The Future of Industrial Energy Efficiency Finance in China

—Transcript of a webinar offered by the Clean Energy Solutions Center on 30 July 2013—
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Webinar Panelists

Patrick J. D'Addario	Institute for Industrial Productivity
Thomas K. Dreessen	Energy Efficiency Project Investment Company Limited
Dilip R. Limaye	SRC Global Inc
Robert P.Taylor	Energy Pathways, LLC

This Transcript

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Vickie Healey

Hello everyone I'm Vickie Healey with the National Renewable Energy Laboratory and I'd like to welcome you to today's webinar hosted by the Clean Energy Solutions Center and today we will learn about The Future of Industrial energy Efficiency Finance in China.

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By—okay right before we begin, one important that I haven't mentioned is that the Clean Energy Solutions Center does not endorse or recommend specific products or services. The information that's provided in today's webinar is featured in the Solutions Center's resource library as one of many best practices resources reviewed and selected by technical experts.

Next please.

I'll go over a few housekeeping information before we begin and the first is your audio. So for your audio you have two options and 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 in the right hand side of your screen and by doing so will eliminate the possibility of any feedback or echo. Also then if you select the telephone option, a box on the right side will display to tell us the number and your audio PIN that you should use when you dial in. Panelist I'd like to just—a gentle reminder for you to please mute your audio device when you're not presenting and that way again we'll prevent any chance of background noise or echo and things of that nature. Also if you're having technical difficulties with the webinar you may contact the GoToWebinars Help Desk at the number provided on the screen, which is 888.259.3826 and someone will be able to assist you.

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difficulty viewing the materials through the webinar portal this morning, you will find PDF copies of the presentation at the link provided on the screen and you can simply also go to cleanenergysolutions.org/training and there will be a link there also to take you to the webinar presentation and by doing so you can follow along with our speakers present and also we'd like to let you know that on audio recording as well as copies of the presentations you'll see today will be posted to the solutions center training page and with the audio recording you'll be able to follow along at a later date or that—you may—provide information to others you know who might be interested in watching this presentation at a later date.

So I'll go over the agenda real quickly and we have a great agenda prepared for you today and as you can also see we have an impressive group of panelist that will be presenting on this particular topic. Before our speakers could then begin I will provide a short informative overview of the Clean Energy Solutions Center Initiative and then following the presentation, we'll have a panel discussion amongst our presenters on aspects of the Chinese [Indiscernible][00:03:30] system. Then finally we'll have a question and an answer session where the panelists will be able to answer your questions, and last but not the least we'll wrap up with a short survey and closing remarks.

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Just say a little bit about the Solutions Center on how it came to be. The Solutions Center is an initiative of the Clean Energy Ministerial and it supported through partnership with UN Energy. It was launched in April of 2011 and it's primarily lead by Australia, the United States and other CEM partners. Outcomes of this rather unique partnership includes supportive developing countries through enhancement of resources on policies relating to energy access, no cost—expert policy assistance which I'll go over a little bit more in just a second, and also a peer to peer learning and training tools such as the webinar that you're attending today.

The Solutions Center—we have four primary goals. First we serve as the clearinghouse of clean energy policy resources. We also serve to share policy best practices, data, and analysis tool that are specific to clean energy policies and programs. The Solution Center delivers dynamic services that enable expert assistance learning and peer to peer sharing of experiences and lastly the center fosters dialogue on emerging policy issues and innovation occurring around the globe. Our primary audiences are energy policy makers and analysts from governments and technical organizations in all countries but we also work very hard to engage with the private sector, NGOs, and civil society.

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Now I'd like to go over just a little bit about our marquee feature, which the Solution Center provides and that is our expert policy assistance. We

call this service Ask an Expert. It's a very valuable service, again, that we offer through the Solution Center and basically what we've done is we've established a broad team of over thirty experts from around the globe who are available to provide remote policy advice and analysis to all countries and this service is provided at no cost. So I'm pleased to inform you that Julia Renaud at the Institute for Industrial Productivity is our expert of industrial efficiency policy so if you have a need for policy assistance on industrial efficiency or any other clean energy sectors, we welcome and encourage you to use this very useful service.

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Just a little bit about how you can become involved with the Solutions Center. We encourage you to explore and take advantage of the Solutions Center resources that we have in our rather expensive curated library and also the services including in the expert policy assistance I just mentioned. We have a newsletter you can subscribe to and we have regular webinars that you can always participate in.

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Now I'm just going to quickly introduce our panelist before they begin. So first up we'll have Patrick J. D'Addario who is Senior Advisor for Financial Products at the Institute for Industrial Productivity.

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Following, we would next have Thomas Dreessen who is the Chairman and CEO of the Energy Efficiency Project Investment Company Limited.

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We also have Dilip Limaye who is President and CEO of SRC Global Inc. and Senior Advisor to the World Bank.

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Finally we have Robert Taylor, Principal at Energy Pathways, LLC, and former World Bank Energy Sector Leader of the East Asia and Pacific Region. So now with all of that I'll like to turn the webinar over to Patrick. Patrick welcome.

Patrick J. D'Addario Thank you Vickie. Hello everyone. I'm Patrick D'Addario as you've heard the Senior Advisor in Financial Products for the Institute for Industrial Productivity and I'd like to welcome you all to this second of the seminars on Industrial Energy Efficiency that IIP is sponsoring with the Clean Energy Solutions Center. We really are pleased today, we have a panel of some of the world's leading experts of industrial energy efficiency finance and then addition to their long expertise and knowledge they are an unusually generous group in sharing. I count them all as

friends and they have been very forthcoming over the years and many of you know their publications and their participations in professional bodies and groups and it really is an honor for us to have them participating in this. My role here is to set the scene and I'd like to start that by giving just a bit of background on the Institute for Industrial Productivity.

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IIP was founded in 2010 by the Climate Works Foundation as prior to the network that exist to promote best practices and energy efficiency to maintain the atmospheric concentration of CO2 under four hundred parts per million and the magic two degree increase in global temperatures. IIP's role is specifically in the industrial sector promoting best practices in policy, technology and finance. In countries of focus as you can see, our three countries of focus are China, India and the US, which together account from nearly fifty percent of the industrial energy consumption in the world. We also have a focus on energy intensive industries, cement, chemicals particularly refineries, iron and steel, paper and pulp, and we work with government industry and financial institutions to deliver integrated solutions to support the transfer of these best practices and their adoption not only from the OECD countries to our target countries but also from our target countries to the OECD and today in the presentations you will see how that may happen.

May I have the next slide please?

