
Webinar Panelists

Jonathan Skeen Presenter on the status of renewable energy developments in Africa
Christine Lins Executive Secretary, REN21

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Moderator And welcome to today’s webinar hosted by the Clean Energy Solution Center and REN21. We are very important to have Christine Lins and Jonathan Skeen joining us. This outstanding group of panelist will be discussing the REN21 Renewable 2013 Global Status Report with the focus on Africa. One important note of mention before we begin our presentation today is that the Clean Energy Solution 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. Now before we begin, just want to go over some of the features of today’s webinars for audio. You can use two options. You may either listen to your computer or over your telephone. If you choose to listen to your computer, please select the mic and speakers option in the audio pane. By doing so, you will eliminate the possibility of feedback and any echo and if you select the telephone option, a box on the right side will display the telephone number and audio PIN you should use to dial in. Panelists, we asked that you please mute your audio device while you are not presenting and if you have any technical difficulties with the webinar, you may contact the go to webinars Help Desk and that phone number is (888) 259-3826. Now, if you like to ask a question, turn the webinar, which we encourage at all times. We use the question pane to the right where you may type in your question and send it in. If you are having any difficulty viewing material through the webinar portal, you can find PDF copies of the presentation at cleanenergysolutions.org/training or if you just want to go to cleanenergysolutions.org and then click on the training tab, it will bring you to the presentation and you may follow along as our speakers with those presentation and also in the next week or two, we will post an audio recording of the presentation on the Solutions Center Training page. So we have an exciting agenda prepared for you today that has focused on the REN21 2013 Global Status and also with the focus on Africa. Before our speakers begin their presentation, I just want to provide a short informative overview of the Clean Energy Solutions Center initiative and then following the presentations, we will have a question and answer session and then wrap up with some closing remarks and a very brief survey. In this way provided a bit of background in terms of how the Solutions Center came to be. The Solutions Center is an initiative of the

Clean Energy Ministerial and then supported through a partnership with UN Energy. It was launched in April of 2011 and its primary led by Australia, the United States and other CEM partners. Outcomes with this unique partnership include support of developing countries through enhancement of resources on policy relating to energy access. We have our no-cost expert policy assistants and peer-to-peer learning and training tools such as this webinar. The Solutions Center has four primary goals serves as a clearinghouse of clean energy policy resources. It also serves to share best policy practices, data and analysis tools specific to clean energy policy and program and the Solutions Center delivers dynamic services that enable expert assistance, learning and peer-to-peer sharing of experiences and then lastly the center fosters dialogue on emerging policy issues in invasion around the globe. Now, our primary audience is energy policy makers and analyst from governments and technical organizations in all countries. We also strive to engage with the private sector, NGO, and the civil society. One of the marked key features that the Solutions Center provides is our expert policy assistance. So it's as connect first the valuable service offered through the Solutions Center and we've established the broad team of over 30 experts from around the globe who are available to provide remote policy advice and analysis of all countries amenable to do that at no cost. For example, an area of low carbon and sustainable energy change we're very pleased to have Joseph Essandoh-Yeddu of the Ghana Energy Commission serving as our expert. If you have a need for policy assistance on renewable, sustainable energy planning or any other clean energy sector, we encourage you to use the chief of service. Again, it's offered free of charge and to request assistance you may submit your request by registering through our asking expert feature at cleanenergysolutions.org/expert. We also invite you to spread the word up the service to those in your networks and organizations. So we encouraged everyone, please explore and take advantage of the Solutions Center Resources and services including the expert policy assistance to subscribe to our newsletter for more information and participate in the additional webinars. Now, I'd like to provide brief introductions to our panelist today. First up is Christine Lins, executive secretary of REN21 who have been providing an overview of the key findings of the 2013 global status report and then following Christine, we will hear from Jonathan Skeen who will present on the status of renewable energy developments in Africa and with that, I'd like to turn the webinar over to Christine.

Christine Lins

Thank you very much. Good afternoon, ladies and gentleman. It's a pleasure for me to be here today with the Clean Energy Solutions Center and to give you an overview on the global status of renewable energy that is based on the REN21 Global Status Report. By now, you should also be able to see my screen I hope. I guess in this is the case. So in an actual report taking you to the status of renewables of REN21, we have stakeholder of policy network. It was created back in 2004 with the mission to facilitate a rapid transition towards renewable energy globally. We are one of a coalition of the willing couples of the living actors

involved with public and private sector promoting renewables that run international organizations such as the International Renewable Energy Agency, IRENA, the IEA, the World Bank, the different REN agencies, the European Commission, a series of national governments. We have the government of Uganda and our members in different industries and associations, global industry associations representing all the sector from the hydropower, wind, solar, biomass, geothermal, a series of NGOs, civil society representing as well and several experts in the field of science and academia among their SANEDI from South Africa, our member on the African continent. The global status report is a report that is produced on an annual basis since 2005. It is—keeps a comprehensive overview on the global market industry policy development in the field of renewables. It's launched together with UNEP's Global trends in renewable energy investment and covers all renewable technology as well as all sectors from power, heating and cooling as well as transport and we are very proud that this is a report that is based on contributions from over 500 people from all around the world. So we have markedly increased this community because effectively nowadays, renewables are developing rapidly all around the globe. The first global status report in 2005 was produced by one person and by now there is a team of over 500 in place. I think this already shows the nature of and emergence of renewables but also that a centralized nature and I'm very happy that today's co-presenter, Jonathan Skeen is here on the webinar today because he was effectively a product manager in the REN21 secretariat for this Renewable 2013 Global Status Report. Every year, we are going to out a special focus. This year, I'm going to have special feature on system transformation SBC at countries with high and higher shares of renewables. We need to address the issue of how renewables can best be integrated into energy systems. So in an actual where do renewables stand in the world today. Renewable energy supplied an estimated 19% of global final energy consumption in 2011 and if you look at this share, which has been slowly but steadily growing over the last years, you see that about half of this is supplied by modern renewables and the other half comes from traditional biofuels—sorry for traditional biomass. The global status report also gives an overview on the four countries where investments, total capacity as well as annual investment is really happening. We are currently in the process of modifying these indicators and of making them a bit more relative. So, in the future, we will also show their investment by GDP or by per capita in order to also show that technically also countries there are emerging countries in the renewable sector that started to invest quite heavily such as for example with South Africa and I'm going to come to these activities into a bit more. When it comes to power renewables comprise about 26% of global power generation capacity and now there is about 22% of global electricity is produced from renewable energy and quite impressive in 2012, renewables accounted for over half of the estimated 280 gigawatts of new installed electric capacity. We were just be—in previous years to low 50% share but now for the first time low on global scale more than half of all the newly built power plants renewable space which I think already clearly shows increasing indication about the importance of

