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P R O C E E D I N G S

MR. LIEBERTHAL: Good evening. Good evening, please continue to enjoy your dinner. I want to begin our program of speakers this evening. We've had an extraordinary array of speakers in the Plenary Sessions today and at lunch. I know you've all had a very full afternoon in various working groups and roundtables. Even at the end of a long day let me say we are in for a special treat at this point. The conference has been set up with the design being to try to encompass both strategic issues of clean energy in the U.S.-China relationship and more practical applications including business relationships and particular projects to move forward.

President Hu Jintao's state visit tomorrow will include clean energy as an important issue, as his letter to this forum highlighted that Chairman Zheng Bijian read at the beginning of the day. And I think President Hu's visit highlights the synergy between the strategic and practical aspects of the U.S.-China and clean energy cooperation.

Our two speakers tonight have been at the forefront of that synergy. It is, while cooperation encompasses always a lot of people -- it's never a one-man show -- insofar as there have been two people who have driven this effectively, certainly our two speakers tonight would have to be on anyone's short list of two or three total. So it's a particular privilege to be able to bring them both here this evening to address this distinguished audience.

Our first speaker -- what we'll do is have first Secretary Chu, who will give his remarks, and then we'll have some time for Q&A with you at the end of his remarks. And then when we've concluded that, I'll ask Minister Zhang Guobao to come up, make his remarks, and we'll have Q&A after that. And then we'll conclude the evening.

It's hard to know how to introduce Energy Secretary Steven Chu. He has been energy secretary since 2009. He has played an enormous role in directing the efforts of the Department of Energy toward promoting clean energy development and

application both in the United States and in U.S. relations abroad, not an easy task.

He is, as is the case with a number of our speakers today, a very distinguished scientist in his own right, best known, of course, for having won the Nobel Prize for physics in 1997. He served as Director of the Department of Energy's Lawrence Livermore Berkeley Lab where he led the lab in pursuit of alternative and renewable energy technologies. He also was for many years at the University of California as professor of physics and professor of molecular and cell biology.

As a professor myself, what startled me is that with this vitae, this array of positions which goes far beyond what I've indicated, I also note that he has published over 250 scientific and technical papers. As one professor to another, sir, I'm amazed and awestruck by that figure.

We're honored to have Secretary Chu here tonight, and without further ado, let me ask him to come up to the podium. Mr. Secretary? (Applause)

SECRETARY CHU: Thank you, Ken, for that very nice introduction and thank you all for being here. First I'd like to thank you in the Brookings Institution for hosting tonight's dinner. This is a lovely event, and thank you. (Applause)

I'd also like to recognize all the people who are here, especially the ones from China who have traveled so far. Minister Zheng and your colleagues, I understand that Minister Wan is not here, but I certainly want to say how much I appreciate both of your efforts in what we're trying to do.

And, finally, I'd like to recognize John Thornton. Is John here?

(No response)

Oh, okay. Well, for his work in promoting a dialogue.

So let me talk about U.S.-China relationship specifically as it pertains to energy. First, let me talk about a misconception in a lot of the world as to what the United States and China are doing concerning energy, concerning a path to reduce our carbon

emissions in both countries. First, let me talk about the United States.

As part of the economic recovery in the United States, we have invested about $90 billion through the Recovery Act as investments and as down payments to transition to a sustainable energy future. These include a path to doubling of renewable energy. These include promoting energy efficiency in the United States and all sectors from raising fuel mileage to strengthening appliance standards, to making buildings more efficient. It includes the investment in research and development so that we get better solutions than we have today because in our energy and climate goals we definitely need better solutions.

So this is a huge down payment, but it's not the end, it's the beginning.

What about China? China, too, has recognized the need to move forward very aggressively and it has been doing, if you look at what China's doing in all the energy sectors in energy efficiency

in both buildings and the automobile sector, diversifying in its energy production from primarily coal to a diverse set of energy sources many of which are aimed at decreasing the carbon emissions.

Around the world, there are roughly 60 power plants now being constructed of which roughly half are being built in China. China has -- leading the word now in the highest voltage transmission lines, both AC and DC, primarily to bring renewable energy, hydro, wind, solar, from the western part of China to the parts of the country where there's population in the eastern parts.

And you look down at the sectors, the coal plants in China are now the most efficient coal plants, including the scrubbers, the SOx and NOx, but in terms of thermodynamic efficiency they are running at extraordinarily high temperatures well in excess of 600-610 degrees centigrade, and everything there they see this -- they have a target for the least 15 percent renewable energy by 2020. And some people think they will exceed that and go somewhere between

15 and 20 percent, starting from essentially zero just a few years ago, very aggressively going in this direction.