The Chinese government in beginning with its eleventh five-year plain in 2006 has adopted aggressive and imaginative programs that are on the scale of its contribution to industrial energy used globally. The audacious goal of the eleventh five-year plan was to reduce the energy intensity of the economy by twenty percent and that China came very close to doing so. One of the major incentives that was offered in this—in the eleventh five year plan where the payments for avoided energy use, as you can see in the slide those payments varied between thirty two fifty and forty dollars and fifty cents depending on where in China the energy savings took place. That program which was led by the thousand—the thousand top enterprises program which most of you know came very close. Experts believed that energy intensity was reduced by about nineteen percent. In the twelfth five year plan, the focus move from the top one thousand industries to the ten thousand industries which are in fact fifteen thousand industries and the—in partially recognition of the difficulty of pushing down, the energy efficiency requirements, the incentive was increased from thirty eight thousand ninety cents to forty dollars and sixty cents.

At the end of the eleventh five year plan, the incentives are also put on for ESCOs and it's important to turn—to cite two requirements of those—of the ESCOs for receiving these incentives for avoided energy use. The first was that the --there be an energy savings contract, in other words, that the

payments would be based on actual energy saving achieved and the second was that the ESCO would provide seventy percent of the financing and you will hear about a lot of talk about ESCOs today and this is really the beginning of the emphasis on ESCOs in Chinese policy. The other major programs that the Chinese government were for which Chinese government provided financial incentives were the ten key energy projects which included financing and grants for coal fired boilers, for district level CHP, for waste projects for oil substitution motor systems, and others. There was also assistance in the provinces for retiring outdated capacity and a requirement in many cases that when new permits were applied for building capacity that an equal amount of outdated capacity be retired. The energy saving product support was basically for labeling and standards in the appliance industry and an additional—there were additional taxes on them for ESCOs both on income tax and value added tax reductions.

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As you could might have expected the government's emphasis on ESCOs and the offer of the incentives led to a doubling of the number of ESCOs between 2010 and 2011 in the significant increase in ESCO activity, but it's always the case the ultimate measure of the effort put in by the government were expenditures. In the five years of the eleventh five year plan, the Chinese government spent forty two billion dollars in direct financial subsidies and or an average of eight billion dollars a year to create a context for that the ACEEE paper that was from 2012 calculated that all US government agencies spent eight hundred and seventy nine million dollars in 2010. So if we assume that the average was spent by the Chinese government in that year, it was 10 times as much as was spent in the United States. But of course as we all know no matter how aggressive the government incentives regulation are, it is not possible to meet such ambitious goals with public finance and so when IIP started this finance program in 2010 we decided that we needed to have—understand how the banks were reacting to this policies, what kind of programs they have in place, what their attitudes were. As it's fitting for somebody who was a founder of the Energy Evaluation Organization, we turn to Tom Dreessen as to establish his baseline against which we could design our programs and understanding where China was and I think I'm not talking out of school, Tom's a dear friend and he's the only person I know who happily accepts the nickname 'Madman' because as he explained to me that means make a difference and Tom, as you've heard, does make a difference and I'd like to turn this over now Tom as for you to present the landscape study. Thank you.

Thomas Dressen Well thanks Patrick and I really appreciate IIP's support in allowing us to do this because I think it did provide a good foundation. I would say very early morning, good morning to those in California, good morning on the East Coast, good afternoon to those in Europe, and good evening or good night to those like me in Asia. So I try to cover the gamut of the time span but it's really great to participate in this and you know I have a bit of

challenge trying to condense say forty plus page report into a twenty minute presentation but I'm going to do the best I can and I hope that many of you that are participating in this webinar have a chance to look at the report, then so that you'll be able connect the dots on some of the things that I'm just going through rather quickly.

So I'm going to start—and we'll try to cover just what's going on in the entire energy financing—not just energy financing, the banking industry in China and then try to narrow down to see what's done actually into the energy efficiency piece and if you may have seen at in the beginning of the last landscape report there's a literature review of some of the main—some reason analysis that have already been done and I'm happy to say that one of our panelist today, Bob Taylor, has been a major contributor in that respect and as well as having been the major contributor to the ESCO industry in China through when—when he's at the World Bank setting up the three government-owned ESCOs that established the whole credibility of the industry. So in addition to myself, you got a really strong experienced and contributor to the China economy and then—anyway you'll see his name listed several times on that literature.

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Next slide please—oh by the way before I set—there's a—you can see the website of reference today of what the report is.

So let's start with the—so starting with the bank sector background there's three major tiers of commercial banks in China. We call them the big four and they are the SOEs that stands for State Owned Enterprises and that's what their government own and they—I think they have assets around US three hundred billion and the big four that ICBC which is the Industrial Bank of China, we have the China Construction Bank, ABC which is the Agriculture Bank of China, and then the Bank of China. They're the main players and as you'll see when I'm going through this summary that they really not the main players in energy efficiency per se other than their financing of Energy Efficiency Projects for the SOEs.

The second tier is—as the US dollar assets and share—these are owned by shareholders. A lot of private—they have SOE ownership as well but their predominantly shareholders with assets at around thirty billion dollars and you'll see that they are the main contributors the tier two to the energy efficiency group and these are the targeted banks with the International Funds IFI programs that we're going to talk about, such banks as the Industrial Bank, Shanghai Pudong Development Bank SPDB, then you got Minsheng and Hua Xia and then China Exim Bank. So those are all tier two banks and they seem to be the ones that have been most active in the energy efficiency through International Financial Institutions.

The third tier is the provincial/city banks which are controlled the government by the SOEs and they're most active in EE and SME or

they're not very active I'm sorry in the EE per se, but they do some SME financing, so that's the type where—so that's kind of the whole framework of the commercial banking sector in China.

The regulatory framework is you got really three main players but there's four mentioned here. PBOC is the Peoples Bank of China that's like the Central Bank, they perform Central Bank functions, you know the rates and the treasuries and everything else, how they—how much money and everything else that the banks are suppose to control and have control of. The CBRC is the China Bank Regulatory Commission and probably they regulate, supervise the bank and leasing companies. My best knowledge is that they're kind of like the FDIC they're not an FDIC but they perform a role similar to that. They're the watchdog in regulation, regulate the various of aspects. They'll do audits in the banks and see how they're doing and in compliance with charters in the regulations.