renewables and their way into mainstream energy needs in all countries. As I mentioned before in the global status report, we do not only give an overview on electricity but we also put—try this in the field of heating and cooling as well as transport. We see anything in cooling that there wasn't generally transitions towards the use of larger systems for distribute little schemes and also for heat sawdust from processes. We see that solar collectors around has used more than in 56 factories for water and electricity for space heating. We see that the different policies in place in the field of transport to promote renewables, liquid biofuels providing about 3.4% of global road transport in 2012 and you also see that more and more countries put in place policies to promote electric mobility and often these policies are directly linked with renewable energy support programs and a very quick spotlight on Africa. So, I'm not going to speak too much about this. There is Jonathan who has the focus on this but I think what we can clearly see is that Africa is recognized for a potential of renewable energy. We see in more and more diverse portfolio of renewables on the larger scale that is emerging and I think it's very encouraging to see that around 20 African countries now have formal renewable energy policies in place and we have HD also in parallel with the global status report we have launched in June this year and main status report. So we put looking on renewables development in the many region in the Middle East and North Africa where we clearly see that a lot of policies on the one hand had emerge but also a lot of investment has started to actually happen in the renewable sector and I think both the North and South Africa are really very active and we also have a lot of other countries Ghana, etc. where within so really progressing which is absolutely encouraging. Let me quickly take you to some of the technologies in the wind deck, we had almost 45 kilowatt of wind capacity that came into operation in 2012. You see the steady increase of the power within the last years and that brings that increase is still global wind capacity by 19%. In the MENA region, wind is the second largest power source in the region after hydro and a total of 1.1 gigawatt of wind capacity by the end of 2012 installed about across nine countries. So also there you see quite impressive—quite significant increase between 2005 and 2012. As far as hydropower is concerned, steady increase of another 30 gigawatt of new hydropower was added in 2012 and there are also projects in Africa for example the Grand Renaissance Dam in Ethiopia that is about to be commissioned and also development effectively going on. In the field of solar photovoltaics, total global operating capacity of solar PV reached the 100 gigawatt milestone in 2012 and when you just look at the trend of this chart you can see how long it took us to reach the small amount, how many years that took, it took basically between 1995 and 2010. It took 15 years to go to 40 gigawatts and now in two years, we're more than double. That also led to significant price reduction, prices of solar PV modules fell by more than 30% in 2012 and as far as Africa is concerned, Namibia and South Africa brought large solar parts online in 2012. I think it's very clear that with the falling cost of PV, we also see increase in new markets, in the emerging economies, which is very rare in packaging. CSP very similar trend and very long from static development

and then finally starting in 2009, a very significant increase total CSP capacity increased more than 60% to about 2.5 gigawatts in 2012 and clearly the CD interest in concentrating solar power—solar of thermal power rise. We saw that South Africa began the construction of a 50-megawatt solar power—power tower and 100-megawatt trough plant so with different technologies and included very favorable conditions on the African continent. As far as the economic benefits of renewables are concerned, renewables provided worldwide about 5.7 million jobs in the sector and we see according to data coming from IRENA's renewable energy and jobs report, we see that employment continues to rise and we also see that more and more countries are putting in place renewables policies because they see the beneficial effect on the economy of the different countries. As far as global investment and renewable energy is concerned, in 2012 saw a decreased in investment of 12% from the previous year. We feel this is the low blue curve. We still see that 2012 was the second highest year of investment ever but still it went down. This is on one hand to do with financial difficulties in OECD countries so a significant reduction of investment in OECD countries. There are investment trend by 29% to 132 billion US dollars. On the other hand, very encouraging developing countries reached 112 billion US dollars representing 46% of the one and total and an increase of 34% between 2011 and 2012 and I think that is clearly showing the trend that developing countries emerging economies where energy demand is growing most significantly than in other parts of the globe are once put in place renewable policies and really, we use these technologies and then of course another reason for the decline investment is that cost came a significant down technology cost came down and at the example of South Africa last year was absolutely spectacular. South Africa managed to increase its investment in renewable energy from a few 100 million dollars to 5.7 billion US dollars. So quite significant but we also see that other countries such as Morocco and such as Kenya saw the commitments to rise very significantly in a very, very short period of time effectively very encouraging significant status. As far as the policy landscape when out of the situation that about 140 countries all around the world have renewable energy targets in place and policies in place. Most policies support renewable energy are to be found in the power sector with feed-in tariffs and renewable energy portfolios and that's being the most frequently used and I mentioned before, policies makers are increasing the aware of the potential effect on national development of renewables with lots of local troughs created in the countries to put in place this overtly centralized energy technologies and what are we do in the GSR we give a very comprehensive overview on the applied instruments worldwide on the country-by-country basis. So that there they could overview for policy makers and to see what countries will kind of instruments initial country that the country has out in place and it is really encouraging to see that the number of countries with renewable targets has more than doubled between 2005 and 2012 and we do not only see these policies on a national level but we see more and more countries and cities and also local governments that put in place policies to promote renewables. The global

