Policy Derisking for Renewable Energy

—Transcript of a webinar offered by the Clean Energy Solutions Center on 12 June 2013—
For more information, see the clean energy policy trainings offered by the Solutions Center.

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Sean Esterly Today's webinar hosted by the Clean Energy Solutions Center. We're fortunate to have a terrific panel of speakers today who will be covering the topic of "Policy Derisking for Renewable Energy Investment."

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

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Before we begin, I'll quickly go over just some of the webinar features. For audio you have 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, we will eliminate the possibility of feedback and any echo. If you select the "telephone" option, a box on the right side will display the telephone number and audio PIN. You should use the dial-in. Panelist, we ask that you please mute your audio device before the presentations begin. If you have technical difficulties with the webinar, you may go to the GoToWebinar's Help Desk at 888.259.3826. That numbers for any assistance.

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We have an exciting agenda prepared for you today that is focused on sharing experiences and lessons learned in deploying policy derisking instruments to promote renewable energy investment. As you can see, we

have an impressive group of panelist presenting on this topic. Before our speakers begin their presentations, they'll have to provide a short informative overview of the Clean Energy Solutions Center Initiative. Then following the presentations, we will have the question and answer session and wrap up with discussions and closing remarks.

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So this slide provides a bit of background in terms of how the Solution Center came to be. The Solution Center is an initiative of the Clean Energy Ministerial and is supported through a partnership with UN-Energy. It was launched in April of 2011 and its primary led by Australia, United States, and other CEM partners. Outcomes of this unique partnership includes support of developing countries through enhancements 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 everyone's attending today.

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The Solution Center has four primary goals. Serves as a clearinghouse of clean energy policy resources. Also serves the shared policy best practices, data, and analysis tools specific to clean energy policies and programs. Solution Center delivers dynamic services that enable expert assistance, learning, and peer to peer sharing of experiences. Lastly, the center fosters dialogues on emerging policy issues in innovation around the globe. Our primary audience is energy policy makers and analysts from governments and technical organizations in all country. So we also strive to engage with the private sector, NGO's, and civil society.

Our marquee feature that the Solution Center provides is our Expert Policy Assistance. Asking an expert is a valuable resource offered to the Solution Center. We have established a broad team of over thirty experts from around the globe who are available to provide remote policy advice in analysis to all countries at no cost. Our policy experts available to assist with renewable energy investment policies include Wilson Rickerson from Meister Consultants Group and Karlynn Cory from the National Renewable Energy Laboratory. If you have a need for policy assistance on renewable energy investments or any other clean energy sectors, we welcome and encourage you to use this useful service. Again this assistance is provided free of charge and to request assistance; you may submit your request by registering through our "Ask an Expert" feature at cleanenergysolutions.org/expert. We also invite you to spread the word about this service to those in your networks and organizations. Some of the broads sectors that are covered by our experts include energy access, energy efficiency, renewable energy, smart grid, micro grid, clean transportation, regulations, and utilities.

So we encourage you to explore and take advantage of the Solution Center resources and services including the expert policy assistance. Subscribe to our newsletter and then participate in this webinars.

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Now, I'd like to provide brief introductions of our distinguished panelist. First, Oliver Waissbein, Finance Specialist, Energy Infrastructure, Technology and Transfer team at the United Nations Development Programme. Oliver will discuss selecting and quantifying the impact of public instruments. Following Oliver. Djaheezah Subratty, a Programme Officer in the Policy Unit of UNEP's Energy Branch, will discuss best practice design in feed-in tariffs. Then our final presenter is Andre Otto from the South African National Energy Development Institute who will speak to us about lessons learned from promoting wind energy in South Africa. With that, I would like to turn the webinar over to Oliver. Oliver welcome.

Heather Oliver are you on the line?

Oliver Waissbein Okay. Can you hear me Heather?

Heather Yes, I can hear you. Thank you Oliver.

Oliver Waissbein Perfect. Thank you very much Sean. I'm very pleased to be here as one of the panelist along with Djaheezah and Andre. Today I'd like to present some findings from a couple of resent UNDP reports. The first report is one that's entitled 'Transforming On-Grid Renewable Energy Markets'. We issued this in October of last year. This report basically hopes that UNDP's experience this in fifteen market transformation projects around the world. In different developing countries. Where we advise and assist the developing countries in establishing feed-in tariffs for renewable energy. A couple of months ago, in April, we issued our most recent report 'Derisking Renewable Energy Investment'. This report puts forward a framework and a methodology to assist policymakers to select and compare the impact of public instruments to promote renewable energy. Today's slides really would focus more on the second report 'Derisking renewable energy investment'.

This first slide takes its step back and looks at the objective at hand and the challenge. The objective here is to make renewable energy cost competitive with the 'business as usual' energy investment, typically fossil fuel based energyies. The challenge is high financing costs that are typically found for renewable energy in developing countries. These high financing costs reflect a range of investor risks that exist for renewable energy in these immature markets. In turn, this high financing cost, when looked at over the life cycle cost of a renewable energy put renewable energy at a disadvantage. This is because renewable energy is highly capital intensive in terms of upfront capital cost. It involves an upfront cost, for instance wind turbines or solar PV panels and then little operating

cost thereafter. But if this self front investment is made and the financing costs are high, then the overall cost of renewable energy becomes very sensitive to financing cost.

The figure in this slide illustrates some modeling that we've done internally on this and where we compare. I'm sure wind energy first is gas combined cycle in developed versus developing countries. When we did this modeling and we used generic assumptions for these technologies. We kept all the assumptions the same. For wind in the developed versus developing country, and gas in the developed versus the developing country. The only things we've changed were the financing cost. Here you see the results. On the left hand side of this figure, we see wind versus gas in the developed country. The cost of debt that we use is five percent, the cost of equity, ten percent. As an example this could be Germany or a similar European country for example. What you see is that the levelized cost with the life cycle cost for wind energy is 6.7 US dollar cents per kilowatt hour. You can then compare that against a life cycle cost for gas, which is 6.1 cents.