NDRC is probably the major, major, major energy player in China National Development Reform Commission and know that it has here—they're responsible for the five year plans, all of them, and in terms of the energy element in them and all National Energy and Energy Efficiency Policies and they establish that's what some of what Patrick was talking about, the ten Energy Conservation Project in terms of categories and everybody, that all the registered ESCOs who you have to register that qualify for this incentive program have to go through the NDRC or their local offices and they kind of control all of the pricing of energy and everything. So they're the major player for energy and energy projects especially in energy efficiency in China. Lastly is the MII which is the Ministry of Industry and Information and they're not very significant in the energy efficiency space or mostly trying to do some stuff on the SME development and guarantee policies.

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Policy develop—that Patrick's already gone through. This is the first part the mandatory targets. Probably one that many don't know about that there were restrictions placed on the industrial facilities that had high energy consumption sectors. In fact my experience was with—when I was working on one of the bank programs that they wanted to come in and form their own ESCO of a major SOE because they were on high energy intensive industry because their bank line have been—they are precluded from borrowing anymore money for an expansion. Anything like that so they wanted to go out and do energy efficiency so that they can do it as an ESCOs they were forming a subsidiary in order to that it's because of restrictions otherwise they could not lend anymore—they could not borrow anymore I'm sorry and so in such in history is cement is one in particular and steel in construction with—or any high energy intensity that sectors chemicals as well. They of course encouraged lending to the Energy Efficiency Projects, I'm trying to think of what are the majors ones that has it guiding opinions but in these guiding opinions that while they

encourage EEP they really didn't help in providing any direction on how to help solve the collateral problem which is the major—one of the major issues of Energy Efficiency Projects from their finance their major value is not the market value of the asset it's the energy savings and so in order for anybody to really finance in Energy Efficiency Project that are normal bank policy or procedures or—they have to use their own core credit capacity to borrow it and use in get collateral from their other projects or their other corporate of financing or corporate assets.

Another part was the policy was the project financing business guidelines but they're primarily for large infrastructure type projects, tow roads and things like that and then of course the energy saving incentives for Energy Efficiency Projects which had Patrick just went through and in total they average around three hundred RMP or fifty dollars in round numbers per ton coal equivalent. Then some earn more higher in areas like in Beijing and Tianjin. They are more on the five hundred range because the cities or the provinces kick them a lot more than the nationals around two sixty RMB. Demand-side policy is another management policy. There was one established in 2010 requiring utilities to do DSM up until level .03 percent of electric sales but because of it was so small it's not really then relevant and much of a focus at all. Last is the special ESCO treatment tax benefits, again, Patrick did a good job of summarizing them already so I'm not going to be redundant.

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The demand for energy efficiency finance has been pretty high as you can—as you may have seen from the report in the eleventh five year plan which is the five years ended 2010 report done by the ERI documented that a hundred and forty billion US dollars of the investments were made and they were estimated for the twelfth five year plan that would be two hundred billion in the funding—and the eleventh five year plan they documented mostly it was made by this SOE State Owned Enterprises and ESCOs were relatively small amount less than ten percent but that's expected to grow to twenty-five percent in the twelfth five year plan. So there's a clear expectation that the ESCOs are going to be major players at the twenty-five percent level in the next—over the next five year plan which ends in two years. EEPs estimated to need about forty day and a funding per year. You know you can do that that's two hundred billion divided by five of above by bank loans and other sources. The twelfth five year plan—they're broking one of the key elements that's interesting is that they're broken down by province and actually they're broken down by cities as well but it's hard to get that information but we provided the provincial information by report. Probably the most important element of that for those that are not familiar with China is that these are delegated down to the provincial governors and province leaders and there are consequences if they are not met. So it's very much a stick type environment. There's --there might be some incentives but the stick is there and we're seeing some real anxiety in some of them right now but

with the next last two and a half years left to meet those bills. Last thing was the matters due to this the effort—the focus for the ten thousand enterprise program at 2011 which targeted them some seventeen thousand companies those that had energy consumption over to five thousand ton coal equivalent per year which represented over sixty percent of China's total energy consumption so there's a big demand as you can see for energy efficiency finance.

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The lending practices are fairly similar to a lot of countries. EE lending is a small part of bank loans really less than one percent in general and there chance to be in a niche type of business for the tier two banks as I mentioned on my first slide there as one of the tier—as the tier two banks I mentioned. One of the interesting things which is that there's a ceiling in interest rates for commercial banks so it cannot be higher than ninety percent of the prime lending rate and so that's—that creates some challenges and in terms of banks not really wanting to do Energy Efficiency Projects because they can't really increase the rate enough and so it's one of interesting things in China. They do have standard credit evaluation procedures that are used in the banks that you have—somewhat of a credit system although it's hard it's not like a [Indiscernible][00:30:23] or anything like that so that's one of the challenges in China of getting credit ratings but the banks tend to know who the good potential borrowers and who are not. Thirty percent equity is typically required and eighty percent of the loans require full collateral or have to be obtained approve third party guarantees and I'm going to talk about this guarantee that's with unique industry through China.

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The debt financing for EEPs is just a high level overview that loans are mostly made directly to large corporate entities. The SOEs that own and operate the facilities where the EEPs are installed energy efficiency projects and we call them the host. They're the host of the Energy Efficiency Project. The loans are booked on the host's balance sheet obviously because it's a direct loan and in most cases the repayment of the Energy Efficiency loans are not related to the saving performance and they're that—they're really not project-based and thirty to fifty percent equity is required for most Energy Efficiency Projects and SMEs and the project loans as I said where there's project loan structure project loan for large projects they're generally not viable for Energy Efficiency Projects.

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This is pretty typical I think in terms of debt financing for EEPs it's very—for other countries I mean domestic bank loans are typically provided for working capital, fixed assets investments, trade finance, projects but not projects in the sense of what Energy Efficiency per se.

There are large projects like I said it could be infrastructure or they could be expansion projects or companies that are growing and doing well, mortgages, accounts receivable and I guess the key thing on accounts receivable, one of the big distinguishing factors here is that the accounts receivable they don't consider on a shared savings contract. For instance a future receivable it's not an accounts receivable. It has to be one where the services already have been provided and the account receivable is already on the books and then they'll finance that seventy-eighty percent pretty typical to most banks. Then there's—one of the other domestic loans is this SME loans and there's was a new joint surety pilot program by ICBC and the Bank of Beijing keeping in mind that our report well as published in last October it really—lot of the results were done in 2011. So it's a little over a year and a half old some of this information so we don't know quite what the status of this surety pilot program is, but one of the target of this was to have multiple SMEs bundled together where there's like if you have transportation company, trucking company is they similar size, similar sector they would bundle them together to get working capital loans predominantly and then they would able—they would cross collateralize these and have joint several liability which it has some challenges to get ever body to agree to it but that was kind of the concept to being able to scale up the financing the SMEs and mitigate risk.