status report also provides quite an overview on countries with different policies. So the darker the countries get, the darker brown, the more specific policies are in place. For example you see has a lot happening in North America and not happening in Europe but as well as in China and India and to a certain degree in some of the American countries. There is also something happening in north up, in the northern part of Africa as well as in South Africa as well as starting. We also see that the African countries start to take it—populated also in other parts. So I will end my presentation with Quick outlook. You might have heard about the UN secretary general doing the initiative Sustainable Energy For All, which is composed of three complementary goals to be reached by 2030 on the global scale. This on the one hand to ensure access to energy tomorrow and energy services for all, to double the global rate of improvement in energy efficiency and to double the share of renewable energy in the global mix. These are inspirational goals but clearly we see that for the renewable sector and that is the right column on the table, this would mean an increase, I said in one of my first slides that in 2011, we had about 19% of final energy consumption coming from renewables. The base inquires sustainable energy for all since 2010 while we had 18% so doubling the share means an increased from 18 to 36% but if you recall my first slide, you saw that there is a huge share of traditional biomass seal in renewable share and clearly under sustainable energy for all. It is not about the promotion of traditional biomass. So clearly, the reaching of this objective, which several studies claim is realistic and also ambitious. If it is ready to be met, this means TME at least tripling most likely tripling of the share of more than renewables including sustainable hydropower and this I think also clearly shows and we will post in the future needs. The big centralized projects but also the small decentralized ones in order to also to make sure we reach the access and for this to happen, we definitely cannot continue with business as usual. The policies are needed to be put in place. We also see the need for renewables of every plain field and still have situation in the world that renewable energy support it six times less than the fossil fuels subsidies so there still a lot to be done and as I mentioned in the beginning, integration of renewables and energy systems will be the key in the future and I think this—all of this can only happen through a dialogue with both—between both the public and the private sector which we are trying to do at REN21 which we are trying to stimulate on the globs basis through this webinars so as the series of webinars and with this I would like to thank you for your attention and head back—head back to the technical solution center. Thank you.

- Moderator Thank you. We will have Jonathan Skeen next. Jonathan? Jonathan, can you hear us? Jonathan, you might to un-mute your cell.
- Jonathan Skeen Yes. I am here. This is Jonathan here.
- Moderator Great. Okay. Thank you.

Great. Okay. Thanks very much Christine for the—for that overview of GSR and good morning and/or good afternoon to everybody depending on where you might be best and as Christine mentioned I was the project manager of the GSR 2013 and I am an engineer at a company called emerging energy in Cape Town where I'm currently speaking to you today from. So today, I am going to be speaking to you just a little bit about some of the key findings on trends and markets and industry and policy that we observe in compiling the new GSR report specifically focusing on Africa. So just to give you a quick overview of what I will actually speak about we will have a quick look at some markets and industry information from the continent. We will get into renewable energy investments in Africa. We will look at the policy landscape and the developing policy landscape in Africa, which has been quite promising of this with a lot of new policies being adopted. We will have a quick discussion on rural renewables in Africa and some of the interesting developments that are taking place there and then just in conclusion, we will get into some of the key challengers and drivers that are already shaping the modern renewable energy landscape on the continent. Alright. So looking at markets and industries on the continent the traditional renewable energy markets globally are also dominants and it is probably quite a while before the African countries will start to make their presence known. Although as Christine did mention the matrix star which we have been looking at the matrix star which we measure these—the market penetration and looking I think such as expenditure per GP and we could see some different matrix of that moving forward. This is being strong growth amongst BRICS and particularly we have seen Africa starting to show presence especially in the CSP market so I just follow up some of the key renewable out markets around the world, we can see that is—sorry I skip past it but we can see that Algeria and Morocco and Egypt have already start to share quite strong presence in the CSP sector. Having a quick look at the bio energy sector, well as Christine mentioned there is a strong reliance on traditional biomass in Africa around 60 to 80% of the population using traditional biomass for heating and cooking and as we even see on Sub-Saharan Africa we see more than 650 million people use traditional biomass for their heating and cooking needs and what we have seen is each shares are significantly low in other developing regions of the world. We might have access to modern electricity services is a global head of the African continent. In the biomass sector, we are seeing some great shares essentially, the Bagasse and CHP operations taking place and stable countries in South Africa including Mauritius, Tanzania, Uganda and Zimbabwe and they all plan developments in several other African countries including Kenya and typically in countries where there is an established sugar growing industry. Biofuels demand are very limited in Africa and the markets are slowly expanding and we have seen economic production rise from around 270 million liters in 2011 to about 300,000,000 liters in the end of 2012 but the markets are still very small. I mean, it's really just about a half percent of global biofuels are actually producing African and just 2% of European imports of ethanol are coming from the African continents. So there is really just quite a long way to go