This relationship, well wind is basically cost competitive is a typical relationship we now see for mature renewable energy technology and that we're all familiar with. This is really a function of the good decreases in technology cost that we've seen for certain renewable energy technology over the last few years. From the policy maker perspective, the difference here between the 6.7 cents and 6.1 cents. The incremental cost of 0.6 cents is what would need to be covered by a market based instrument or premium of some sort so that it could be a feed-in tariff premium that could actually be GHG based crediting or allowance resource. But that's the incremental cost that needs to be covered. On the right hand side of this slide. We've done exactly the same modeling but in the developing country. We assume Non-Investment Grade Developing Country. In the financial jargon that's a country with a rating below triple b minus. And for example this could be Kenya, Tanzania, a country such as that. The cost of debt we model is ten percent, the cost of equity, eighteen percent. What you see is that the levelized cost for wind energy jumps to 9.4 cents per kilowatt hour. That's an increase of forty percent. That as you can see in the breakdown can be attributed almost entirely to the financing cost. When you then look at the gas in the developing country environment. It only increases to 6.5 cents. An increase of six percent. Here again you see how the high capital intensity of renewable energy penalizes renewable energy in environments where there are high financing cost. Here there is actually an incremental cost of 2.9 cents and between renewable energy and fossil fuels.

From the policy maker prospective, there's essentially two choices in how to address this. One is to try and bring down the financing cost in the developing country. So that way the 9.4 cents will be reduced. This can be done by addressing the underlying investor risks. Or the old other alternative is to make up for the incremental cost through this market

based instrument or other such mechanism. The theory of change that the report derisking renewable energy investment puts forward. And UNDP's theory of change in the work that we do. Is as much as possible, it's most efficient and cost effective to reduce financing cost. Then after having done that, to make up the difference through a direct financial incentive to cover the incremental cost. That is the theory of change that that report puts forward.

The next five or so slides in the presentation highlights some of the steps and the illustrative results we got some case studies that we performed in the report. This slide here illustrates the challenge for the policy maker. Which is that there are literally hundreds of public instruments out there when it comes to addressing renewable energy. What this slide — these figures seems to do is to give a bit of structure to that by identifying some categories of instruments. I our experience, all public instruments fall in to the category shown in this figure. At the bottom of the figure you see three boxes. Policy Derisking Instruments, Financial Derisking Instruments and Financial Incentives. Those three boxes equate to what I was talking about in the last slide about the choices for policy making to either de-risk or provide a financial incentive.

When it comes to derisking, the report defines to types of derisking activities. The first is Policy Derisking. That involves the government policy or government program that addresses an underlying barrier that results in investor risk. Examples of such instruments are the government putting in place long term renewable energy targets that can reduce uncertainty for investors in terms of what the government's approach to energy policy is. Another example is streamline permitting processes, which can avoid the cost on uncertainty of a lack of harmonization in permitting. The next category is Financial Derisking Instruments. Here at the report defines this as instruments which don't address the underlying barrier but rather play an important role by transferring risk from the private sector to the public sector and typically to a development bank. The products here that are offered — the instruments that are offered here are public loans, loan guarantees, politic risk insurance. Typically what we see is that there's a need for a combination of these instruments depending on the particular country circumstances, the technology, the country objectives. In addition to the derisking as mentioned in the last slide. On has the option to provide financial incentives for the premium, the tax credit offsetting what was similar mechanism. Those are the fundamental three categories of public instruments.

What we also see in my experience is that there are group of public instruments that have proven to be extremely effective. We call this Cornerstone Instruments. In renewable energy, we think that really only a hand full of this corner instruments in clean energy generally. In renewable energy, such corner instruments in our experience involved providing the private sector, providing project developers, independent power producers, with a long term power purchase agreement. With a

fixed price for the sale of their electricity and guaranteed access to the market. These can be structured in different ways. One is as a feed-in tariff, which may or may not include a direct financial incentive. May or may not include a premium. Another approach here are PPA bidding processes. We see quite a few similarities between those. Djaheezah, in her presentation — in her next presentation, we'll talk a lot more about this. I think Andre also will talk about the experiences in South Africa where at first they look to the feed-in tariff but then they moved to more of a PPA based bidding process.

The next two slides, this is part one and then there's a part two which I'll quickly flip to and now I return to part one. Illustrate another tool and concept that we introduced in the report, which we call 'Public instrument table'. This table here is a generic table that we've done for large scale mature renewable energy. But ultimately this table needs to be tailored to the particular circumstances in each country. This table brings together quite a few concepts and I'll touch to them briefly. But I don't want to dwell too much on this table. On the left hand side of the table, you can see that it defines a number of risk categories. Actually across part one and part two, we defined nine major risk categories and we gave a description of them. We talk about the underlying barriers. Importantly, each risk category is associated with a particular stakeholder. This is important because it actually keeps the risk categories independent so they don't correlate. That's important for later aspects of the methodology where we submit this framework to quantification. It also helps in targeting the instruments. For instance social acceptance risk, the risk — the key stakeholder group there are the end users and the general public. If there are measures to address social acceptance on those, that's the target group to address. For resource and technology risk which has to do with assessing the renewable energy resource and selecting technologies. The design and construction of the renewable energy plant. That the stakeholder or project developers, in certain cases it could also be the supply chain. That would be the group that would be targeted.

On the right hand side of the slide, we have four columns, which match policy derisking instruments and financial derisking instruments to the particular risk category. So — and this can help the policy — help a policy maker and help those actors who are designing interventions to align instruments with particular risk categories. As mentioned, there are really hundreds of different instruments. So again this is another tool to provide a bit of structure to the process of targeting risks with particular instruments. Here you can see in part one, there are five risk categories that we've identified and then in part two this continues with Grid/Transmission Risk, Counterparty Risk, Financial Sector Risk. Then a couple of general risk categories that actually don't have a stakeholder associated with them. Political risk and Currency/Macro-economic Risk.

A couple of slides now as we finish off. That illustrates some illustrative modeling that we did in the report. In the report, to show how it can be

applied, there are four illustrative case studies in a mixture of different countries, which hopefully represent a range of country circumstances. Both investment grade and non-investment grade countries. Then high cost baseline countries and low cost baseline countries. Those are Panama, South Africa, Mongolia, and Kenya. These two slides illustrate the results for Kenya. They've just have some excerpts of the results. In Kenya, we did the modeling for onshore wind energy. We assumed a one gigawatt target for installed capacity of wind over twenty years. That was in broadly in line with some of the government's own projection sets. Slightly less ambitious and that's because we made certain simplified assumptions in this modeling exercise. In Kenya, the government has already put in place a feed-in tariff for wind energy and this is for winds farmed up to a hundred megawatts. Then above a hundred megawatts, there is a slightly wide hawk PPA based approach.

What you see in this slide is that we modeled two scenarios. One is a business as usual scenario. That's the risk environment and the approach that's been taken in Kenya today for wind energy. Then the other scenario is what we call a post derisking scenario. That's following the implementation or the modeling of the implementation of derisking instruments. At the top of the slide, in the business as usual scenario, you can see some risk waterfalls here. Actually this slide only has risk waterfalls. This shows a contribution of different investor risk categories to the financing cost in the particular country that's being studied. This is performed in both the cost of equity and the cost of debt. You'll see there are actually different risk categories we think apply whether it's for debt provider or for an equity provider. I don't have the time to go into this in detail and this numbers are not meant to be exact. Well, what you will see is that they'd give a good immediate idea and in quite an engaging way we think of what are the immediate bottlenecks in the country may be.