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The debt financing for the International Financial Institution, this is just a summary. There's a quite a bit of detail in the events cape report on this. The World Bank China Energy Efficiency Program have predominantly three—primarily three banks the China Exim Bank, Hua Xia and then the China Minsheng Bank. These were sovereign guarantee loans to the Ministry Finance and they went to these banks who tried and then the emphasis was supposed to be on energy efficiency. I'm fairly committed with some of them and in general they have not been too successful and we can talk about that later but they've been—it hasn't really force them to change their business as usual with the exception of maybe Minsheng Bank and then Hua Xia and then if this is a couple of years ago and I understand that they've all been trying to focus more and use the project-based financing with the energy savings. French Development Bank they did it with three banks you can see those SPD, which is one of the leading banks in Hua Xia and of course China Merchants Bank. Then the ADB has one of the favorite provincial program that's been out there for some time since 2009 with the—and then another one at the Shangdong Province in 2011and I think they've done loans to the provinces themselves to implement Energy Efficiency and most recently one in Hebei Province which I know that the lead was very instrumental, the lead were made was one of other panelists was instrumental in getting that done and perhaps you may want to talk about that. Then there's another with the KFW Bank and EE/RE Loan to China Exim, which I was—works the consultant for KFW Bank on couple years ago that expired in 2012.

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Leasing you know it's mostly sale leasebacks directly to large private companies and SOEs they require pretty much the same security as banks and thus their not really a major ESCO financing option. At least they weren't a year and a half two years ago. However in 2011, the World Bank initiated a pilot program and lent the hundred and thirty three million to one ESCO and two leasing companies and one of these ESCOs was Bob Taylor's original three large ESCOs and they turned their business model into a leasing company and their focus it to a large [Indiscernible][00:36:19] in Shangdong Province as it says and they can bear only able to lease in that province under this program but they're providing this leasing to ESCOs, industrial Energy Efficiency Projects and equipment vendors and the ESCO in particular is offering the EPC model with the equipment as a primary collateral and you know some of the elements of it is that the maximum funding per project is US five million dollars rates around fifteen percent in the terms three to five years. In summary I guess the finance—one would have to conclude clearly that the financial leasing is not fully developed in China. It's the less than one percent of GDP. In 2009 it was versus like thirty percent in US just to kind of give you a comparison.

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Credit Enhancement programs—you know the IFC has a new SME risk sharing program RSF in 2011 with two participating banks the—again you'll see Shanghai Pudong Development Bank all over the place. They're very active in all these programs and then the BRCB, which is Tianjin in high real commercial bank. This was relatively new when we finished our report. There was very little knowledge about other than what they were planning to do. So they were targeting the customers. There were EE loan applicants of participating banks so they were lending to—providing these guarantees to the participating banks for all types of Energy Efficiency Projects and it's supposed to be in effect until 2018 and they say the collateral is going to be the project assets. They're interested to see how that's worked out and this is an extension—it's an extension of the Chile program, which is the Chinese Utility Energy Efficiency Program. Many—most people know about where they had three banks and provided these guarantees to the banks and risk sharing facility. So this is—this was targeted more of the SME market and so we really haven't—at the time we were looking at it was rough—very new and had no results. Insurance companies established in 2003 but these companies are mainly just kind of guarantee companies for losses from the companies from going bankrupt during solvency and pretty typical I think of most countries.

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Probably the most important thing or the most unique thing in China are the guarantee companies and banks they've come in to fruition or payment

because they were willing to accept slightly wider range of collateral than banks are allowed. Actually by law, they can take company stock and other personal guarantees and things like that that the big banks are not really either by policy or whatever regulations are not able or not willing to take as collateral. So these guarantee companies will take that of different type of collateral and then they'll provide the guarantees to the banks predominantly the banks are the primary beneficiaries of the guarantees and they'll provide this to select SMEs and ESCOs based on track records and some are starting to explore the future receivables and pledge model and which they believe that constitutes a significant technical risk for them because the guarantee companies are really not geared for taking performance risk which is what that requires in some cases especially if their shared savings projects. Then the one of the big ones that was mentioned at that time was Huazun in the investment in getting credit guaranteed company. They had introduced a pretty innovative product back in 2010 for ESCO which with future receivables pledged as collateral for loan guarantee I'm not really—again it was—a product was introduced I think in late 2010 and I'm not really sure about the results that they have—I think not major results in 2011 when we're doing this report. Then this last one is a national SME guarantee program which really doesn't have much to do with energy efficiencies it's mostly related to adding the SMEs banks, providing guarantees to banks with—and is related to pack of guarantors and it's very stringent on what they can do. The SMEs have provide counter guarantees but these—the guarantors have to be predominantly providing guarantee to the SMEs and it's a good program but it's very restrictive.

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Equity sources, probably the biggest one is CECP which is the only national state-owned enterprise that was setup where it was re-organized in 2010 they specifically organize the unit under it to fund large EEPs. I happen to know for a fact dealing with them that they also are a large ESCO and have done lots of wasted recovery—lots of major projects themselves in addition to funding I'm not sure how much funding they do to ESCO to projects other than their own so it remains to be seen and maybe somebody else would know that we were unable to really find that out. Another was the [Indiscernible][00:41:29]—again this is in 2010 and so the other was a limited results on that in terms of where they were. Same with the General Environment Industry Fund, which was established in 2009 there are relatively small amount of capital. They were going to raise four hundred million for EEPs in various areas and they'd launched it in 2011 a dedicated fund for EPC but again in our report we didn't document any results because it didn't have any. The Shiyin EC and Environmental Protection Fund, again, they announced intentions to raise eight million small amount and the rest are listed. Good Hope going to raise US sixteen million and these were just ones that we found out when we were doing the survey to as a basis for our report and then the China

CDM Fund which—most of you know is really not very hot these days and they've made no investments as of the time in mid 2011. There's little or no information on other types of PE and other equity investments. From my personal experience even today there's very little of any energy efficiency equity investors—project investors most of the energy efficiency equity investors are only have seen investing in technologies or companies that have technologies they can take them for IPOs. They're not really interested per se in investing in the projects themselves.