So China, too, is making great strides in this. China recognizes now it's not only are they making great strides, they actually recognize that this is an incredible economic opportunity. I hope and think the United States also recognizes what a great economic opportunity.

You know, why is it a great economic opportunity? Well, let's talk about, you know, I'm not en economist, I'm a scientist, but it's easy to put my -- and choose of what you want to do in the future.

And the first thing everybody does both in their personal experience but also in their professional life is they say, well, what I want to do is position myself so that I can do the best I can possibly be. I can be the most competitive, I can possibly be the most productive I can based on not what happened 10 and 50 years ago, but what I think is

going to happen tomorrow and next year and next decades.

Okay, and I think that what's going to happen in the coming decades is we can probably anticipate that the price of oil, because of supply and demand issues, will increase. I don't know what it's going to be a year from now or six months from now -- if I did, I'd be far richer than I am now, not that I'm interested in making money, but I certainly could be richer -- but I think 10 and 20 years from today there's a very, very good bet it will be higher.

There's also a very good bet that 20 years from today -- and I hope it's a very good bet 20 years, I hope it's a good bet 10 years from today -- the world will recognize the importance of reducing carbon emissions; that as each year goes by despite people's attempts to muddy the waters, as each year goes by, the evidence is becoming increasingly compelling that we are altering the climate of the planet and that there are risks involved in doing so. And we have to be wary of those risks and try to see

what we can do to mitigate those risks as much as we can without crippling economies, without doing these things but recognize that this is a risk.

So the fact that we will be living in carbon-constrained environment worldwide a decade or two from now for sure, I hope, what should countries do to position themselves to develop those technologies that the world will need, because the country that develops those technologies will be a very prosperous country, to be quite blunt. All right, so I think -- so both China and I hope the United States recognizes that that's the future.

So then there's an interesting issue. You know, these are two great countries there; they're the two major users of energy, the two biggest carbon emitters, the two largest economies. This is not going to change, hopefully, for the coming decades, so what we have here is an interesting situation where both countries might recognize there's incredible economic opportunity, but what do you do? It's a competition, yes. But it's also an opportunity for a

collaboration, and so what you do in those circumstances is something I draw from my personal experience as a scientist.

Early on in my 30s, I began to realize that in order to move more rapidly in the science I wanted to do I could try to do it all myself, and if there's a particular experiment I wanted to do, or I can invite other people to work with me, which means you share your idea, you share in the saying, "You come on board, and we will share in whatever benefits there are in terms of scientific world that's in the discovery." You no longer will be the sole discoverer, you will be a discoverer, a co-discoverer, with several people, with other groups.

But I decided that when you do this, you can go faster because ultimately I wanted to solve a problem. And then I decided it would be better to do this, even for my own personal gain, if I started to collaborate with people, because, okay, you're not going to get all the credit. This is ultimately an issue with scientists because, quite frankly, the

second person to say $E=MC^2$ doesn't get much credit, you know, and it's true in business as well. But, on the other hand, if you're the first person and you share it, you're the first person to climb Everest and you share it, you're still the first.

Okay, so I really believe in my heart of hearts that the opportunity for the economic gain, the opportunity to solve the problem that confronts the world can be solved fastest and bestest by these two countries sharing as much as possible, knowing that they're also competitors.

Now, decades went by, I'm getting kind of old, but I would say that looking back on my career of 35 years in science, some of my most serious competitors have become my best friends, truly my best friends as in, you know, we chair a lots of things and sometimes, you know, we compete for this and that, and sometimes we'd be racing each other for very, very important achievements. But we would always tell each other what we were doing, and sometimes we collaborated and other times we were head-to-head

competition. But we always did it in a very honorable way, and in the end they became my best friends.

There are another set of very serious competitors, even more serious competitors: They're my students and post-docs. There are over 30 of them now who are professors in major research institutions. And although we are competing, we also have a common -- you know, I view myself as kind of their parent, and so there's a certain perverse joy in watching them blow me away when we are racing to our next scientific achievement. But it's a perverse joy, I admit.

So the whole message about that is really that there is a lot to be gained, and I can enumerate what we can gain in terms of what our countries can -- you know, the U.S. looks at China as this big, wide opening market. There's going to be lots of investment in China, but China's more than that. China is also making great strides and developing amazing ability to take technologies and really make them hum and sing, and I think that's a lesson we can learn in the United States.