Based on the interviews and this data comes from interviews. Structured interviews that we performed and that in using the framework I performed with local investors. One can see that power market risk is identified as a significant risk category. This has to do with the outlook for the power market where prices may be going. What a competitive outlook may be. Grid integration risk that has to do with the management of the grid and the grid infrastructure. Counterparty risk that has to do with the payment on under the PPA and the credit profile of the [Indiscernible][00:25:24] taker and typically this utilities and other such matters. Based on these waterfalls in the business as usual scenario, what this allows a policymaker to do is to then target this investor risk categories with public instruments.

In the bottom half of the slide, one can estimate the impact of this public instruments in mitigating those risk categories. There you can see the reduction in risk that has been modeled here. So for the cost of equity in the business as usual scenario, we have an eighteen percent cost of equity. In the post derisking scenario, this goes down to 15.9. The package of

public instruments we modeled here. More or less suggest every investor risk category. We took an approach of being comprehensive and totaled based on preliminary top level estimates. About ninety million U.S. dollars over the twenty year target for this one gigawatt of installed capacity for wind.

This next slide builds on the risk waterfalls of the previous slide. Now applies them on the levelized cost basis and applies them over the one gigawatt target. So at the top of the slide you can see the illustrative calculations that were performed here for the levelized cost of electricity. Firstly in this modeling case study, we modeled the base line LCOE. Kenya generally today has a nice diversified electricity generation mix. There's some hydro there, there's some geothermal. However on a marginal base line approach, which is what we modeled here, most of the expansion in capacity has been for recently for recently for diesel and heavy oil. This is very expensive. So on an unsubsidized basis, we calculated an LCOE of 17.1 cents per kilowatt hour for the baseline in Kenya today.

When you then look at wind investment in Kenya, for the business as usual scenario we calculated an LCOE of 8.7 cents and for the post derisking scenario of 8.1 cents. A couple of things to come on here. In Kenya, because it's a high cost baseline country, one sees this relationship where wind energy today is actually significantly cheaper than the marginal baseline. The thing that with Kenya today is that there is no investment in wind. At least there has been no complete investment on the ground. There are number of very interesting projects that has been discussed for a while, Lake Turkana, and a couple of others. But what is clear is that due to some non-financial barriers. That investment is not occurring today. What we also see is that in the post derisking scenario, there you will apply this package of instruments. Our assumption is that those instruments will address the non-financial barriers that are preventing investment today. The LCOE of wind drops even further to 8.1 cents.

The bottom of the slide here illustrates what this means to Kenya on an economic basis over the one gigawatts of installed capacity. Here we show a couple of metrics that the framework and the model generate. There are also other metrics that address other matters such as affordability and carbon abatement. But here we focus on investment leverage ratio and saving leverage ratio. What you see for the investment leverage ratio in the bottom left hand corner is that the business as usual scenario today, here we modeled the provision of public loans and other financial derisking instruments that are ongoing today and that are being offered for in Kenya. The cost of those based on the assumptions we've made and this are all made clear and transparent in the annex of the report.

We see a leverage ratio of about eight times. We think that about two hundred and fifty million dollars of financial derisking instruments could

leverage about two billion dollars of investment. The slight issue here is that that investment is not coming through today. In the post derisking scenario where we assume a sort of systematic addressing of these investor risks costing nineteen million dollars. What you see is that the cost of the financial derisking instruments drops because there is less of the need over the twenty years for these instruments because these underlying barriers are being addressed and the leverage ratio jumps to fifteen times. Moving across the slides to the savings leverage ratio on the bottom right hand side. This illustrates this in another way and I think in quite a compelling way because it shows the unlocking of significant value across the economy in Kenya. You see a nineteen million dollar of policy derisking that occurs on the left hand side of this slide. Then this will unlock 4.2 billion dollars of incremental cost benefits. That's basically the difference between investing it in one gigawatt of the marginal baseline, which is diesel and heavy oil. First is investing in one gigawatt of wind. So you have 4.2 billion dollars of savings which are — of incremental cost which unlocked, then you have the further two hundred and seventy-five million dollars of savings that come from the difference in LCOEs between the BAU and post derisking and that creates a total savings for Kenya of 4.5 billion dollars, so pretty compelling numbers. Again, these are very illustrative, these are not exact but it gives one of the sense of the potential of applying this instrument.

This slide just basically lets you know that the reports are available online. You can Google them or go to our website. We have also released a financial tool and it's an LCOE based financial tool that assist policymakers in looking at the baseline LCOE as well as the LCOEs of the renewable energies that there may be starting pre and post derisking.

We need to wrap up with my last slide. In summary then, the report puts forward a theory of change whereby there has been great news that the technology cost of renewable energy has fallen dramatically over the last year. We think the opportunity for policymakers today is now to address a high financing cost that exists for renewable energy in developing countries. When we looked at the illustrative case studies in the model, we can mark with the few key takeaways. The best outcome seems to be when each of the investor risk categories is addressed in a systematic and comprehensive way. There is no silver bullet here. There is not one risk category that can be addressed that unlocks everything and that actually they can often be blockages if things are not addressed comprehensively. Secondly, when one looks at the tradeoff between derisking versus providing incentives our results and our experience actually in the field indicate that derisking is far more cost effective than providing incentives and where possible derisking should be prioritized over incentives. That finishes my slides. Thanks for your attention. I'll be happy to answer questions later or offline and I now would like to pass to Djaheezah for her slides. Thank you.

Djahezzah Subratty Thank you Oliver. Good morning or good afternoon everyone. Oliver in his introduction mentioned referred to Feed-in Tariffs and to power purchase agreements as being corner stone instruments. My presentation today is going to be focusing on a number of design issues from a policy and law perspective focusing on Feed-in Tariffs. Briefly I'll be introducing UNEP because not many people know about UNEP's engagement in renewable energy and then I'll focus on Feed-in Tariffs design considerations.

UNEP is engaged in a number of priority areas which we call thematic areas, all of UNEP's renewable energy policy and finances work relates to build sustainable energy and to climate agent. UNEP started working on Feed-in Tariffs a couple of years ago and last year we published a report on Feed-in Tariffs and the policy instrument for promoting renewable energy and focusing particularly in the context of developing countries and that report actually focuses on policy design considerations and how to translate those into actual laws in countries using practice in both developed and developing countries.