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Other types the course the energy performance contracting. Well this is a form of it it's a project trading company that was set up the China Beijing Environment Exchange and EMCA. They launched this to try to create a trading platform for energy savings. Not sure they was—how much progress they made they had not made much progress as of 6 months ago on this and it says this designed—they were stating it's going to be designed to provide project financing based on the future savings or receivable trades but one of the big issues challenges which we—is in the presentation in the report there have been a big challenges is there's no real standard measurement verification of savings and it's created a big problem in China. The last one is the EMCA in terms of they form several strategic cooperative partnerships. I think Patrick, you're pretty familiar with them. They've done several banks, guarantee organizations and they arrange financial support for dozens of ESCOs. I think that they've done a lot of evaluation from what you said Patrick.

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So I guess the summary and our conclusions of all these as far as EEP financing. Like in most country China banks typically offer only asset based lending. EEPs getting no special treatment for their benefits and limited to seventy percent of the capital cost. What that does is that requires a host or an ESCO or an anybody if they can get the debt to put up thirty percent equity and then typically they have to collateralize the remaining seventy percent debt from the bank with collateral or guarantees. So it's actually for somebody to do an energy efficiency project, they have to come up with other collateral or other financing from other sources they cannot really use the benefits of the Energy Efficiency Project which is the savings and so it's very typical—I mean that's what I'm doing here working in Indonesia it's the same thing. So it's not like that's a China problem, that's typical around the world and like in most countries Local Financial Institutions are just not—they're not comfortable letting the Energy Efficiency Projects without full guarantees or collateral and they probably tribute no collateral value to the savings for a variety of reasons. Female Speaker: e could talk about if we wanted to but that's a separate topic and except for the approximate six commercial banks that are participating in International Financial Institution programs. Few LFIs are really interested in EEPs or have the internal capacity to

evaluate their casual benefit. The current partial credit risk guarantee and direct lending programs from IFIs rarely result in LFIs deviating from the business as usual lending terms. Well the focus is on Energy Efficiency for these programs there's no real hook, there's no real way to the Ministry of Finance most of these are provided through except for the IFC had provided through the Ministry of Finance and so any attractive terms requirements go to the Ministry of Finance and then to the banks and that the banks typically don't receive that benefits per se. They may focus on it but they don't change their terms in business as usual in terms of the collateral they're required based—they had not—in a year and a half ago.

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Debt terms from LFIs for EEPs are generally not attractive to the non-SOE hosts and I say the non-SOE host they're really not attractive to them but the SOEs have so much cash and so much credit capacity, it doesn't really matter. Basically the banks are providing corporate loans and so it doesn't really matter if they're an SOE and they're getting a loan from one of the big four banks. These type of debt terms cannot be met by most ESCOs and SMEs simply because of the reduction that it requires of them in their core business and credit capacity and of course most ESCOs have little ability to access the loans for EEPs due to their limited financial capacity. Of course the primary barrier to accessing EEP loans from the LFIs is the guaranty and/or the collateral requirements. I think that's obvious. Probably the last conclusion is that new risk-mitigating products are needed to motivate LFIs to develop new lending products with commercially-attractive terms that was kind of our conclusion in our reports. So I don't know I think I maybe went over a little bit on a ten minutes Patrick I did probably the best I could to try to condense it so with that I'll hand—I think that's the last slide I'll hand it back over to you.

Patrick J. D'Addario Thank a lot Tom did a great job commencing and I don't know how you could have got it to be much smaller. Our next commentator is Dilip Limaye who many of you know he has seems to be everywhere in Energy Efficiency in Finance whether writing reports to the World Bank or at the International Energy Agency or helping Institute of Standard offer tariff and for Energy Efficiency in South Africa or working on the Hubei Provincial Probe Loan for the ADB. He has much to offer and I will let him speak now. Thanks Dilip.

Dilip R. Limaye Thank you Patrick and welcome to this webinar to all the participants I see you have seventy one participating, which is great. I must say that I'm very happy to be on this illustrious panel with Bob Taylor and Tom Dreessen and Patrick particularly considering that my experience in China fails compared to that of Bob's and to Tom's. Well I've done some work in China, it's not been much in the last year or so. So my comments are going to be somewhat limited by that fact.

May I have the next slide please?

As Tom has provided an excellent summary of what's going on in China I would like to comment on the fact that the greats—some of the great successes in China so far have been based on the very strong government mandate for Energy Efficiency and this is translated into policies and regulations and some specific actions not only of the central government level but also on the provincial level. Patrick has already pointed out to you and Tom has also reiterated some of the policies and programs that have led to the significant emphasis on Energy Efficiency. There have been great successes in China and with respect to developing a large ESCO industry which kind of stands out compared to other Asian countries and other developing countries around the world where the ESCO market has not quite yet developed anywhere near the Chinese market.

They have also engaged some of the banks even though a strong point in the other number of banks actually participating in debt financing is quite small but they're at least participating and have lead to a number of projects. China has also seen a great deal of success with the International Financial Institutions, the World Bank, the IFCA and some of the bilaterals like the French and the German agencies in defining credit lines and risk sharing programs such have also essentially moved the Energy Efficiency market towards more and more projects and of course we're now seeing the introduction of leasing models.

So there's been a number of successes that make China stand out compared to other countries but despite this and despite the fact that there are hundreds of ESCOs currently operating then and lots and lots of projects have been done a substantial amounts of activity in terms of projects and actually energy savings. There are some significant limitation, which again Tom has pointed out and I'll quickly summarize this. In banking sector regulations, while Chinese government policy has done a lot for promoting and facilitating Energy Efficiency, they have not yet been able to change the banking regulations which a strong point about still require the thirty percent—minimum thirty percent equity investment substantial or collateral and other constraints to financing Energy Efficiency Projects which have limited the financing to the larger industries the SOEs mainly and we have not seen the financing go to the smaller enterprise of SMEs and certainly not enough to buildings and to municipalities and cities. There is also—there is tremendous potential for Energy Efficiency but they have not done much work in that area. I was part of a project when the World Bank was trying to get going where one of its credit lines portion was to be dedicated to financing building projects and municipal projects like street lighting. Like that project still has moved too far. In all of the regional banks in the provincial level particular has not been very great partly because of their lack of interest partly, because of their lack of knowledge and understanding of the Energy Efficiency business and the access to financing for small ESCOs has also been quite limited and as I mentioned earlier the financing for Energy

Efficiency buildings and municipalities is yet to see a certain amount of scaling up.

Now the next slide please.