But, having said that, I would also say, you know, although of Chinese heritage I was born in the United States, and I also take pride, great pride in knowing that the United States still is incredibly innovative and may be still, I still believe, has the biggest raw innovation machine of essentially great new ideas. And so we can all benefit, both China and the U.S., in these things as China grows and very rapidly to come as equal collaborators in this great adventure, and the great adventure being, how do you transition to a sustainable energy future, but one which will create great wealth for both countries?

And so in this clean energy cooperative agreements that have been made -- and this is why President Obama and President Hu have launched this ambitious program -- the ideas of building efficiencies, renewable energy, cleaner uses of coal, electric vehicles, and this is just a start. And if these things go well, certainly the Department of Energy would be very enthusiastic about funding other avenues of collaboration in research because again, I

do know from my own personal experiences and from what I've seen, not only in my scientific career but my connections with business, that it is -- it is a great opportunity.

So with that, I just want to end in saying I, you know, I hope the clean -- the CERCs that have been started will flourish. I hope that's just the tip of the iceberg; that it doesn't have to be through government grease, it could be, you know, company to company, it could be scientist to scientist, it could be all those combinations. But what a great opportunity it would be to work with each other. Yes, we're going to compete, but, yes, we will also collaborate.

And, actually, it is a worldwide problem that we all have to solve and, but in doing so, there will be incredible opportunity for economic growth, for new investments, and so I'm very excited. My only regret is I want to see what happens 50 years from today, but in the last 15 years of my career we're doing a lot of biology, so I'm working on that, too.

But anyway, with that I will stop, and I'd love to take some questions. Thank you. (Applause)

MR. LIEBERTHAL: I can recognize questions out here, anywhere. Please raise your hand high because the lights are in our eyes. Yes, sir? I'm sorry, we have a roving mic, it's coming right over to you. Thank you.

SPEAKER: Mr. Secretary, we're encouraged by the great camaraderie that we see here and what we're doing with our partnerships with China. Do you think that the direction is going to stop the EPA pushing so we can come to some reasonable solution to this issue? I know that's a tough question, right? (Laughter)

SECRETARY CHU: Well, I think first -- first I think the current administrator of the EPA has repeatedly said that many of the solutions that we face in terms of the carbon emissions and these things are better solved legislature, but they're even better solved by having countries and companies see the opportunity, right, that -- you know, I mean the legislation sets a policy where it's, quite frankly,

you know, it make it sense. You will have a market, you will have some support. Any new industry needs support for awhile in order to -- because they're incumbent industries. But even the incumbent industries are hopefully going to be there and help them evolve.

So I think, ideally, you know, you might want a purely free market to do it, but, of course, I would say no, that's going a little too far. I think there has to be a little guidance because, you know, I, for one, do not -- you know, there's this old joke about how many free market economists does it take to change a light bulb? None. If it needed changing, the free market would have taken care of it.

(Laughter)

There are some free market failures, and one of the most significant free market failures are, you know, these commons issues, or where it gets out of the belly with of a particular industry or something. You know, there's far-reaching consequences.

But having said that, I think, you know, what one really wants is motion going forward and we don't -- one doesn't want -- you know, mercifully, I'm not an EPA administrator, so, hopefully, I'm being seen more, you know, a good guy who's trying to help you in business and do the right things and use the technology. But I, you know, I think you also need a little bit of, you know, if things don't happen -- but, but ideally, we don't want an – on a regulatory side that's the last thing, ideally, we wanted on a carrot side. And then, ideally, we want incentives that people will see the opportunity. Okay.

MR. LIEBERTHAL: Yes, sir. The mic is right behind you.

SPEAKER: Secretary Chu, good to see you again. We talked on a plane in another conversation once about cooperation with China, and where were the areas? And I recall you said there would be nuclear power, coal CCS, high voltage DC, high voltage transmission and energy efficiency, but also renewable energy, my field.

What are some areas that we can cooperate with China on renewable energy? What are your thoughts?

SECRETARY CHU: I think there's a lot to be said on why there are certain issues -- I mean, you know, it's going to be a competitive world out there in solar, (inaudible), things like that. But there are certainly things where there's ripe areas. Let me start with one.

As both U.S. and China grow in renewable energies, renewable energies are variable, wind and solar are variable. You have to integrate it into the system. You actually want to optimize the use. Right now we have wind farms, and if the wind picks up but the load up, what do we do now in the United States? We feather the blades. We throw away the energy, or we don't feather the blades in time and we dump it somewhere onto the ground.