So basically when people think of Feed-in Tariff very often they think of the cost, the price that is paid for renewable energy feeding into grids but very often in practice, what happens is that other factors like interconnection, purchase, dispatch, contracting issues actually define in all significant manner of the success or less so of any Feed-in Tariff mechanisms that country has adopt. Basically Feed-in Tariffs provide for a guaranteed grid access. They also provide for a long-term contract for the electricity produced. Basically, providing visibility for investors over the longer time horizon and also ensuring that eligible generators receive an attractive price for their renewable energy sales.

Statistics show us that Feed-in Tariffs is actually the most prevalent policy mechanism which both developed and developing countries have been using over broadly in the last decade or more and they've really been instrumental and driving global wind and global PV capacity. We see sixty-four percent for global wind and eighty-seven percent for global PV. Increasingly over the last decade, the share of developing countries using Feed-in Tariffs as a policy instrument is really increasing and very fast.

Summarizing, the interactions between a number of policy design issues and policy design considerations that a country may face with, the policymakers intending to embark on designing and implementing Feed-in Tariff mechanisms typically face up to include a number of design issues which in the unit report we've like clustered and here, on the left hand side, nineteen main design issues and their interactions with a number of policy considerations. We clearly see that investor security and policy costs which are clearly related to derisking the policy and financial derisking that Oliver, in his presentation, mentioned actually very relevant in the context of Feed-in Tariff.

So very briefly, I'm going to run through those nineteen policy design considerations. The first one is the integration with policy targets. In countries, we basically have two sets of approaches. One is to have binding renewable energy targets. The other one is to have voluntary intents that policymakers announce. Those can either be linked or not to energy and climate targets. These policy design consideration has implications for investor security and also it is linked to the amount of administrative complexity that it entails. The second policy design consideration is about whether or not to have the policy objectives included in law. Here again, we see different approaches in different countries. Some choose to include it in law; some do not and prefer to keep it separate from any Feed-in Tariff law. This has or doesn't have direct impact on policy implementation and is very often a result of really the policy approach within the country because different countries have different approaches in general with regards to policy and its implementation. This is not specific in many countries, only to energy or renewable energy policy. Whether the policy objectives are embedded in law or not it can influence policy development. For example, if the law itself includes clauses for subsequent rounds of policy making. The third consideration is about eligibility. Some of the more common eligibility criteria that decision makers refer to include technology and what kind of renewable energy technology is going to be eligible. The resource whether it's new or whether it's existing renewable energy investment. How they relate one to the other. What kind of financial relationship exists with the policymaker and the investor in terms of ownership. Is it public? Is it private? Is it an individual in the case of very small scale generation facilities? What level or size of project is the law targeting? Some laws categorize projects and provide different time frames and different pricing and depending on the size of the generation capacity. Eligibility with regard to grid connection, whether to restrict grid connection to certain voltage levels and whether to allow mini-grids or isolated systems to be included in the scheme, for example in Thailand, we see that eligible ownership types include public, private, and individual scales.

The next policy design consideration which policymakers have to address is tariff differentiation. So what renewable energy type we're talking about. Tariff can be differentiated according to project size, according to resource quality, the technology application. For example for PV, we know that whether it's roof mounted or ground mounted in many countries has an impact on the rates, on the ownership, on the geography, offshore wind and onshore wind have different rates. There is local content requirement for some states or in some countries. The next policy design consideration is about setting actually Feed-in Tariff rate. Cost-based approaches establish the payments according to renewable energy generation and adds a targeted return. Some laws are explicit about the cost calculation; others not so and refer to other guidelines or national documents.

The next design element is about the payment duration. So when designing a Feed-in Tariff policy or a law in different countries, there are various categories which are used. This is what comes from assessing what's happening in developed and developing countries. The policy may also specify, at the end of the policy term, what occurs to the project revenue streams. So really they're all like various options for countries and it basically depends on the development priorities of the country and the institutional relationships as well between the generator and whether the generator is a private generator or that it's a public-owned company and the share of generation capacity between public and private sectors as well. In terms of the payment structure, we have basically three broad categories which countries use. One is the fixed price, whereby a guaranteed payment for a pre-established period of time is provided to investors and generators. The second category is premium design. So this is basically payment on top of the wholesale market price. Some countries include floor prices; some do not. We also have the third category, which is referred to as 'Spot market gap' approach where the generator sells electricity to the wholesale market and the payment actually is the difference between the guaranteed payment and the wholesale market price.

The next element which is important in policy design is inflation. This is accounted in rate setting or is either adjusted by adjusting the rate, for example, annually which is the case in most countries. The next important element for policy makers to consider is cost recovery. Cost recovery for the Feed-in Tariff includes basically either rate payers or tax payers and in some countries a mix of both. For example, when electricity is subsidized, both rate payer and tax payers foot the bill. Interconnection guarantee in its case shifts much of the risk and in some cases all of the risk associated with interconnection to utilities and the rate payers. It can be coupled with interconnection cost recovery rules but in some countries, interconnection is regulated separately from Feed-in Tariffs. So some countries choose to regulate Feed-in Tariffs and interconnection in separate legal instruments. The next policy design element which policymakers have to address when defining Feed-in Tariff is the whole issue of interconnection costs. So how — what's the pricing to connect to the grid an also whether the interconnection costs includes cost of grid upgrade. In some cases, it does not but in cases the cost of grid upgrade is included in the interconnection cost catered for in the Feed-in Tariff law and these are transferred to the rate payers to various extents but is paid basically upfront by the generator.

There is also the issue of purchasing and dispatch requirement. When a Feed-in Tariff law is in place use — utilities usually cannot refuse buying renewable energy electricity offered for sale under the Feed-in Tariff scheme even though they could basically be purchasing cheaper electricity from conventional generation. In some cases, the base load generators whose electricity are not being bought as a result of this are compensated. This is very closely linked to priority dispatch policy at country level. The

next policy design element is on how much is purchased. Gross Feed-in Tariff refer to purchase of all of the electricity that renewable energy generators are producing and that Feed-in Tariffs only excess electricity purchased. This also is very closely linked into the energy portfolio — generation portfolio in the country and the energy policies in general in the country. Usually gross Feed-in Tariffs are preferable from an investor perspective but within that Feed-in Tariffs, investors find themselves are in a bit of unsure ground because the contractually — the onsite electricity consumption is not secured. In terms of purchasing entity, we have various purchasing entities. Purchases could be utilities. It could be transmission approaches. It could be government agencies or it could be third party entities. In some countries, the electricity system is not unbundled. In some countries there is unbundling in between generation and distribution and transmission. This is a factor which is very closely linked to how the institutional and administrative set up is defined at country level. It's been apparent that administrative burden is highest with government or with state-owned utilities when they all Feed-in Tariff off-takers with utility or third party Feed-in Tariff off-takers administrative requirements shift to less regulatory — less intensive regulatory and oversight functions.