So given that I'm kind of looking forward in saying what are some of the things that could happen or that we would like to see happen that would move this financing game to a much higher platform? Perhaps the next level up and help scale up Energy Efficiency Finance. So here's my wishful thinking and I'm sure my—next panel is Bob and will comment in some of these because some of these things are starting to happen. One of the biggest challenges is the reforming the banking regulations to facilitate Energy Efficiency financing in particular trying to figure out how to use the future cash flows because the biggest asset in Energy Efficiency Project has is the fact that it's generating cash flows for energy savings but under current regulations in China it is not any different anywhere else most of the countries have the same problem. In fact you cannot collateralize these richer cash flows. Some innovative ways need to be found to figure out if ESCOs and small industries can somehow of be in financing but pledging their future cash flows on savings. So that's the first two items can we use the project cash flows collateral? I know that one bank in China—Tom mention Shanghai Pudong Bank has found a way to something like this and Bob Taylor may tell us a little bit more about this. They have actually used ESCOs past and future cash flows to develop a way of financing them using the cash flow as collateral. Energy Saving Insurance, this is an area that potentially could help ESCOs quite a bit. Energy Saving Insurance Policy is something that essentially guarantees the technical performance of the equipment or the project being proposed by ESCO. While the standard loan guarantees and risk guarantees programs protect the bank, the energy savings insurance or the technical performance guarantee will protect essentially the ESCOs investment by providing a second level of comfort to the host and to the financing entity mostly on commercial bank by saying that, 'Hey if the ESCO fails to meet its guarantee he will back it up.' This has worked somewhat in North America and it be nice see if some kind of product can be developed in China and in the countries to use the energy savings insurance as a product to help ESCO financing.

Capacity building of banks, most of the banks in China at the provincial level and also some of the ones that are on the national level do not have the knowledge of understanding particularly of the loan officer or the risk manager level of what Energy Efficiency Projects actually entail and what is the risk profile and what are the types of characteristics that they have. There's a certain amount of communication and education required here to build the capacity of the banks to understand Energy Efficiency Projects and to look at them as potentially a new business area that could be actually as profitable or perhaps even more profitable than their current lines of business. This will allow them perhaps to mainstream Energy Efficiency Finance as a new business area. It is something that if it

happens, could facilitate the access to finance for a number of the ESCOs and SMEs at the provincial levels. By the same talk and we have to also figure out how to build a capacity of the project developers, the ESCOs, the equipment supplies and others to prepare bankable proposals. One of the challenges we all must face is that when I talk to banks in the Hubei Province when they're working on this hundred million dollar Asian Development Bank loan, they cannot claim—they had the funds available but they were not getting any good proposals in the ESCOs. At the same time the ESCOs was saying that they had good proposals but were not able to get any financing with the banks. So there's a disconnect here to some extent. I've seen this disconnect in many other countries particularly in India for example. This disconnect perhaps can be corrected by providing capacity building to the banks as well as to the ESCOs. So that they can understand each of these perspectives and help the ESCOs develop what we call bankable project proposals.

Couple of other things that are currently being thought about the Asian Development Bank is right now thinking about a program to develop what they call a sector-specific ESCO. This will be an ESCO that would be specific to a particular industry and I think about the chemical industry as the first one and then focusing that ESCO on doing projects simply in that industry. The advantage of this they think would be that while most ESCOs focus in the investment sector on the common utility type of measures like motors and pumps and vertical speed drives. This sector-specific ESCOs can do more process-oriented work and thereby increase the level of efficiency services they can offer. Then of course they would need some financing tools customized for that industry and this again could be a way to scale up efficiency projects in the specific energy intensive industries. Finally, one of the things China has been perhaps slow on is the engagement of utilities. In the US and in Europe, utilities have been measure drivers on efficiency programs primarily driven by the regulators. EE for example is not requiring all their members to develop Energy Efficiency obligations on all the utilities but some very aggressive targets one percent a year for the next ten years. EE obligations and Demand Set Management Programs implemented by utilities could be another way to scale up the Energy Efficiency business. So here are some of my thoughts. I'm sure there'll be some further discussion on this from Bob and we'll of course get more into the discussion in the question and answer area so Patrick, shall end there right now?

Patrick J. D'Addario Thank you very much Dilip. One can only imagine what would happen if you spent more time in China. If Tom Dreessen is the miler of Energy Efficiency as he's gone from country to country developing projects and ESCOs and project type lines, and Dilip is I think was kind of a decathlon guy because he goes from DSM programs in South Africa to loan programs in China and to enormous assortment of program analysis and development. We then have Bob Taylor and Bob's a China marathoner. He's been in this for a long time. He's got a lot of depths and acquired a

lot of patience and it's really been a pleasure to work with him. Without further ado I give you Bob Taylor.

Robert P. Taylor Hello everyone this is Bob here. I'm very happy to join in and to have a chance to say a few things together with my friends and colleagues Dilip, Tom, and Patrick who I have known all for quite a few years. I think it's an exciting time in China. I think a lot is—there's a great deal of activity. It's hard at times to be able to tell what's an intention, what's a plan, what's an idea, and what's actually on the ground being implemented. So it's at times it can be confusing as to exactly where we are but my feeling is that this is moving, it's moving pretty fast and there's some good reasons why it's moving fast.

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First of all Chinese Industry has strong interest in promoting Energy Efficiency. A big part of that come from the government's ten thousand enterprise program where basically all of the major industries of the country have agreements with the government about energy savings during these five years, 2011 to 2015. Therefore these industries are required to meet targets on Energy Efficiency and are looking for ways to achieve those targets. At the same time financial sector reform is now on the agenda. China's financial sectors we could say is mid way to reform a lot has changed since the early 1990's but a lot still needs to be changed in order for it to be more market-oriented—more commercially-oriented. There's a good chance of some key breakthroughs maybe achieved in the next couple of years. The one in particular that would make a big difference would be the lifting of interest rate controls on deposits because this then will change the overall business approach of Chinese banks. Finally, we see that there's a lot of activity in the financial institutions on Energy Efficiency financing because it's a hot market for projects and then there's also encouragement from the government for one of the banks to help the effort. I generally say that about a half dozen banks it could be six to eight maybe a little bit more than that now that are quite activate in this space have been developing Energy Efficiency financing projects and products for a number of years. I find the—these banks are beginning to really get into the business, staff starting to understand the market, developing products that can be useful for Energy Efficiency financing but it's a critical time in that these are mostly small programs in these banks, their just started to gain fraction, so the question is can this momentum be sustained and can this really be scaled up?