there. CSP and solar in general is really seen as a huge area of potentially in Africa. We have already seen African countries particularly North African countries starting to make significant impacts on this industry, which is a large nuisance in the global sense. South Africa was one of the most active markets in 2012 and as Christine mentioned there was a 50 megawatt power tower plant under construction, 100 megawatts trough plans and actually just in the last few months, we have seen the construction start on another 15 minutes megawatt hydraulic trough plant. They have also plans to develop CSP in Namibia where the conditions are really excellent for this type of technology and then very encouraging as well. It is very ambitious targets in the MENA region but at least in North Africa for over gigawatts new of CSP capacity in the coming years. So really an opportunity for the CSP industry globally to really establish a strong foothold on the African continents on whether north and south and these developments are adding significantly to the global and title market, which is around 2.5 gigawatts at present. I am just highlighting the deposition of some of the North African countries there. Moving on to solar PV, Solar PV is also considered a technology that is very well suited to many countries in Africa and some of the best solar resources are and the northern and southern regions of Africa and we have seen that is more than a 100 megawatts of capacities currently operating in Africa although in having said that and a lot of market in Africa is offered distributed capacity and there is every chance of they are actually significantly more than they're currently operating. We are seeing large grid-connected plants under construction in South Africa up to 50 megawatts in size. So we can already see that there are huge ships going on in terms of capacity in Africa and that number is shifting rapidly and there have a number of Chinese company's building Solar PV plants in at least 20 African countries achieving with the aim of establishing new markets to support their solar technology manufacturing industries. So, there is a lot of activity happening then we're seeing some just initial movements of concentrating. Solar plants of all technologies and some new markets specifically in North Africa and so the solar thermal, heating and fueling sector. This is quite established in several African countries chiefly Egypt, Mozambique, Tunisia, Zimbabwe, and south Africa and again, south Africa has the sort of the most established markets in terms of installed capacity on the African continents and in Tunisia the PROSOL programme has been hugely successful and increasing installed capacity 13-fold in the five year-period and we have seen good other off sheets in terms of industry in South Africa which is the most developed markets and we have seen a huge number of installers and setting up operations in the country creating quite a lot of installation and maintenance and operation jobs and unfortunately, we have also seen some challenges to domestic manufacturing because a lot of domestic manufactures some of which have actually been around for quite a long time. I have seen strict, stiff and stiff competition from cheaper Chinese imports of solar thermal technology. Africa has huge potential for geothermal development and to this, thus far, it has been dominated by Kenya in terms of activity and Kenya is the largest producer of geothermal power in the continent with

about 200 megawatts by the end of 2012 and 2012 is quite an active year in Kenya 2-½ megawatts being commissioned in early 2012 and another 5 megawatts coming online at the KenGen facility and then insignificant amount of activity with Ormat technologies announcing commercial operation with 36 megawatts units at the Olkaria III complex. There have also been new developments of the number of public and private partnerships, which are aiming to add around 560 megawatts at Olkaria and 140 megawatts increments. So, a lot of market going on Kenya and some really exciting developments taking place there but it is not just in Kenya where we're actually seeing the geothermal industry pick up and it is actually around 14,000 megawatts of geothermal potential along the Great Rift Valley of Africa. So these several other countries where we are seeing development take place and for example, in Rwandan, the Rwandan government is funding exploration drilling with an estimated 700 megawatts of geothermal potential. We have seen the World Bank supporting program which aims to manage risk of exploratory drilling for developing countries and they have also being partnering with Iceland to support exploration and provide technical assistance in the Great Rift Valley. We've also seen several other organizations including African Union with German government and the EU forming a trust fund with them also supporting risks mitigation in Eastern Africa and supporting surface studies and exploration drilling. So in a sense the underground action happening in Kenya in terms of actual build programs but then a lot of also ground work taking place which should lead to the development of an active industry in other countries as we move forward in the coming years. Moving on to hydropower Africa is—stable African countries have well-developed hydropower also and in fact stable a lot of African countries is getting a lot of—get most of their power from hydropower and we have seen quite a lot of smaller plants and construction in several countries and as Christine mentioned earlier, the highlight in terms a large scale hydropower has been in the development of Grand Renaissance Dam in Ethiopia with 6,000 megawatts of power coming online and then a more general sort of industrial off sheet of that has been the development of stable transmission projects and around the region with the 2,000 megawatts length being established between Ethiopia and Kenya with the aim of supporting hard to supply constraint regions in the Eastern African region. So again, this is another area where there is significant activity happening and around 7% of Africa's hydropower power potential has been realized at this point. So there is a huge grid for development moving forward and in all of the regions of Africa. Moving on to wind, wind is—the wind development on the African continent has been in south valley recently also most exclusively focused in the North African region. There had been significant recent installations in North Africa including one and almost doubling the capacity in Tunisia. Ethiopia is one of the list of countries with wind farms installations around 52 megawatts but the really big story over the last few years at least has been the construction starting on several southern African projects totaling more than a half a gigawatts and that is actually taking place as we speak in some of the first large wind farms are reconnected wind farms in the south of the continent will soon