In terms of what commodities are purchased, the Feed-in Tariff has a choice between whether only electricity and generators retain ownership of all other commodities and environmental attributes or whether the rights to other commodities are bundled with electricity and transferred to the Feed-in Tariff 'purchaser' for example the utility. A single contract transferring all commodities provides investors with maximum investor security and reduces administrative and monitoring requirements in the part of the utility. The next important element is triggers and adjustments. In policy adjustment in practice includes concept of tariff degression with time the tariff goes down and there are a number of means and ways of doing that. It could be through annual or overall caps. It could be through periodic reviews. Different countries approach this in different manners and it influences investor security very directly because obviously investors want to know what they're investing, how the tariff is going to be fluctuating with time and what kind of predictability in time horizon be all given by policymakers. So very simply put those triggers, whether they are time-based or whether they are capacity-based, they must be transparent so that investors know what is awaiting them. In terms of contract issues, some Feed-in Tariff laws are very specific that a contract is required. Others do not refer a very specific contractual issue and when a contract is required sometimes this contract is a standard one, in other cases it is not. Often — most of the time, contracts are not used for premium Feed-in Tariffs and contracts can be either standard or negotiated.

Now we go back to the whole definition of a Feed-in Tariff. So the tariff component per se, how is the tariff paid? We see two cases. One is payment in local currency and the other case where the payment is in the indexed foreign currency. The key, I think, decision point for this is

whether project developers will be transacting in local currency or they are exposed to foreign exchange risk. For small scale projects, it's been observed that local currency payments are particularly useful. For large scale projects, currency risk can be mitigated by denominating Feed-in Tariff payment in hard currency or by indexing payment to foreign currency exchange rate. But this approach shifts the risk to rate payers. So basically they are good for investors and less appreciated by customers but really this is like a balancing act. The last policy design consideration which is important is not to address Feed-in Tariff in isolation but really as a policy package with regards to interaction with other policies and other incentives. In many countries, their renewable energy policy landscape is quite complex and is getting more and more complex. It's organized at national, at state, at local, at city-level and policymakers use legislation in some cases to specify the relationship between Feed-in Tariff law and other incentives. In some cases this is not the approach which countries use so really there is like a wide landscape of approaches that that countries use. We've seen recently in a number of developing countries, for example like in India, where there is also a bit of a hybrid approach which is being attempted with bidding combined with Feed-in Tariff and with auctioning. So really this is an immerging area of policy development with countries and states' trying approaches to suite their own particular context because there is clearly no one size fits all.

Very briefly, as part of implantation issues to summarize we see that there are two very distinct approaches that are privileged by countries depending on their own institutional and in policy preferences. One is the legislative pathway where we see that in countries where there are Feed-in Tariff laws this increases investor confidence and security but sometimes it is difficult to include all significant details into law and also requires legislative review whenever changes have to be made. The other broad development pathway is to use a non-legislative one and to use regulatory bodies through rules and regulations, and so to develop really a Feed-in Tariff program which is independent of the Feed-in Tariff legislation from the executive entity in the country. This has the advantage of streamlining policy development and to adopt a more independent in a way regulatory process but because it is not a law, also has a drawback of being perceived as less investor-friendly and can reduce investor confidence. To finish, a big question about how do countries go about doing this is really a question about capacity. So, building capacity whether it's capacity for technical assessments like resource renewable energy or resource assessments, building capacity to develop policies, building local capacity in countries to develop and implement laws, building monitoring capacities so that regulators and institutions vested with authority to monitor the effectiveness and efficiency of Feed-in Tariff mechanisms at country level. There is — really come as a package and should be addressed in really in a comprehensive manner. To finish and of course I'll welcome any questions. I've really not gone into those nineteen policy considerations in detail but we really do not have the time to do it today. So I'll welcome any questions later during the session. People who are

interested to go through the report are very much welcome to do so and the links are provided in the power point which will be uploaded on the Clean Energy Solution Center portal. Thank you and now I'd like to hand over to our friend Andre Otto from SANEDI in South Africa, who's now going to really present to us country practical — country level experience. Over to you Andre.

Andre Otto

Thanks very much Djaheezah. My — good afternoon, good evening wherever you are in the world. Thanks very much for this evening. My presentation will basically start a few years back and we'll take it from there where we are now in South Africa. It will focus on wind but it does use an example and it will also give other elements.

Basically, I also just will give a short introduction to what is SANEDI then we will go into keeping the thing simple. In going back, when we started, the issues that we have battled with up until now what has been done in South Africa, as one could maybe call derisking renewable energy in South Africa and then where we are now and maybe some issues we should look in the future. What's going to be important is we still need to address.

SANEDI is state entity and basically [Indiscernible][01:02:29] under Energy Act in South Africa and is basically I will be reporting today on department of energy and it's their [Indiscernible][01:02:37] promotes diversification of energy supply, energy technologies, human capital, and then innovation and some development.

Basically for an instance I was work — fortunately for some time in the government and as we all know, we need to keep this really simple if you want government to look into this option, we need to keep it simple. In South Africa, they set up debates on renewable energy and whether it can work or not. We need to keep it simple if we want the people to understand. It means some of this form — this is what we, I would say, found in South Africa. We need to address these three simple questions. If we cannot base it with facts not in licensed facts then we can move forward and I feel that's what we're busy trying to do as I will go through it and basically the questions are as a the few guest speakers also mentioned is the issue of the cost of renewable energy especially the high capital cost relative. Important also, what is the potential of renewable energy? I mean in here the practical potential. It's easy to do so some theoretical calculations but what's a practical potential because you want to both in industry. You can't know the industry if you don't know what is your potential. Then especially also the question in South Africa, there are a lot of debates on this 'What is the reliability of renewable energy?' where we are talking of capacity renewable content and capacities of generator of energy [Indiscernible][01:04:12] and we need to address these things if we want to move forward.