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A couple of interesting trends I saw in Dilip's list and many of those are areas that things are happening it's, as I said, it's difficult to tell exactly what is idea, what is been approved and what has actually entering into operations. One thing especially over the last year is that a number of the banks now have products for financing ESCOs using the future cash flow

from executed energy performance contracts. So this is especially for ESCOs have been in the business for little while so they already have energy performance contracts that have been executed. They've shown that they are able to operate those business, able to make money in this business. So a number of the banks, Bank of Beijing and the Pufa, the Pudong Development Bank in Shanghai, and others are now using those future receivables on executed projects as a portion of the collateral for lines of credits to those ESCOs or for a credit for a bundle of projects. This for us is real progress and that it's beginning to open that door that you heard Tom and Dilip mention of using future cash flow from Energy Efficiency Projects as a way of providing at least partial collateral. Another that's interesting I've heard a lot of discussion of not only theoretical but operational discussion is of using ESCO accounts that would be setup with a baler to an Energy Efficiency Project to hold the energy savings cash flow from Energy Efficiency Projects and that provides then a more visible and cash flow to the bank—more secure cash flow but then also could be used as a type of collateral. I'm excited about the financial leasing models that are beginning to take hold in China. I think this is an industry that has a lot of potential. As Tom said this is underdeveloped but is beginning to grow quickly we've see a lot of innovation in using financial leasing in particular for Energy Efficiency Projects. There are more options for how the structure projects, more options for how to collateralize them and so it offers a different types of mix of options for enterprises specially ones that already have a lot of loans on their books and I'm looking for an alternative for bank finance.

Finally this discussion about how to develop business of adding Energy Efficiency what we call Energy Efficiency Project add-on. So a large industrial company that's powering from a Chinese bank for a portfolio projects or for long term—has a long term relationship for financing with Chinese bank that they add on Energy Efficiency Projects into the bundle as a way of providing of service to the enterprise to help him to meet his obligations for energy savings and also a way to reduce operating cost and to make money. Because so many things are going on and so much is—it's hard for me to keep up I think it's hard for all of us to keep up. I think it would be useful to—if IIP could spend some time to develop and disseminate examples of best practices in China. I think there's a number of them we could probably less it—at least a half dozen but its also an evolving list and to go through and provide enough details so that people from outside can understand and also that we can separate the ideas from the practical operational experience and so I hope that IIP might be able to do something like that in the future as a service to all of us and I don't know if I went over my time but that's what I got to say now Patrick.

Patrick J. D'Addario Thanks Bob I really appreciate that. We have in fact run well over our time as a group so in this next segment we will keep a quite a bit shorter than I thought I think we need to keep it to maybe a total of five or six minutes. In particular here we wanted to address the issue of ESCOs.

Everyone has talk about them, all of our presenters. The enormous growth of the industry Tom talked about the NASA registration etcetera. I think it's important for people who do not have a lot of contact with China to understand how the ESCOs are different and how their operations are different in China than we maybe use to in the US and Europe. Bob I like you—can you take that on and Tom and Dilip, let me know what do you like to add in?

Robert P. Taylor Okay let me make just two key points to say that the ESCOs in China are very different from ESCOs in the United States or in Europe, especially in two ways. The first is that the market that the Chinese ESCOs tap into is primarily industry whereas in the US for example there's virtually no energy performance contract in an industry and it's dominated by buildings and specially buildings that are related to local or federal government. So it's really unique in that sense and that you have an ESCO industry that's strongly focused on industry not a whole series of different types of industrial projects. The second is the business model of the Chinese ESCOs is also very different. Chinese ESCOs primarily provide financing for the projects that they implement up to or usually over seventy percent of the project finances from the ESCOs and this is one of the most attractive features then to industry is that its a means of financing Energy Efficiency Projects off balance sheet. So the off balance sheet attraction is important at the same time it changes the focus of the ESCO and that for the ESCO, the main issue is being able to obtain repayment for his project. In China where contracts are a—commercial contracting is a developing type of—is developing in not as secure as it might be in some countries. This is a key part of the business, how to be sure that I'm able to get my repayment. Therefore projects tend to be shorter. No one wants to put their money out for too long. It Tend to be simpler and at least until a customer relationship has been established and the ESCO is comfortable with the customer being able to repay. So I think that colors the ESCO industry in a different way from in other countries.

Thomas K. Dreessen Yup. May I jump in Patrick?

Patrick J. D'Addario Thanks Bob. Yeah, I was just going to invite you to do that Tom.

Thomas K. Dreessen Bob did a wonderful job identifying the differences. I would just kind of exemplify a couple of those and what those mean. I came to China with my purpose of funding ESCO projects not being in ESCO although I had been one in many countries because I saw a couple of big gaps in the market place. One was a funding gap because they are required to put up seventy percent equity. But the major difference, which extends from that is the ESCs now could take credit risk so Bob's right. They focus on getting paid and so there's a lot less emphasis on the performance side versus ESCOs everywhere else in the world where it's very much performance oriented, creating major projects with transparent measurement verification and performance requirements being met as a primary form of payment, which does is really not typically the case in

China. Most of the deals are—while there's some technical aspects to it, there's a gap in the market place on really technical innovation. Most ESCO's are single technology providers, the small ones. They don't bundle multiple projects and do a comprehensive analysis of a facility they'll do waste heat recovery, they'll do a boiler, they'll do a chiller, they'll do a variable speed drive or something that's in their sweet spot. It makes sense because in lot of cases they're the manufacturer so they could pull out their equipment and get some value back, so it's not really the bundled comprehensive approach and more importantly it's not the guaranteed savings model that's done in the US which is where because they use the government building where they entity their host itself. The government entity goes and gets the money, borrows the money, and then the ESCO provides a guarantee of savings. So the ESCO doesn't even have responsibility for the credit risk and they could focus most mostly on the performance side.

Probably one of the other—the biggest gaps that I would say that ESCO's had and I see it as a long term barrier to really having savings become a primary form of payment is the measurement verification of savings, huge gap in the market place. There's no real transparent way. There's certainly no standard way. You know I happen to be active with EVO. The new chairman of Efficiency Valuation Organization and we just setup a relationship with the China National Institute of Standard and purposefully just setup an MNB standards and protocols that can help provide a transparent way for them to be measured and verified. I think the government is struggling as well in incentive payments because you can't—one of the things they've realized, you can't evaluate savings in a project after it's implemented. You have to do it before, you have to establish the baseline. Once you removed the inefficient asset, you have no way of comparing the new one to it. I know that's obvious to most everybody probably on this webinar. Anyway so I think those are the challenges to project finances. One of the challenges to being able to have savings they use as a primary form of payment is the MNB, transparent MNB. That's really not a culturally accepted way of doing business in China. They like to negotiate a deal and do the funding. It's very difficult to get host and ESCOs to want to go through the difficulty or the extra work to do a good MNB plan and absolutely document the way savings can be measured and verified. I'm done Patrick.

