but with renewable energy in this future generation. We hope to help every country to reach that target in the next couple of years.

So that's what I was planning to show to you. Thank you very much. Let me get back to Sean. Thank you.

**Sean**

Thank you, Arnaldo, and thank you, Christine for the excellent presentations. We didn't receive any questions from the audience. So we can go right ahead on to the survey for the attendees. Heather, if you could just display that first question for the audience for us. That question is webinar content provide me with useful information and insight. The next question out. The webinar's presenters were effective. The final question, it's overall, the webinar met my expectations. Great. Thank you very much for answering our survey. I would just like to mention that we are doing additional regional specific webinars for the REN21 report.

You can find out more about those other regions by going to [cleanenergysolutions.org/training](http://cleanenergysolutions.org/training) and register for those if you'd be interested in additional findings from the report. Also you can access recordings of the webinars, the previously held webinars at that page and at our new YouTube channel which is [youtube.com/user/cleanenergypolicy](https://youtube.com/user/cleanenergypolicy) as displayed on the slide deck. We also have informative interviews with thought leaders on clean energy policy topics as well. So with that, Arnaldo, did you have any closing statements you'd like to make or final remarks or anything before we finish up?

**Arnaldo**

No. Just to thank you all for the participation and that I consider REN21 is the best reference for keeping updated information on renewable energy worldwide and also regional like we saw today and the very useful information for planning, for people interested in investing or developing studies in that area. Thank you very much.

**Sean**

Great. Thank you, Arnaldo, and thank you, again, Christine. We appreciate you coming on and giving those presentations. Thank you to each of the attendees for joining us today. With that, I hope everyone has a great rest of your day and we hope to see you again at future Clean Energy Solutions Center with us. This concludes our webinar.