	I collected a typical example, we call it the Darling National Demonstration Wind Farm. That time being we started in 1996 and that sort of — you can take the case study then by doing — in those days, we spoke — we're fortunate with an early place in the process which is not any more. We [Indiscernible][01:04:38] no bulk renewable energy IPPs, policy, legal, and regulatory framework were basically [Indiscernible][01:04:45 - 01:04:47] renewable were sort of nonexistent. Also significant work that there was the issue of environmental impact effacements. There were a few practitioners and there were also not really know how to deal with this renewable we need in particular. We were lucky that we by gathering interest of government commercial and developing banks, [Indiscernible][01:05:15] we managed to put this project together. It was innovative. In fact, it's [Indiscernible][01:05:23] ground. In those days, there was an understanding of the power and meaning of agreements between IPPs and [Indiscernible][01:05:31] with this utility. Now powerful —
Heather	Apologies, we seem to have lost technical access to Andre. We will hold a moment and see if we can get him back on the line. Thank you for your patience.
Heather	Okay, maybe we can start with a few questions while he gets back online.
Sean Esterly	Yeah, we have a couple of questions here and just to remind…
Heather	Thank you.
Sean Esterly	… if you do have any questions that you'd like to be answered, you can go ahead and type it in the questions box on the right. First question is, what have the panelist found have been the main challenges that implementing policy derisking instruments in developing countries? Is there a typical time frame once measures have begun for a country to attract private sector investments?
Oliver Waissbein	Thanks Sean. Right then I have the first crack at that. Then other panelists please, please chip in. I guess in a nut shell, I mean, our experience —
Oliver Waissbein	Oh. Andre, are you back?
Heather	He's back?
Sean Esterly	I believe Andre is back.
Oliver Waissbein	Very good.
Andre Otto	Oh. Hello.
Heather	Yeah. Hi. We lost you for a bit Andre so welcome back.

Andre Otto

Okay. Yes I am. Let me just click a little bit back. I just [Indiscernible][01:07:31] quickly, as I said when we started with the Darling National Demonstration, we founded years back as [Indiscernible][01:07:39] and from then on we then started to go specific on the policy. It was obviously we realized we needed the policy in place [Indiscernible][01:07:48] up and I'm just going to quickly go generally over the policy. [Indiscernible][01:07:53] intervene since that time and also obviously the climate issues also became much more developed. So South Africa rectified the [Indiscernible][01:08:02 - 01:08:04] see, we developed the White Paper on Energy in 1998. [Indiscernible][01:08:08] about two pages on the renewable energy [Indiscernible][01:08:10 - 01:08:14] not much, much more than that. Obviously we accede to the Kyoto Protocol, it's a developing country. I would say that the first significant movement in the renewable making it out of just energy but putting it in a proper energy so it was that White Paper on Renewable Energy Policy in November 2003 and we have a target then. That was specific about renewable energy and we from there we started to act. Following that we then also requested in the Electricity Regulation Act. That act was very progressive and we provide access to the grid. We were able to [Indiscernible][01:08:55] make regulations under new generation capacity IPPs. Also significantly is that renewable energy they moved out of just before it energy [Indiscernible][01:09:07] but also other important government departments like Department of Trade and Industry. They were looking at its potential industrial spin out of renewable energy. So that was included in our Industrial Policy Action Plan in 2007 incorporating renewable energy.

At that same stage, coming from the Darling Farm we found how did we scale up to the [Indiscernible][01:09:33] or able to source funding from the Global Environmental Fund (UNDP-GEF) which we developed in South Africa Wind Energy Programme basically also to say how do we take Darling and how did we scale it up? Some of the key projects which I will get into later was the Wind Atlas for South Africa talking about what is the technical potential of wind. At that stage we have the lack of theoretical instruments but nobody did know. We also — the issues of standards and the also significant was the issue of [Indiscernible][01:10:06] are basically how much the capacity can we displace because according to the [Indiscernible][01:10:12] in South Africa wind is intermittent that's what [Indiscernible][01:10:14] so we wanted to retrace that and that helps government to get credibility on the stand it's [Indiscernible][01:10:20] they can make policy on that. Needless to say in 2008, the Darling Wind Farm was commissioned.

Also significant development from what I would say what's happened in also they found in 2008 with the government was saying, 'Okay, how can we — South Africa participate in global emissions reduction?' We [Indiscernible][01:10:42] commissioned what we call Long Term Mitigation Scenarios. We [Indiscernible][01:10:48] the scenarios in South Africa. What is the interventions to keep us this sustainable power and

basically, what was decided, it was a lot of scenarios, is basically thinking of the emissions probably from 2020 to 2025, flat, and to bring it down from 2030 onwards. Actually this was the key development that's been used in a lot of the following policies and documents. At the same time, the Energy Act [Indiscernible][01:11:23] the Energy Act basically been slated the energy White Paper. As we've heard earlier in South Africa, we've also started with IPP and renewable energy Feed-in Tariff [Indiscernible][01:11:36]. Next they [Indiscernible][01:11:39] regulated by law obviously looking at tariffs. They are investigating this. A lot of work was done on this and basically they refit for certain technologies. At the same time, in 2011. This is also a significant development coming from the Electricity Regulation Act implementing the regulations were the resource plan. Basically, [Indiscernible][01:12:06] resource supply plan for South Africa. Significant indeed was this the target of new growth generation of about forty-two percent that should come from renewable in [Indiscernible][01:12:20] from 2010 to 2013, 8.4 gigawatt wind, 8.4. gigawatt of photovoltaic, and one gigawatt of concentrated solar power. Also very important into this is a document that will need to be revised. Now on the one side, it is [Indiscernible][01:12:38] because it needs the most [Indiscernible][01:12:39] campaign in the [Indiscernible][01:12:41] how our industry is getting mature and the more the government is buying to the [Indiscernible][01:12:46]. We can argue for a higher percentages of the renewable in the resource plan but obviously it is also true if that's not going to happen these [Indiscernible][01:12:55] can revised down [Indiscernible][01:12:56]. I don't think it will happen but it's just a portion which means it can be revised on the [Indiscernible][01:13:02] mature we can always sustain [Indiscernible][01:13:04].