Patrick J. D'Addario Thanks very much Tom I appreciate that and Dilip do you have a quick comment to make?

Dilip R. Limaye I have a very quick to comment. So I think Bob and Tom have pretty much covered the landscape on ESCOs pretty well. I just wanted to make a comment that despite of all the difficulties, China has succeeded in building up an ESCO industry. Now I've always wondered why and how as opposed to other countries and couple of things that stand out are that the very, very strong government mandate requires industry to perform—to actually deliver in terms of energy savings or energy productivity

improvement and therefore they are compelled to do something and they do not have the internal capacity and therefore they have returned to ESCOs to help them out with trying to meet these targets which is not the case in many other countries. I just want to make that quick comment we've already taken a lot time on this. Thank you.

Patrick J. D'Addario Thanks very much Dilip. The other issue that we wanted to touch on because the ESCO scene is so different in and such a strong part of what the Chinese government is trying to accomplish, it's quite important I think to create some context and Bob if comment if you would on the role of the ESCO in the overall context of financing of Energy Efficiency and some of the particularly contrasting it and comparing it to the direct host financing of Energy Efficiency Projects.

Robert Taylor I think that the ESCO9 energy performance contract in financing mode for industry is only just a part. I think it'll be a minor part, when I say minor that doesn't mean it's trivial, it's not important. It means that it could be twenty-five percent, thirty percent something like that is what we would hope for. The balance of commercial finance will need to come through direct financing mechanisms or through other types of intermediary mechanisms like the using leasing company or using trust investment company or some other types of project packagers. So I feel that the ESCO business and industry is an important one and it's a key one but it's only a part and so it's important to keep focus on how banks can develop their Energy Efficiency lending portfolios, how they can make partnerships with technical entities to help them do that. How they can originate loans that are in the Energy Efficiency business and I've seen progress on those areas as well. I think some of that through World Bank's chief program which I feel had done quite well developing Energy Efficiency loan portfolios and the a number of the Chinese banks and then follow up to that as I said there's some sixty-eight banks that are quite active and they're work includes some on ESCOs but a lot that's more direct lending. Okay Patrick.

Patrick J. D'Addario That was good and I will just add here that specifically we been working on a program to help the banks to work with their existing customers to finance Energy Efficiency adding on to other lending that they do to existing customers. We think that could have a large role in the future. It remains to be seen whether the Chinese banks agree with us but we're trying. If neither Tom nor Dilip has anything they want to add there, I would like to try to get the answering some of the questions that we received that was submitted together with their registrations and since I have the microphone I'll take the first one which was, how do the Chinese do with propagating best practices? You know from my point of view, they do remarkably well but the five year plans are in fact setup so that some provinces or localities should suggest that the pilot of a particular policy or program that the government wants to implement and in effect several of the provinces will be working very hard on creating these pilots in the first couple years and drawing on international best practice and the

best information that they can find and one of them proves to be effective then there it's adopted by the other provinces. The five year time span allows it to happen although as you can imagine often year five is a helter skelter of people rushing to implement programs but nonetheless it's a very empirically-based program and IIP actually has been involved.

Shangdon Province was one of the pilot provinces for the top one thousand enterprises program. Then in the eleventh five year plan—in the end of the twelfth five year plan they ended up being the pilot for Energy Management Systems so it's just one of the areas that in which IIP has concentrated its effort particularly in China. So now we're working with them with the provincial officials to put together Energy Management Systems that can be adopted by industry as required now under the twelfth five year plan. So we're in the thick of that and also on the Energy Systems Optimization Fund, which is another area where the Chinese government has put a lot of emphasis. We are working with this iron and steel industry to develop models that could work and pursuing the success of those efforts so as will then be propagated to the other provinces for replication. Let me ask Tom, there's a question about the importance of insurance in Energy Efficiency Projects in China would you care to take a shot of that?

Thomas K. Dreessen Yeah I think like Dilip is saying we try to do something along with IIP trying to create a savings guaranteed product, which I think has valued it. I think at the end of day the real benefit of insurance products and guarantee products is guarantying the credit risk for banks to be willing to provide funding. That seems to be the big area and well they're providing guarantees, the guarantee companies and in most cases require similar collateral from the host or the ESCOs so it's still a bare but I think the primarily role and that's one of the new products I think we could figure out is how just not only the performance savings guarantee but I think being able to help the ESCOs at some sort of guarantor to help them get repaid would help a lot on the industry and not only just the ESCOs with the banks being willing to accept the savings as a primary form of repayment.

Patrick J. D'Addario All commendation of the above risk mitigation methods thanks. I think that we're going to have time to answer one last question. Bob there was a question on whether there are mandatory audits and who has to do them.

Robert Taylor Okay very quickly. Industries in the top ten thousand program are required to have energy audits completed. They are paid for by enterprises although mandated by the state. There's a lot of discussion between the local governments, central government, and enterprises about whether more public finance might be available for that. The audits vary in quality a lot, some of them are good, some of them are perfunctory, some of their ability to use audits as a way of indentifying quality investment projects also is going to vary depending on the company and the audit. Thanks.

Patrick J. D'Addario Thanks Bob. In order to bring this home on time I like to go to the resource slides if I may please? IIP has a number of resources as you can see for those of you who are interested in delving into this China Energy Efficiency. In particular you'll notice some of these name I had not mentioned that the Dilip had led a similar baselining effort in India on Energy Efficiency Financing. As you can see Bob has been working particularly in the DSM area and then the next steps of Energy Efficiency Finance in China that's all available on site you're welcome to it. I would also like to just say that as those of you who may have been involved with webinars are aware in addition to the people that you've met today, Vickie and Heather, and us it takes a lot of work and I particularly want to recognize Cassy Hade and Emily Goldberg by IIP. They've done a tremendous amount of work on this. I want again thank you for your attendance and your patience. We appreciate it and with that I would like to turn the microphone back to Vickie.

Vickie Healey Great Patrick thank you so much and gentlemen, I really thank you to all of you for your very informative and outstanding presentations and the panel discussion amongst yourselves. I think it was really interesting and very informative for our audience and we thank you in all of your hard work that you put in to making this webinar a success. So with that I think now we'd like to go to a very short survey asking our audience and participants three short questions just to get your feedback on how we did today because we want to make sure we're giving you the best experience possible. So first polling question is the webinar content provided me with useful information and insight and you can just click next to the answer that must have priced to your feelings on that question. We'll give you a few seconds to think about it and provide feedback. Great thank you. Next question is, the webinar's presenters were effective. Thank you. Our third and final question for you is coming up in just a second. Overall— [AUDIO ENDS]