Okay, certainly one of the things that I see a great -- is how do you -- renewables, it's the first-cost investments are a huge part of it. How do

you actually, once you've made that investment in a wind turbine or in a solar farm, capture as much of that energy as possible, or do you capture as much of the investment as possible, which means, how do you integrate it into the system which you have fossil fuel plants and you have hydro plants in a way that, you know, that fuel -- the wind and the sun are kind of free at this point? It's how you integrate it.

That I think, you know, learn how to do this, how to make, you know, half-hour predictions. How do you actually learn to toggle the other sources up and down in a way that you don't feather blades? How do you use even mild energy storage? And, you know, okay, there'll be a race to see who makes better batteries, but actually, how do you do systems integration for mild storage? There's a business in that as well, but there's a business in all these things. But a lot of those things, how do you capture the full value of your assets?

Okay, that's -- that's a no-brainer, I think. Okay, the countries should learn to do this,

and this goes to the transmission distribution systems. I think there are other things in, you know, the standards, the reliability, all these other things, you know. It will be -- it's going to be a competitive race. One company wants to make turbines that they can sell worldwide, and one recognizes that, at least get in a common ground and, you know, how you define standards and reliability.

But you push the reliability, but the integration of renewables I think is a no-brainer. We can help each other there, as we still compete on a market because you can ship these things.

Buildings I feel very differently about, because buildings are typically built in the country. You don't build a building and ship it, put it on a boat and ship it. And how you do the standards, how you enforce the standards, how you do the buildings and how do you disseminate the technology among the architects and designers, and how you do all these things is something we can share. And so again, there is this mixture of recognize that there will be a

competitive force but it also recognizes that there is a lot of common ground. All right?

MR. LIEBERTHAL: The last question. We've got one more? Where? Oh, yes, over here. Please.

SPEAKER: Mr. Secretary, would there be any viability in trying to encourage the Chinese to help finance a major change in our transportation infrastructure where we truly developed natural gas as a truck fleet fuel across our major interstate highways, and have the Chinese help finance that effort which would drastically reduce our dependency on imported oil which would, of course, be in China's interest because it would put less pressure on oil prices?

SECRETARY CHU: Well, do we have China to help us finance that? I don't know. I think the cross-financing, in general, is a good thing. U.S., in the sense that, you know -- let me take it from a very parochial point of view: Why would China want to finance things in the United States? I would put myself in their shoes and say, well, because partly

they want to sell stuff, as is the opposite. I think, you know, the United States might want to finance things in China because they also want to sell stuff.

I would say the more we can have completely open markets and the more we can have completely non-favored status, the better it would be for us because it would require our companies and our investors and everyone else to try to compete by making better stuff and things of that nature. I think, now having said all that, the, you know, the United States has actually a lot of capital on the sidelines, quite frankly, today. And I think what we need here is a feeling that the United States is worth investing in; that, you know, there's a lot of people who have that capital that they're a little bit worried about what to really put it in.

I think China also recognizes the United States is a good country to invest in, as we do in the United States recognize that China has these incredible markets and would be good to invest in.

And so this cross-pollination of investments is also a good thing.

Now, let me, since this was the last question, let me close. I had a very interesting conversation with Mr. Zhang at our table, and it was getting very philosophical, philosophical about, you know, when people reach certain points in their life and their world view, things of that nature. And I just wanted to say that -- and how we deal with life going forward is actually only it's formed by our personal experiences. That's just the fact of life.

And so that's why I spent some time talking about my personal experiences as a scientist, but it's not strictly as a scientist and on boards, and I've done things in the private sector as well. But I think one of the things that's very important is that the best, most successful people, the most successful leaders, the most successful scientists, you name it, develop early on in their 30s and 40s, a core set of values about how to deal with life.

The actual decisions are complicated, and you deal with those as they come, but the core set of values and how you deal with life, how you interact with people, whether you trust them or not, whether you work with them or not, whether you, you know, when you trust people you could get let down, but then there's other opportunities. All these things are formed early on, and when one forms these values, my observation and my -- as I get old and gray -- is that it makes a lot of how to go forward very easy in the sense that instead of trying to be, oh, so clever, and try to think of all of the nuances, and try to get as much advantage as you possibly can, you don't do it that way. You leave the change on the table. You say that, yes, you know, there will be some people who were maybe not scrupulous and don't have a good core set of values, expect that.