be operating which is encouraging. Just in that area as well, North Africa is actually currently targeting around 10 gigawatts of capacity by 2020 so it is certainly moving across the continents in the wind sector. Moving on to investment, this is just a quite nice figure from the GSR, which we put together this year. It shows that the regional investment and it does give a good idea of where the investment is actually happening. As we can see, a lot of investment is still happening in the traditional markets. In Europe, the United States, and significant investments taking place in China and what we have seen is obviously a shift of investment from the developing countries of the world to—from the developed economies of the world to the developing countries of world and we see that Africa is one of the regions where investments increased in 2012 related to 2011 where actually it decreased in number of other regions. So, if we could just pull that out, we can see that around 11.5 billion year's total was invested in renewables in the Middle East and Africa and a good proportion impacts probably more in half of that was on the African continent itself just a more interesting fact about renewable energy investment in Africa in 2012. It did increase in Africa despite declines in many other regions and south African investment and renewables under the new renewable independent power produced the procurement program was a really big risk to investments in South African renewable energy and making the country the eight highest investor globally in 2012 in terms of allocated funds to renewable energy projects and then we saw significant levels of investments in other African countries including Morocco at about 1.8 billion US dollars and Kenya just over a billion US dollars. Another interesting development that has been taken place in terms in terms of renewable energy investments in Africa is the involvement of smaller and newer development banks in providing finance and we see the DBSA, Development Bank of South Africa has earmarked around a billion US dollars for renewable energy products and we have also seen the African Development Bank setting aside around 800 million US dollars for renewable energy programs in Morocco. Moving on to policy, we had a quick look at this—this policy map in Christine's presentation and what will I do is just pull out, if you could just look at Africa and you can see that is just, just when quickly looking at this we can see the adoption of policies happening in south Africa as well as Egypt in the north and this is quite an interesting diagram because you can actually see one of the trends in Africa is the development of regional policies so in which in Africa, the eco west organization has had a quite strong influence on the adoption of renewable energy policies and we see a lot of west African countries adopting renewable energy policies . The MENA region has a lot of regional program and they're promoting renewable energy and a lot of them—a lot of the programs and the developing large CSP programs and large wind program across the region and we can see that has its fit in terms of the adoption of the renewable energy policies on quite regional basis and we can also see the east African countries significance at least initial beginning of adopting these policies as well with past and way to go in terms of data find the range of policies, but set new some encouraging—some encouraging developments across the regions without

some way to go and some of the—in come countries with more depressed economic activity and with less—with less policy and energy strategy in place at present. So just a couple of points there as well and as I mentioned the ECOWAS countries have been cooperative basic with their renewable energy policy and to get 10% electricity from renewable energy about 2020 and about 20% by 2030. Again it means some really ambitious and positive. So the end wind targets in the MENA region. Egypt is looking to get 83 gigawatts to CSP and nearly a gigawatt role 700 megawatts by 2027. Libya is looking from almost no renewables to around 10% about 2025 and quite an interesting case is the security as of which as of 2009 have no renewable energy whatsoever they're looking to go 100% renewable by 2020 far to the south the country Djibouti which is a land of country within south Africa looking to produce 360 megawatts of renewable power by 2030 which is actually a small amount in global terms but it is actually more power than Djibouti generates on the entire grid so it is quite ambitious targets and at various levels across the continent. Rural renewables obviously a very, very important topic on the African continent and the section of the GSR, which is covered in detail. If we look at the electricity access which is illustrated in this table from the GSR, we can see that Africa has around 68% of the cooking energy derived from traditional biomass and we see the statistics and we repeated over quite a lot of African countries so this is quite a long way to go in terms of electrification and the ECOWAS region again very active in the sector aims to electrify 78 million households by 2030 largely through minigrids making use of renewables, diesel and battery hybrid systems and then just a key shift that we have seen in the recent years is really a move from taking on approaches and which really characterized a lot of rural electrification programs and that were undertaken in Africa in the late 1990s and we are saying these sort of making way for more enabling policy frameworks to get to the bottom of the processes and one of the key—really a key observation in the recent times regarding the role of renewables in Africa is the battery reaving is more an integrated part of industrial policy in terms of job creation and terms of developing a knowledge economy in terms of promoting innovation whereas in the past they were very much linked to small scale and electrification programs so we now see that a quite a positive shift in terms of integrating renewables as part of rural energy and industrial strategy. So this again approaching the end of amiable focus section on Africa and I thought I would just touch on some of the key challenges and drivers that are shaping the energy industry in Africa and one of these thoughts are actually contained in a sibo with in the GSR itself is the focused regional sibo on the African region and we will just have a quick look at what is actually included there and some of the key challenges and some of these were mentioned by Christine as well. There is a very large investment gap in terms of the quantity of power required on the African continent and the capital investments that are actually available to develop that power. We have seen that Africa actually requires by certain estimates around 7 gigawatts annually for the next 10 years in order to close the supply gap and there being some challenges in terms of actually raising that level of the finance

for these projects and another key challenge at this phase in varying degrees across the continent is the fact they are still urgent short-term socioeconomic challenges and used to ray dominate national region budgets and they can be quite difficult to especially where a long term energy strategy has yet to be developed. It can be quite difficult to integrate renewables and really promote them through renewable energy policy and another key and another interesting thing is that they are also these negative perceptions internationally about the African continent as a whole and there was quite interesting survey which looks at the perceptions of companies that are active Africa against other companies that aren't active in Africa and there was quite a strong difference in the perception between those different grids and it has a significant value to investment on the continent and especially in a light of global economic challenges that are being faced and the challenges of—and the risks of investing in emerging markets in general. That is on the positive side and there are a lot of positives around. Africa does have world class resources and we have seen this in the solar sector and the geothermal sector and wind and hydro and then just speaking from an South African perspective, there are actually cases now where solar is actually approaching grid parity in the certain circumstances so we are ready do see the strong economic chances driven by just the quality of the resources full development of renewable across the region. We are also actually seeing unprecedented growth in many African countries. Stable African countries are growth rates will be at sometimes from a low, from a very low from a low base but stable African countries have growth rates of 8% annually. Africa is the second fastest growing region economic in the world after Asia and we've seen along with that unprecedented political stability in many African countries and although they might be charges challenges in certain regions and many governments are now showing stability that has not been seen today across the region and along with that obviously is more of the policy making and longer term industrial thinking and as I mentioned previously, a key observation that has been made in the past years is that renewable energy has really been seen as an important building block of industrial policy because of its potential to create jobs and some developments to come and in just finally obviously a massive drives is the surging energy demand and one of the quite interesting aspect of this is that this surging energy market is hand and hand with the generally under developed great infrastructure in many African countries and renewables do seem to have—offer an opportunity to detail a decentralized energy model in many of these cases and to actually meet the general challenge of electrification and the economic demand for energy. Great. Well that is my component of the presentation. I hope that it was informative and with that, I will hand back to you. Shaun. Thanks very much.