I am going to into much detail on this but there were some issues after the Feed-in Tariff was developed for about two years. I would say there were some legal issues on situation instances in South Africa which came up and then basically the refit was abandoned. The Department of Energy, they launched what we call the renewable IPP Procurement Programme. That's basically a price competitive [Indiscernible][01:13:33] programme where the [Indiscernible][01:13:36] price fair competition. We get you referred for this. We get you financial clause for this. Financial clause were [Indiscernible][01:13:45 - 01:13:49] our utility. I would say, for me the most significant development is what we call South African Renewable Energy Initiative (SARI) and that also plan basically was spearheaded by the Department of Trade and Industry which seemed a long term potential for an industrial site for renewable but obviously also looking at finding some cost help. How are we going to be able to finance the renewable to the states where there it is a critical mess and the industry can go on its own? That's why they developed or are developing that started on the initiative. Basically to go into critical [Indiscernible][01:14:25] from the nation of pubic [Indiscernible][01:14:27 - 01:14:28] international funding and basically this is [Indiscernible][01:14:31 - 01:14:33] uncertainty which the industry want. So there was a local worker who did that. Currently, it's with the

Department of Energy and actually at the moment it is an implementation of this initiative. Coming back to the resource [Indiscernible][01:14:47] the resource in South Africa as example, wind. In those stages we've worked on the wind and program atlas. We've launched our first Verified Numerical Wind Atlas. One of the big problems in South Africa is a lot of these are theoretical stuff but you need to make sure that you can verify from the ground. So we have [Indiscernible][01:15:07] that we verified physical and you can see the users. This is quite [Indiscernible][01:15:12] our worldwide so there was [Indiscernible][01:15:15] from Palestine [Indiscernible][01:15:17 - 01:15:20] and stuff like that and [Indiscernible][01:15:22] it's basically okay to go back there but you can go to the government and you can talk to them. It's not [Indiscernible][01:15:27] and a significant development now is the Department of Environmental Affairs is actually now looking at what they call or they define the Renewable Energy Development Zones and the moment they start with the [Indiscernible][01:15:43] and [Indiscernible][01:15:45] that will probably expand from there. Here, basically they are using the Wind Atlas. This is the [Indiscernible][01:15:50] wind development areas in South Africa. The whole idea is to make the [Indiscernible][01:15:56 - 01:15:58]by 2014. All of these are basically helping wind get down the cost for government as well as to the investor. [Indiscernible][01:16:05] financing of renewable. In the [Indiscernible][01:16:08] I think also significant [Indiscernible][01:16:11] the base of Darling is that we have Mature Renewable Energy Industrial Association and environments that we have at South Africa. Wind energy association sustain actually the former [Indiscernible][01:16:23 - 01:16:25]. Years back in Darling that was about two man[Indiscernible][01:16:30]. Now we have these [Indiscernible][01:16:32] are really on the ball if they did on [Indiscernible][01:16:36 - 01:16:38] the people is aware of that. This helped to — also to government. Certainly the industry is serious and there's a counterpart to work and the have mature and well development banking sector. I believe that this is basically the history of [Indiscernible][01:16:55 - 01:17:00] how these developers both on previous developments. Now here that's the way that we — this way that we'll be dealing with, as I said, with government in South Africa. We build on them, we take them with us, we provide the facts, we take it further industry and government, and that's why we can move forward.

As I'm saying now we are now sitting in the Renewable Energy Procurement Programme Competitive [Indiscernible][01:17:27]. This is just strictly a diagram that gives an idea. The technologies, wind solar, concentrate power, hydro, biomass, biogas, and landfill gas. Then so in here we have our first ReBid 1 we call it basically and the financial clause was November 12. That's the financial clause. Then it was followed up with another one in May 2013, the second financial clause and now recently. We looking at the next. It's around like a few ideas like July in 2014 to financial clause [Indiscernible][01:18:04]. That teach us the [Indiscernible][01:18:08] at the moment so that currently the

[Indiscernible][01:18:12] for [Indiscernible][01:18:14] to five megawatt. We set the 2534.8 megawatt will be sixty-eight percent. On significant developments also recently we've invested our energy department of energy at additional three thousand two hundred megawatt [Indiscernible][01:18:27]. So we actually set up at about what is it? Six — Seven — About seven gigawatts of renewable energy by 2013. That's in a Rebidding prices.

Okay looking into the future. With all — If when asked today we still [Indiscernible][01:18:46] wind farm 5.2-megawatt underground. Even if started in 1996, even if we have all these renewable energy about 3.7 gigawatt. At the moment if people wants we need to show them something then that's the only thing they have on the ground. We assume we should ask the first bits of the [Indiscernible][01:19:04] also on the ground. But I think that's the thing. We've done a lot of work. We've build up the facts. We got into a bidding program. Where government is taking the industry as it is, is accepting, is working together. Now we need to make sure we get successes on the ground. So these first programs have come and go on the bidding on the ground. They must be successful because that's going to be used [Indiscernible][01:19:31] before the success. So as they say the proof is in the pudding and that's where we need to get now. Get on the ground and get the success projects on the ground.

The key thing in South Africa, we can't just vote renewable energy on climate change. It's not going to work. You need to vote it on economic. It needs to assist localization, meaning it needs to create an industry, it needs to create job creation. I think that's a key thing we need to be aware when we implement this bidding program. I feel this is going to get much more especially from government in the future. They're going to be much more aware on this issue. We need to make sure that its putting projects on the ground but we need to be able to show that we get localization like the industry [Indiscernible][01:20:17] job creation. As I say, the key thing I would say in the future, 'We need to give market certainty.' That also relates to localization. It's difficult for an international [Indiscernible][01:20:29 - 01:20:32] manufactured it with this in South Africa with no [Indiscernible][01:20:34] certainty. I believe this is why the science of renewable energy in South Africa renewable energy is important that we provide some certainty, market certainty.

Once again we need to keep going, confirming, verifying our practical renewable energy potential. Again we need to make sure that we know what is our — the capacity contribution of renewable energy. You see this energy generator but obviously we also want to — if able to motivate and sell that renewable energy can also substitute fossil fuel capacity generation. So we need to keep going with the facts and what the model. Grid access and [Indiscernible][01:21:12] is going to be important. I think the few things that's in South Africa, I think in many countries now are coming up with more and more with water uses and availability for power generation. Wind turbines really don't really need any wind. Yes, you

need to have some water to clean the feed-in now and again but obviously seriously a biomass, biogas, and landfill, those things that are keeping directly and indirectly dependent on water. It is possible that our generation technology — [Indiscernible][01:21:42] generation technology and future is going to be determined by our water uses. I think this is a key thing we need to watch out as we move forward.

In South Africa, and I think this is very good, we have the bidding program [Indiscernible][01:21:56] busy running but we also need to realize as there is a life outside of the bidding program. What I mean here is there is issues of cell generation, there is issues of [Indiscernible][01:22:05] well and valuable and sell it. We can ask a private developer who's want to buy from a wind developer outside of the bidding [Indiscernible][01:22:14]. Household's with feed-in panels. [Indiscernible][01:22:20]. I think that is also what we need to look in to. We'd actually help bring down the cost and also the investment in renewable. In mildly just to complete, we started with learning by [Indiscernible][01:22:35] I feel we needed to [Indiscernible][01:22:37]. We should develop all these policies and then we should make sure that we implement them. Thanks very much.