But most of the people, when you trust them, they return that trust; when you open up to them, they will open up to you; when you say become an equal partner, they will say, okay, and they, too, will come

back to you and say I want you to be an equal partner. And this goes into the (inaudible) and I'm hoping that will put our two countries going forward into this, that there's going to be level of trust. It won't always turn out in the best possible way, but on balance I think there's so much opportunity if we step forward in this with this attitude, because there is so much to gain.

And so with that I have overstepped my time, and thank you.

MR. LIEBERTHAL: Thank you very much, Mr. Secretary. (Applause) Thank you. Wonderful.

We've heard all day about what all of you are aware of, which is the utterly extraordinary efforts that China's been making since the turn of the century to improve energy efficiency and develop new forms of cleaner energy and deployed that energy.

If there is someone I personally have always thought of as Mr. Energy in China, it's our next speaker, Zhang Guobao. His formal positions from which he stepped down only a week ago include a

primarily serving as vice chairman of the NDRC and head of China's National Energy Administration. He will remain very active as a technical specialist going forward in China's National Energy Commission.

Among his major accomplishments are a key role in three huge projects, one, the construction of the Qinghai-Tibet Railway; second, the construction of the west to east gas transmission project and the third, the construction of the west to east power transmission project. Those projects reflect the scale of Minister Zhang's thinking and capabilities. So we are really delighted to have him this evening. I welcome him to the podium to make his speech, and then we'll spend a few minutes with him on Q&A afterwards. (Applause)

Mr. Zhang?

MR. Zhang: Colleagues and guests, good evening.

First of all, I would like to thank Brookings Institute and the NEA to invite me and I also would like to thank everybody present for their

support to my work.

A week ago I was -- resigned my post. I will still work in State Council. Today, as the promoter of energy development to introduce our 11th five-year year plan and our 12th five-year plan and give you the future plan. In the past five years, China's energy history is in a very important stage. First, the production total has become number one in the world. China's energy production total from a five-year 2.16 billion now is 2.9 billion. Our annual increase of 6.5 percent is the world's number one. Whether we are the largest user of energy, IEA has published a report that stated that China's consumption of energy has surpassed the United States to become the world's largest. Therefore, China's statistics institution still thinks the U.S. is slightly higher than China. I told them that perhaps we don't have to be very sticky on this point. Soon China will be the largest user.

In 2010, China's coal production is 2.6 billion. It's 45 percent of the world's total

production and our power production capacity is 5.6 kilowatts. Our new generator is 4.5 kilowatts. We have already surpassed the last five years' capacity. In our hydroelectric we have reached 2.6 kilowatts. This is also the highest in the world.

In the past five years, our new capacity online is 900 million kilowatts. And last year we had -- the last five years a total hydropower capacity. Our domestic production is stabilized at 1.9 billion tons. It's the number five in the world. Our natural gas production also increased greatly. We have 100 million cubic meters. It's 1.9 times over the amount five years ago. We have been increasing one time the energy consumption for two times increase of GDP. We made a great contribution to the world economy.

Second, our energy structure has been optimized. In the last five years we have improved our traditional industry. We have eliminated the old industry and promoted the new industry. We had good results. Last October, the small fire coal plant has the total as the United Kingdom or South Korea. The

total electric generation power. Our total capacity is 70 percent. For every kilowatt we have reduced from 370 we have closed 9,000 small coal-fired plants and eliminated 450 million tons of capacity, redundant capacity.

So the total capacity of 397 kilowatts accounts for 40 percent of the total of the world. So that means 40 percent of the capacity under construction is in China. The annual production is more than 800 kilowatts. And for wind power, for five years consecutively it has been growing. And the total capacity is more than 4,000 kilowatts capacity has been connected to the grid, second only to the U.S. Their gross of the -- the net growth of the U.S. is 600 kilowatts. So be careful. China will overtake the U.S. this year.

Thirdly, we have made effective efforts to cut down energy consumption and emissions. The Chinese government pays close attention to energy conservation and emission reduction. We tried our best to build a society of energy efficient and

environmental friendly. We have passed laws and regulations to improve economic policy and we have an accountability to adjust our industrial mix to promote energy conservation in key industries and to promote advanced energy conservation technology and products and other measures. In the past five years the unit GDP energy consumption decreased by 20 percent. The total emission of major pollutants decreased by 10 percent. In the five years, the total accumulated we have saved more than 300 million tons of coal in total and we have developed nonfossil fuel energy, hydropower, nuclear power, and wind power, and the total accumulated volume reaches 30,000 kilowatts, which is around 1.5 billion TCE. And we have reduced carbon dioxide emission by nearly three billion tons and have made our contribution to the climate change. And we have undertaken (inaudible) differentiated responsibilities.