Moderator

Thank you very much Jonathan and thank you Christine for the great presentations. We do have time to answer some questions from the audience. I did receive quite a few that were sent it and I would just want to remind anyone listening today that you can send in your questions

through the question pane on go to the webinar. So for the first question, it is regarding biomass and it is just state you—they know that you did not include biomass in the renewable statistics and in West Africa they tend not to include biomass in the statistic because it gives a skewed view of renewable energy. Can you just talk a little bit of ion your choice to include that?

Christine Lins Yes, may actually take this question. Effectively—effectively we did include the share of 19% of global financial consumption from renewables comes with biomass. We have a situation that I mean we have two usages of biomass. We have modern biomass use for electricity generation for heating and then we have the traditional use of biomass. Unfortunately, in current statistics, there is no differentiation and even at DIA. There is no possibility to just clearly divide into I mean DIA for example classifies all the use of biomass outside of USD countries as condition of the use of biomass which is—which clearly problematic and that is why for our purposes, we have included biomass and then again both traditional and modern use of biomass in statistics, however, the section on the GSR—tries to be very specific of the different usages and this is something that we are working on to really make it very clear that it is mainly this is only for future usage and all the promotion of modern renewables including the substandard biomass.

Moderator Alright, thank you Christine. The next question from the audience today, can you give more details of the increased wind sector investment in South Africa and refer to the Darwin story. How has the investment climate been revived and are there any lessons for other countries? You want to pick this up?

Jonathan Skeen Yes. Sir I am sorry would you mind just repeating that question Shawn?

Moderator Of course. So can you give more details on the increase wind sector investment in South Africa and then they refer to the Darwin story and wonder how has the investment climate been revived and are there lesions for other countries?

Jonathan Skeen Well, as I mean essentially what happens in South Africa is initially the feed-in tariff was adopted—the system of feed-in tariffs and quite a number of years ago, about five or six years ago and that was actually, eventually changed for an optioning system which is currently underwent—that's running around so there has been quite a few rounds and terms of the financing of the wind project. The real barriers that did exist was if there was no framework for the procurements of great connected renewable energy power and with the bidding program that provided a platform for that to take place and generated a huge amount of interest. I mean the program has been vastly oversubscribed and has been extremely competitive. So that rarely provided the framework to unlock the finding. I do not think that there was necessarily a problem in finding the funding once the technical G diligence have been undertaken on all of

those projects and so I will tell you—I probably—the key message there is that it is really policy driven. It direct frameworks weapons placed and then allow the momentum of the industry, the economic momentum of the industry to actually run its course and if you look at the small scale sectors in south Africa for example there is—we're seeing kind of the same thing where there is huge demand for rooftop commercial and industrial so DB assistance for example but there still isn't quite the framework for those to progress so although the—although in certain cases, there is actually case where it could be argued and we are actually reaching grid parity in terms of solar PV installations. In certain areas where the electricity process and the tariffs are a little bit higher and at this point, the policy and the regulatory structure is not actually there so I wouldn't say that in South Africa it's necessary the challenge accessing funds and but certainly possibly the bigger challenge is being creating the ground rules of the system and the framework at which we can—which financiers can feel the happy with the investments.

Moderator Alright thank you Jonathan. One of our attendees would like to hear some specific examples relating to Nigeria and one of the questions that they asked regarding that is what role renewable energy can play and integrating, supporting and complementing hydrocarbon development and also meeting the energy deficiency issues, looking for specific examples in Nigeria.

Jonathan Skeen Well, I can probably tend to answer that. I think the key—I think a key role of renewable is essentially Nigeria and I am not speaking from the region itself when I have work fixing on the region and there is obviously a huge amount of expenditure on hydrocarbon driven fuels, on diesel generators for electrification especially in rural areas and there is essentially a high cost of electricity that results from that. From the transport of diesel to off grid locations and so there are really good opportunities for the integrations of renewables into an economy such as Nigeria which is experiencing robust economic growth and which has really becoming on the African continent. It is really a huge economy globally as well and so renewable energy really offers the chance to take the demand—that growing demand especially in places like Nigeria for energy but where you have a situation where essentially your infrastructure is not enough to keep pace with the economic development and it offers a way to—lead the way from a fairly fast to the markets and to actually compliment things like diesel generators where you can have so you can have diesel and solar it for example hybrid systems that's complement each other reduce the energy—the expenses—the operating expenses of the assistance and also improve their lives. I'm not sure if I answered the full question but.

Moderator I think that you covered it pretty well. Thank you. The next question is, do the regional development organization play a role in terms of promoting shared cross border energy use? For example in terms of facilitating the implementation of transmission lines or establishing

regional power tools or in terms of harmonizing regulation of renewable energy development? So what role does regional development organization play?

Christine Lins

Well, I can maybe to start to answer that to Jonathan's compliment. We clearly see that the energy methods are metro-regional corporation. I mean transmission lines do not often saw orders, but I mean it would be much more efficient and these regional explosions. We see as Jonathan mentioning in the presentation that in regions where regional organizations for the promotions of energy efficiency and renewables exist. There is a lot happening. For example in Western Africa, the ECOWAS region we see. We have the similar for North Africa with Ukraine and within Egypt for Middle East and North Africa and we see the emergence of the similar other centers for southern as well as eastern Africa. This is supposedly promoted by [inaudible] [00:58:50] and we also of course have the regional development banks that often help to without regional approaches and in general, yes that makes the most sense and I think that with the effect of Africa really moving into the renewable sector, we see based on the movement of assessment, model of enquiry in the ECOWAS region, we see other central organizations emerged. Jonathan, do you want to add anything?