Sean Esterly — Oliver, Djaheezah, Andre. Thank you so much for that outstanding presentation. We do have a couple of questions from the audience that will use the remaining of time to answer. The first question, the one from before which I will read again for anyone that might have missed it. That was, 'what have the panelist found as the main challenges to implementing policy derisking instruments in developing countries? Is there a typical timeframe once measures have begun for a country to attract private sector investment?

Oliver Waissbein — Why don't I have a quick go at that one, Sean? In a nutshell this is how to pinpoint any particular challenge. This is an extremely complex area where there are — as I think Andre illustrated in his presentation with the multiple facets of the work has been done in South Africa, as Djaheezah illustrated in hers with just all this different aspects of the feed-in tariff, one particular instrument. It's just incredibly complex. All around and whether it's a one instrument or bringing different instruments together and further than that we are talking about market transformation from typically energy systems which are fossil fuel based to those which renewable energy. There are best at interest as a lack of awareness, a lack of knowledge, so all that's up to very challenging environment. I think taking the learning by doing the approach that Andre I think rightly recommends countries everywhere and making incremental progress here. In terms of timeframes, when it comes to the work that we at UNDP in my unit in the UNDP-GEF unit assist on. The typical projects that we work on funded by the GEF about three to four years at least at the design stage. Sometimes they're extended during implementation. But our experiences being that this takes a long time, this is market transformation. This is ten to twenty years. Timeframes from when one starts, the action to actually

having a worlds functioning renewable energy market. It can't be this, it can't be more but certainly it takes time. In for example, we were involved in the project in China in wind energy under the GEF paid by the global environment facility, I think in the mid ninety's. They were shortly only really in the second half of the first decade of 2000, sorry 2005, 2006, 2007, 2008, 2009 when wind energy really started to pick up in China. Obviously that wasn't just a result of UNDP's intervention, it was a result of a number of different interventions coming together. But these things take time.

Sean Esterly Thank you Oliver. We did get — We have another question that we have time for and that question opened to the panelist is, 'What role if any has CBM finance played in derisking of renewable energy? How can CBM finance in mechanisms be adapted to better contribute to reducing investment risk?'

Oliver Waissbein Djaheezah do want to have a crack at that? Or Andre?

Andre Otto Yes, I can —

Oliver Waissbein I —

Andre Otto Hello?

Sean Esterly Yes, we can hear you Andre.

Heather We can hear you Andre.

Andre Otto Yes. Yeah. I can — it's — I'm taking from the Darling Demonstration we found those days that — where we are now. I didn't put it in my slide but I can just update it later. We did look obviously we have CBM in South Africa. There are some projects that's happened. We also looked at capable and renewable energy certificates. The gap is so big between — if you look at your financial cost compared to technology capitol cost of your generation, practical cost. CBM tradable certificates can help but something more than that. We need to have like say the bidding program or the feed-in from government basically to close that gap. That's the experience from outside.

Oliver Waissbein Yeah. I would fully concur with Andre. We have a program here called the 'MDG Carbon Program' which is a CBM project which was established in 2007. On renewable energy, the CBM and revenues from CER's I've seen that, firstly a function of the market price and that the moment a market is quite depressed. But they cover — I think an interesting, I mean, distinction here is that the revenues from the CBM are cover — in terms of the theory of it should cover the incremental cost. I think that's what Andre's touching on when he said that it's often not being sufficient. One observation we've had when we looked at the work in that CBM is that, it's important to CBM isn't actually derisking in many ways although it raises awareness and other [Indiscernible][01:28:49]

matters. The CBM addresses the incremental cost aspect. We think it's important that carbon finance mechanisms, the CBM or other next generation once that may come about. You know today people talk about sectoral approaches new market mechanisms. A framework for various approaches. That this had complimented by derisking measures which resulted the lower financing cost. So it's — there's an interesting interplay between the incentive that is offered by the CBM and complimentary derisking. In the ideal world, you those come in together nicely and the CBM being sufficient to cover the incremental cost. In practice, it often hasn't been for renewable energy sufficient and has needed to be a common need by other mechanisms such as a feed-in tariff premium or other such things.

Sean Esterly — All right. Thank you all. That's all the time we have for questions. If you did have any additional questions, feel free to submit them. Now I'd like to provide our panelist an opportunity to provide any additional or closing remarks that you'd like to make before we close the webinar.

Oliver Waissbein — Thanks Sean. Well for my side, once again I'd very much appreciate this opportunity to present these slides. We'll welcome all inquiries where UNDP can be of assistance to other actors so please don't hesitate to get in touch. I know how all these things end.

Djaheezah Subratty — Thank you Sean and the whole team for enabling us to do this presentations today. I'll also welcome any questions either through the clean energy solution center or directly to my email and from participants after the session. I'd just like to maybe end on a positive note. I mean, our presentations are all quite technical. They may seem very complicated to people but despite the fact that there's a huge amount of fossil fuel subsidies going to conventional fuels as opposed to renewable. Still we've noticed like 6.5 times more investment renewable in 2011 compared to 2004. I think this is really I hope that with the combination of the instruments and the approaches that Oliver just mentioned and that's also Andre mentioned. I think with more political will a lot more can be done. So thank you all.

Andre Otto — From my side also thanks to the organizers, to the listeners. I also just want to say, 'Please be always interested in South Africa.' A lot of things are happening and now it's at last it's happening and yes we welcome you coming and visit us and my wings are good. You are also welcome to send any questions. Thanks.

Sean Esterly — All right. Thanks again everybody. We do have a survey for all the attendees. We'd like to provide you with an opportunity to provide us feedback on our webinar by asking you three short questions. You're feedback is very important to us as they allow us to understand what we're doing right and where we can improve. Heather can you please put up the first question please.

	The Webinar content provided me with useful information and insight. Do you strongly disagree? Disagree? Not sure? Agree? Or strongly agree?
Sean Esterly	All right. The next question. The webinar's presenter was effective. Then the last question is, 'Overall, the webinar met my expectations.
Sean Esterly	All right. Thank you and on behalf of the Clean Energy Solutions Center, I'd like to extend us a hearty thank you to all of our expert panelist and to our attendees for participating in today's webinar. Had a terrific audience and we're very much appreciate your time. I invite our attendees to check the Solutions Center website over the next few weeks if you would like to view the slides and listen to our recording of today's presentation as well as previous, any previously held webinars. Additionally you will find information on upcoming webinars and other training events. We also invite you to inform you're colleagues and those in your networks about Solution Center's resources and services including the 'No Cost' policy support. Have a great rest of your day everybody and we hope to see you again at future clean energy solution center events. This concludes our webinar.