Fourth, we have improved the conditions for urban and suburban residents. In 2010, the per capital energy consumption is around 2.38 TCEs per

year, increased by 32 percent compared with that of 2005. The per capita installed capacity is .69 kilowatts increased by .29 kilowatts compared with the year 2005. This is only one-quarter or one-fifth of the average level of the U.S. So the per capita installed capacity is around three kilowatts in the States but we are only .69 kilowatts. The per capita natural gas consumption is 88 cubic meters, 2.4 times bigger than that of 2005.

In the past, very few people can use natural gas. Even today the percentage is very low in China. It's 2.4 times more than in 2005. In the past five years we have reformed rural electric grid and solved the problem of energy utilization of more than 30 million people. The per capita daily power consumption increased by 79 percent in rural areas compared with 2009, especially in northern China. In these varied cold regions we have built more than 60 million kilowatts combined heating and coal power plants to replace the old coal power plants to address the heating problem for more than 40 million city

residents. And we have paid special attention to Tibet and the Xinjiang regions to connect the residents in Tibet to the grid and solve their power utilization issue.

Fifth, we have enhanced our legislation to try to realize a small government in a big market. For the biggest energy producer we don't have a ministry of energy. We are merely a bureau. We have only around 100 officials. We are responsible for drafting energy laws, regulations, policy standards and we also make plans for key projects to guide and serve the energy industry to grow in health and other ways. In recent years we have amended the law on renewable energy and passed the law on protection of natural and oil pipelines. We adopted plans for coal, for electricity, oil, and natural gas and renewable energy, and we have publicized -- published industrial standards. In total we passed more than 588 industrial standards. Recently, during the 12th five-year plan, in sessions the Chinese government raised the target that we are going to set decreasing the

energy consumption intensity and the carbon dioxide emission intensity as constraining indicators in tax so we will use it to guide us to work in this way. So we have to accomplish this task. This is what we mean by constraining index.

So it is compulsory. You have to reach the goal. So we have to reasonably control the total energy consumption and improve the energy utilization efficiency. So in order to reach this goal in the next five years, China will continue to promote the reform in energy consumption and energy production and to establish a safe, stable, and a clean modern energy industry system. And our key tasks and major difficulties are as follows.

First, to control the total energy consumption at a reasonable level in the next five years with rapid development of China’s economy and industrialization and urbanization, we are going to face an even more difficult task to guarantee energy supply even though we will still continue to control the overall energy consumption at a reasonable level.

We have a 12th five-year plan and in the next five years China needs to increase the energy production by 4.12 percent in the next five years in order to support the annual growth rate of the national economy of seven percent. This is the top priority for the Chinese energy industry in the next five years. It's also the most difficult one.

Second, we have to adjust the energy mix of China. In the past few years we have clean energy but in general the clean energy only accounts for a small percentage, only roughly eight percent of the total energy consumption. Nuclear power only accounts for 1.2 percent of the total energy supply, far below the international average level. The total installed capacity is only 10.8 million kilowatts while the U.S. is exceeding 100 million kilowatts. And we have just started new energy such as wind and solar power. So in the future, if one day China has 100 reactors, we will not be surprised because the U.S. already had more than 100 reactors.

For wind power, solar power, and other new

energies, we are only at a starting phase. It accounts for a very small percentage of the total. So in order to reach our solemn commitment that means to realize 15 percent of total energy consumption -- energy supply from non fossil fuel sources we have to improve these new energies by 100 percent. So we have set up a goal that non fossil fuel will account for 11.4 percent among primary energy sources in the next five years. And in another five years we have to reach 15 percent. So in order to do that we have to adjust the energy mix of China. We have to -- with the precondition of protecting the ecosystem to actively develop hydropower and under the condition of guaranteeing safety and security to grow nuclear power, wind power, and solar power, and also biomass power and thermal power, etcetera. I once made a prediction that Germany has to change its policy. It cannot only -- it should not withdraw from developing nuclear power. And I can say that in the future Germany will start building new nuclear reactors.

Third, to promote scientific advancement and

technological innovation. In today's world of globalization, carbon emission has no sense of boundaries and energy security has no sense of boundaries. So we need close cooperation and communication among countries. We need to enhance technology cooperation. We need to be open-minded and to learn from each other. The gradual diminution of fossil fuel energies is a global issue so we need to -- for other countries, for other governments to try to find alternative sources to fossil fuel energy sources. We are all partners so we cannot address this issue by any country alone. So please do not worry about China's nuclear clean energy growth too quickly. We don't have enough clean energy to satisfy our own needs.