Jonathan Skeen

Yeah, I think that is that as they are. I think the role of regional organizations on the African continent is very strong and we've seen the Middle East and North African countries have quite strong alliances in terms of the development of renewable energy and the ECOWAS organization is also strongly effects on regional and development of renewable energy but also I think more a habit just a more general comments on those regional relationships. We've seen quite an increased especially politically in Africa to form partnerships regionally and ended at developing the economic growth in the region and it happens in the South African and the [inaudible] [01:00:09] as well so there is certainly a very strong focus on that and has not been seen—it has actually materialized in terms of greater adoption of renewable energy policies in those regions where there are those organizations.

Moderator

Thank you Christine and Jonathan. And the next question is regarding PV. They are wondering, do you have any data on the African countries with major utility scale PV plans such as the name of the country that is either of the plans or financing.

Jonathan Skeen

I would say—I mean the GSR is really—it is really full of that kind of information. One of the good places to look for that kind of thing is in the reference tables at the back of the study and it actually gives the country about country information on solar power and in terms of great connection solar PV a lot of that will be in North Africa and a lot of it will be is under construction in South Africa so that you will see quite a strong regional focus in that sense. They are reconnected plans in other countries. Unfortunately, I can't pull it on the top of my head. I pulled out all details

in those but I would really just suggest taking in to report that there really is a good resource for all that kind of information and especially some of the reference table is at the back of report, quite detailed information on different technology types and the installed capacities across the globe including Africa.

Christine Lins I think maybe I can add here to Jonathan's statement, the report is available free of charge on the REN21 website www.REN21.net and we also and I would also like to invite the participants to take a look at the at the REN21 renewable interactive net that features a lot of country information where you can actually search a country and by technology and should you not find the detail that you looked for in the report then check out the net at www.map.REN21.net.

Moderator Alright and the next question is regarding biomass and also funding issues so it is someone that indeed trying to kick off a green field biomass project in West Africa and their main issue is raising the necessary funds. They are wondering if there is any info that would address the funding issue noted for other renewable energy projects.

Jonathan Skeen I am sorry Shawn would you mind just repeating that one last time?

Moderator Yeah, definitely. Is there any info—information that would address these funding issues noted for other renewable energy projects?

Christine Lins Well, I think that if I understand the question then it is the question is coming from the project development and it's looking in the finance. I think I mean depending on where your at—he or she is located I have contact a regional organization in your area or then check out with the African Development Bank to see whether there is some funding available. The tariff is this is the publication including global status report that is global crisis renewable energy investment. You can also find that in the reference table for investment section of the contents status report which shows information from there where you can even see an overview about the different types of investments in the different technologies that have—that the report as such do not and not the manual to provide ideas where investment can be found.

Moderator Thank you Christine. And the next question is what do you think the key issues are that sub-Saharan African Countries should focus on and what are the increase in their renewable energy production? Is it policy issues, investment or lack of technical know-how?

Christine Lins What I think that is the first and the most important thing is to increase the share of renewables is responsive. I think we see all around the world that technologies are available. Of course there is some need for further research in making them more efficient, bringing cost down in the central but clearly stable policy frameworks absolutely key. We have seen unfortunately in the course of last year especially in terms most of the countries of the situation that policy frameworks will change on a

recreative basis which is quite detrimental for it is because they need stability and they want predictability of return of fund investment for the investments and in this sense policy will technically be the key driver and I think with these same policy frameworks, we will also see the investments coming to market and the kept would be made available so if I let you choose one of the listed items that we will clearly go for policy as a main vector for rapidly increasing the share of renewables here in Africa or anywhere else in the world.

Moderator Thank you and next question is what do you think explains the lack of renewable energy policy in so many African countries?

Christine Lins What I think it is not—I would not see that so negatively. We had a situation that the bank investment [inaudible] [01:06:29] we only have handful countries that had renewable policies and targets in place that has evolved quite rapidly because countries grab the virtue of renewables in terms of appropriation, in terms of economic development but I think also what we have been seeing in the course of the last years of the last decade is significant decreased in cost of electric generation from renewables which many areas makes renewables almost competitive with conventional fuels despite this energy crisis and which technically makes countries more and more independent from energy imports and I think this is a trend that is emerging and I would not say, I mean you can either of course you can either have an African look at the white spots on the map or on the brown spots and I think SV [inaudible] [01:07:32] highlighted in our presentations we see that there is a low emerging and if you would actually compare the map a couple of years to now, you would see that it gets more and more shaded and there is more and more happening so I have brought CDs as oppose to get print and I am pretty sure that each trends continue then we will see more and more emergence of new policies also in African countries that currently do not get them in place.

Moderator And as a follow up to that question, how critical do you think the current policy framework is an impeding renewable energy development?

Jonathan Skeen I am sorry Shaun, did you say an impeding?

Moderator Yeah, that is the way question was raised so the currency policy, the way it is framed, the framework of it, is it impeding renewable energy development?

Christine Lins What I think, I mean we clearly see all around the world that renewables still not competing on a fair market so to say. I mean we still have situation that as I mentioned in my last slide renewable energy support is significantly lower than possible subsidies. I think if I remember correctly the latest focus from IDA show fossil fuel subsidies in the overall 523 billion US dollars in 2000 as compared to 66 billion US dollars renewable support so quite a significant difference and we can see that and we must clearly see that some policy makers has been reluctant to acknowledging the benefits of renewables but we also have to see that renewables are

changing the equation of the energy system but being mostly of more decent life's nature by being of the reliable nature so they also have different impact on [inaudible] [01:10:02] need to be taken into account and yes we still in some countries have situations like where fossil fuels or conventional energy sources somewhat privileged. However, if looking at the market with impacts, we see that renewables are better off and then quite optimistic that many countries in the world will revise their policy frameworks in a way that will hopefully give renewables a fair chance to compete with the mentioned energy sources.

Moderator Thank you Christine. Now the next question, I have two questions that are closely related so I'll try to ask them together. I will present them both at once. The first question is what about vested interest of local diesel engine and fuel providers, what would you recommend for overcoming those obstacles and then related to that is what about the relationship between increases in renewable energy production in oil producing countries?

Christine Lins Yeah. So on the first question but of course the, I mean this is definitely one of the challenges, business moguls need to evolve and there will be some winners and losers in the end. There is absolutely no other parties but we see is most of the countries, however, that for example fuel oil providers are diversifying their portfolio and now the footprint tells that the message programs so they are really taking up renewables into the system and also let us be very clear, I mean what I presented here the energy for all objective of having the share renewables by 2030 definitely shows that there will still be a share of conventional energy sources in India to mix of countries. It is not by phasing them out—it's not by pacing them out for more than to the other and the second part of the question about oil-producing countries, India moved about renewables. We had recently the management of Saudi Arabia of having this renewable in other countries, I think that clearly chose that these countries have understood that given their natural conditions, given the sunshine they had, etc., it is economically more interesting for them to produce their own energy especially with electricity from renewables and to save oil and for exporting it that is economically actually more beneficial than using, consuming the oil in their own countries of just to think quite an interesting trend where you can clearly see for these countries renewables suddenly make sense economically.

Moderator Thank you Christine. And the next question, just wondering if you have any of the latest news about the Desertec Project?

Christine Lins The latest news about the Desertec Project, no. I mean—I think Desertec has a conference coming up in, if I am not mistaken in October where they try to choose that are developed. There were rumors of company's quickening the consortium. I think there is still a lot of work and effort put in place and I think what we clearly see, there is a bit of a shift in strategy where this is the consortium with technologies now the need for involving the countries in the Middle East and North Africa and their considerations

because there are many North African countries having the fuel, the solar resource and often also these countries are the ones in need for additional electricity capacities and so I think the transport was are working closer together with these countries and acknowledging their needs in making sure that that electricity produced eventually lighting the country and make a—put it at disposable to people that need it there.

Moderator And somewhere into that question, is there any news on implantation of transmission line from the line from the EU to Northern Africa?

Christine Lins There is, this is something that is under discussion. There is also some discussion going on under the Mediterranean solar plant effectively as you kindly mentioned that is not actually an easy subject but is definitely something that is under discussion. On the one hand, however, you all can, we of course it's for the mission lines and then also how this connection can be closed.

Moderator Very good. And Jonathan I believe this question pertains to you, but it is regarding the study that you mentioned about the negative international perception. The sendee was wondering if you had a source for that study.

Jonathan Skeen Yes it was just on the top of my head, it was a study, it is actually referenced in the regional stock report and I actually can't remember. It was sort of a journal study but if you were to look at the regional spotlight, which is on page 24 of the global studies report it is actually referenced there but I can certainly pull out and I can provide it after the webinar if that would be agreeable.

Moderator Definitely and I can e-mail that question to you as well as I will wait a response to it by email.

Jonathan Skeen Okay great.

Moderator That was the last question from the audience today so I just would like to once again thank you Christine and Jonathan for the great presentations and also handling all those questions, if you would like, I would like to give you a moment to provide any closing remarks if you have any.

Christine Lins Well, I would like to thank especially the Clean Energy Solutions Center for the excellent organization. Thanks for the interested audience and all the questions and last but not the least to Jonathan Skeens for not only the great presentation today but also all this work on coordinating the global status report 2013 here in the REN21 secretarial.

Jonathan Skeens And great. Thank you very much Christine and again thanks to the organizers of the webinar. Just—maybe one just interesting side which I can add is and which perhaps we have not gotten into too much depth and which might be interesting to the audience is the sidebar age of the report which is the innovating energy systems and many good policy to get and one other thing that we saw this year was just that many of the grids and

setting up economically sustainable and many good systems for addressing electrification province in Africa is really getting become—is really getting a lot of interested from both the private and public sector so I would recommend anybody who is interested in that topic you should take a little bit of that sidebar and also the many good policies which has been produced in parallel in the report so and again thanks everybody thanks to you Christine and the organizers for great webinar. Thank you.

Moderator

Alright and thank you again panelists. Now audience, I just like you to ask you to please take a minute to answer our quick survey on the webinar review today. We will just have some short questions for you to answer. Your feedback is very important to help us improve webinars in the future. So first, the question is the webinar content provided me with useful information and insight. And the next question is the webinar’s presenters were effective. And the last question, overall the webinar met my expectations. Very good. Thank you for answering our survey. On behalf of the Clean Energy Solutions Center, I just like to extend a hearty thank you to our panelists today and also to our attendees for participating in today’s webinar. We had a great audience, with really question generated in discussion and we appreciate your time. I invite our attendees to check the Solution Center website over the next few weeks. If you would like to view the slides and listen to our reporting of today’s presentation as well as any previously held webinar that we hosted. Additionally, you will find information on upcoming webinars and other training events. We also invite you to inform your colleagues and those from your network about the Solution Center Resources and Services including the no cost policy to park. I hope everyone has a great left of your day and we hope to see you again at future Clean Energy Solution Center events and this conclude our webinar.