Fourth, to enhance reform and to enhance legislation we are facing a lot of strategic tasks such as to improve the administration system and to reform the fee charging system and to reform the pricing mechanism for energies. So we will learn from international community and then try to solve our

problems.

Fifth, we have to continue to enhance international cooperation. Depending on globalization, any country cannot grow by itself. In the next five years China will, according to the principles of mutual benefit and win-win situation to seek mutual development, we will proactively utilize current bilateral and multilateral mechanisms to work with other countries to address this issue.

Dear colleagues, the topic of this conference is U.S.-China Strategic Forum on Clean Energy Cooperation. This topic clearly shows the reality of our two countries in the area of energy cooperation. First, it is in line with our common interests. China and the U.S. are the two biggest -- the biggest developing and developed countries in the world accounting for 25 percent of the world's total population and 35 percent of the total economic activities. At the same time, China and the U.S. are also the biggest energy producers and energy consumers. In 2009, the total primary energy

production and consumption accounted for 32.2 percent and 39 percent of the world's total respectively.

Even though we have different national conditions at different stages of development, but we are facing common challenges while we are dealing with energy security, climate change, and economic system development, we are going to have more and more common interests. In 2009, when President Obama visited China, the communiqué of the two countries said the energy sector to be the key direction and key area for cooperation. To do this well is of strategic significance for the two countries and to the world. China has 1.3 billion people with a huge energy demand. Their coal accounts for nearly 70 percent of the total energy mix of China, and in 2010, the total coal production reaches 3.2 billion pounds accounting for 45 percent of the world's total while the per capita annual consumption of China is far below that of the western developed countries. The per capita power consumption is only less than one-quarter of the U.S. So we need to encourage and help China to grow

the new energies.

Some people in the international community say that there's a threat for China to develop its energy. This is an extension of the Cold War mentality. The real problem is if China does not grow its new energy. Because of domestic pressure, the U.S. started 301 investigations on China. Everybody knows that the U.S. government provides a large amount of subsidy to new energy industries. You can just log onto the internet and you can find more than 1,000 kinds of subsidies and policies of their federal and state governments for new energies.

For example, you have a 30 percent ITC, 100 percent depreciation. So as a person in charge of energy affairs of developing countries I feel ashamed. I think that I really want to have this kind of subsidy for new energies in China but we don't have. So I believe that for nuclear, a new energy area, cooperation is more important than competition because the two countries are sharing in the same task to address the issue of sustainable development of

mankind, even a sustainable survival of the mankind.

Secondly, we have a huge potential for cooperation between our two countries in the clean energy area. We have already had all around (inaudible) and extensive framework covering energy policy, oil and gas, civil nuclear power, grade construction, new energy, biomass, etcetera. Clean energy is the area we have the least amount of friction and the most amount of consensus. We have the biggest complementary advantages and the greatest potential. The U.S. sees an important task of the world to grow renewable energy and it has obvious advantages. China is the fastest growing energy market with huge market potential and advantage of economy of scale, in recent years the two governments signed agreements in biomass and bioenergy cooperation and the MOU, Shell Oil Corporation, between the AEF China and the State Department of the U.S., and also a MOU on renewable energy partnership between China and the U.S. These important documents set up a platform for all kinds of communication and cooperation.

And we have established a dialogue for energy policies and renewable energy, industrial forum, and also research center for clean energy. So we welcome American economists to participate in China's clean energy industry. American economists already set up joint ventures for when power equipment manufacturing plants in China and to export equipment and components to China. This morning I met with the U.S. companies called a material solar. He told me that their solar equipment they produced are being sold to China. China does sell a lot of solar cells to the international market but almost all the equipment that we are using to produce these solar cells is being bought in foreign countries. This is a vivid example of our cooperation.

In China, Shell Gas and the export of nuclear power, Westinghouse has given us AP 1,000 Technology. At the same time the Chinese enterprises have also invested -- wants to invest in the clear energy in the United States. A while ago people were complaining that the United States didn't allow China

to come to invest. Here we have signed it today. There will be U.S. investments in China for the wind power generation. We'll reach 10 billion total investments we hope. Our governments will create the platform for investment and develop clean energy. Both sides should have cooperation in energy. We have already signed a lot of agreements and it gave us a good foundation for cooperation.

Looking forward we should not be satisfied with consultation and dialogue. We should deepen our cooperation and our cooperation should be in funds technology and the personnel, energy development, and create more jobs for both countries and give new life to our economy. This is mutually beneficial. In this aspect, we already have a lot of success stories. China's (inaudible) oil company and with America -- CHK company started project. According to CHK's calculation, this project could project 20,000 local jobs. In the operation of the project at the state and federal could get 40 to 60 billion U.S. dollars. At the same time, it could produce 42 - 45 thousand

barrels of oil. It can reduce U.S. dependence on the import oil.

America's solar power company set up a solar power station in China in Mongolia. And the United States and China formed a joint effort in exploring the shale gas in (inaudible) and both countries have a lot of enterprises in cooperation and 13 projects are in the works. These 13 projects in various energy forms. One is we will buy 12 turbines. Westinghouse is going to transfer technology and produce AP 1000 fuel. These are concrete and realistic projects. I think you raised -- you'll agree with me.

Ladies and gentlemen, energy is our trade development focus and it should be beneficial to both our countries and to the world and for the climate change. Tomorrow our President Hu Jintao will pay a state visit to the United States. I think it started today already. He will talk about the grand strategy for our cooperation. We should complement each other's efforts and strive for win-win results. We should promote our comprehensive cooperation in

energy. Thank you.

(Applause)

MR. LIEBERTHAL: Thank you very much, Mr. Minister. It is late. I think we have time for perhaps one question because we said we would finish within 10 minutes. And the question is over here. We have a mike right behind you.

SPEAKER: First of all, to echo Ken Lieberthal, I think we all have great respect for the contribution that you have made to assure that China has the energy capacity it needs to support its economic growth and certainly wish you the best as you take your new responsibilities on. I think for many Americans it has been surprising to realize that now more -- 60 percent more new cars are sold in China than in the United States, and obviously what happens with cars in China as in the United States will have a big impact on energy. Can you give us a little guidance as to how to think about the automobile fleet in the future and China? Is it going to be 30 million new cars a year? Is it going to be electric? Is it

going to be very efficient automobiles? I think we'd all benefit from your thinking on this. Thank you.

MR. ZHANG: Just as you said just now, last year, 2009-2010, the annual sales is 17 million. Two years combined it's more than 30 million. If each vehicle used two tons of gas, we would have 30 million tons new demand. Therefore, in China when we would use replacement energy in the north and in three provinces in the south, we are using methane mixed with gas. Another one, like other countries, we are also developing EV. EV has a lot of technological problems to be solved. Secretary Chu today participated in the clean energy discussion. One topic is EV. Electricity has a lot of resources with nuclear, solar, and wind and biomass. This is also one approach to solve the energy needs for vehicles.

Of course, the large number of vehicles also creates problems. In China, in Beijing, traffic jam is very important. How to solve the traffic problem. Why do we want development? In the last, the United States, the car industry is the engine of the economy.

At the present, China is gradually moving into a modest prosperity. There's a great demand for cars and therefore the sales are increasing. We have to solve the future energy needs for vehicles. This is our most important issue. Thank you very much.

(Applause)

MR. LIEBERTHAL: Before we say good night I just want to make a few announcements and then we'll ask everyone to join me in thanking both speakers together.

Some of you are involved tomorrow morning in a roundtable discussion. You know which ones you are. That roundtable discussion begins at 8:00 a.m. It has an extremely full agenda, so for those of you who are involved in that please arrive at about 10 of 8:00 or a quarter of 8:00 so everyone is seated and ready to begin right at 8:00. Breakfast will be served with that. For everybody else, the vast majority of people here, you'll have breakfast again where you had it today. The working groups reconvene at 8:30 tomorrow morning. I hope that your discussions there are

fruitful.

Since we ended up on an electric vehicle note, I do want to say there is an opportunity to drive an all-electric vehicle, which is the product of a joint venture effort between CODA Automotive and Lishan. That electric vehicle is a yellow car right in front of the hotel. There is someone up there who will drive you around in it so you can see it or you can drive in it. There's someone there this evening I understand and will also be there all morning tomorrow. So if you want an all-electric joint China-U.S. venture experience it is available to you.

With that, thank you very much for being with us for a long, I hope very fruitful day. And please join me again in thanking our two wonderful speakers this evening.

(Applause)

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I, Carleton J. Anderson, III do hereby certify that the forgoing electronic file when originally transmitted was reduced to text at my direction; that said transcript is a true record of the proceedings therein referenced; that I am neither counsel for, related to, nor employed by any of the parties to the action in which these proceedings were taken; and, furthermore, that I am neither a relative or employee of any attorney or counsel employed by the parties hereto, nor financially or otherwise interested in the outcome of this action.

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