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P R O C E E D I N G S

MR. LIEBERTHAL: Good morning. Thank you for coming today. I'm Ken Lieberthal, I'm senior fellow at Brookings and very interested in issues of climate change and clean energy in China and the United States. So, I'm really delighted to be able to moderate this panel this morning.

We've got two terrific speakers here. First up, I'm going to introduce both now and then they'll come up one after the other rather than my standing up again to introduce the second speaker.

The first speaker is Dr. Qi Ye. Qi Ye is the Cheung Kong professor of Environment Policy at Tsinghua University School of Public Policy and Management. He's also the director of the Climate Policy Initiative Beijing and it's in that latter capacity especially that he's addressing us today. He has a very extensive background advising governments, NGOs, and international organizations on climate change, clean energy, and environmental policy issues. His PhD is in environmental science for the State University of New York's College of Environmental Science and Forestry and Syracuse University.

Most of his current work is focused on climate and environmental policy and governance. I've especially enjoyed his work because he looks very carefully not only at policy, but also at the governmental management of policy down to the basic levels in China. You learn a lot about the realities when you go to the basic levels and see what the incentives are and how things actually work out. So, his work is really fascinating. His most recent book is entitled *"Environmental Governance in China."* He's the principal investigator and editor of the *"Annual Review of Low-Carbon Development in China,"* and he'll be reporting on the third low-carbon development report in his presentation in just a moment.

The second speaker is one that is very well-known to most people who do anything with Brookings, Bill Antholis, who is managing director of Brookings. He's also a senior fellow on governance studies at Brookings and coauthored with Strobe Talbott a widely read piece called "Fast Forward: Ethics and Politics in the Age of Global Warming." You won't be surprised to know if you haven't read it that this is a stark warning about the problems of global climate change and the moral and ethical as well as other imperative to deal with this issue in a much more serious fashion than the major players manage to do to date.

Bill has a wide-ranging background. Among other things, he was the director of International Economic Affairs at the NSC and the NEC in the Clinton Administration and was deputy director of the White House Climate Change Policy Team under the Clinton Administration. Bill's PhD is from Yale University.

Qi, as I mentioned, will give a report on the CPI, *"Climate Policy Initiatives Third Annual Review of Low-Carbon Development in China."* I'm delighted he has done this before annually for this report and the report is fascinating. Bill will then shift focus a bit and talk about national and local action on climate change in the United States, and Bill also spent I think it was six months, is that right, traveling in India and China looking at linkages between local and national development and the policy implications of that and he will be building that into his set of remarks. So, and afterwards, we'll have plenty of time for Q and A and look forward to your questions from the audience.

So, let me get out of the way and, Qi Ye, welcome.

DR. QI: Good morning. Thank you, that's a very kind, very generous introduction, and, like Ken said, for this particular work, I'm mostly representing Climate Policy Initiative in Beijing, and for those of you who are not familiar with the CPI, this

organization, it does not stand for Consumer Price Index. It is a global international research network with the headquarters based in San Francisco and offices in Beijing, Berlin, Venice, the Rio, and also some programs in India and Indonesia. I'm very glad today my boss, Professor Tom Hillard, is here with me to show his support for this work.

Anyway, this is my third time here talking about this very subject of low-carbon development in China. This is the Third Annual Review we have completed just recently. So, I'm very glad to report to you. My hope is I will keep coming back here to talk about this subject until you get really, really bored of me.

For this year, we focused this particular aspect of this study, namely the policy implementation and institutional innovation. I would like to start with this is what I call China's low-carbon development puzzles. And from the previous work, we have come up with more questions than answers.

The puzzle number one is if you look at this carbon intensity, energy intensity, what happens in the tenth five-year plan, 2001 to 2005, to the intensity in eleventh five-year plan, 2006 to 2010, we see a very sharp reversal of this increasing trend. So, after 2005, we see a very consistent decline of the energy intensity in carbon intensity and why is this? What are the factors behind?

The second puzzle from the previous study is renewable energy, particularly wind energy. Just like in the United States where you have a RPS, Renewable Portfolio Standards, in China, there are the similar quota systems, the National Government set some quotas for the major power companies to meet. The interesting thing is almost every year these companies, these players consistently exceeds this quota. They do better, they overachieve the target.

A third puzzle is what was reported last year. We have this very nicely S-shaped curve, namely the red curve that is going up very fast that the overall emission

in China is very scary. The second curve, the green curve, is the decreasing intensity curve. So, that's good news, right? Then the question is: What are the factors behind this weird shape? So, our answer involves four factors that we identify, namely the economy and the low-carbon policies, implementation of these polices, and finally the funding, particularly the government funding for this. I will explain how and why these factors worked, why we call it the China story.

First, the economy. If you look at this pattern of the increasing trend of the carbon emission and the energy consumption emission, there's no question this trend is driven by the economy or primarily by the economy. So, because of the increase of the GDP to close to double its growth and, therefore, the current model of economic development, there is an increasing trend.

For the intensity figures and the standards explanation of this decreasing trend, since the eleventh five-year plan, this was driven by the policy. This was driven by the energy-saving policy. There are a number of policies. Then we look a little bit further, more closely on this pattern, we see these explanations are important but not necessarily sufficient.

For the intensity figure, for that increasing trend from year 2002 and 2005, it's increasing. Now, the explanation for that increase was the economy, people citing the WTO, they're citing the export-driven economy in China, and now citing the urbanization in China. So, therefore, even for the intensity, there is a factor it played a very important role. That's the economy.

Then if we expand this period from 5 years, 10 years to several decades, starting when China first had the policies and programs on energy savings. That was the end of the 1970s and the beginning of 1980s. Then we see this consistent pattern of declining trend of energy intensity. Then the argument from the Chinese side, this was

driven to show the effectiveness of the low-carbon policy or energy savings policy. But this may involve other factors.

First time when I was here, Trevor Houser presented this graph. What he did, he expanded this way beyond the 1980s to cover the whole period since the foundation of the People's Republic of China. So, this is a much longer record and he pointed out, he said really not the policies, the policies really didn't work that much and he said it's the lack of the regulation or a lack of policy that actually worked to where the decreasing trend in energy intensity and carbon intensity.

And he pointed out several points. When there is a liberation policy on the industrial enterprises that you begin to see a declining trend of energy intensity. It's just the picture getting more and more complex. Well, I guess the idea is we look at the two set of variables and one set of variables has to do with the economic growth and the other set of variables having to do with a policy or energy efficiency regulations.

The first one primarily we see the export, the urbanization, and the industrialization, particularly the increase of the heavy chemical industry. And the second category is we see the energy savings policy and also the energy savings target whether or not there is a target and how big, how ambitious that target is. And, also, what's extremely important is the implementation system, whether or not there is an implementation system there for these policies to be enforced and how effective this policy is.

Well, let's once again look at the economy side. Again, I cite this figure from Trevor Houser from the very first time here in this very room. And he looked at the share of the industry of GDP, so, it increases over time, particularly in the last three decades. He also pointed out after 2002, we see a very rapid increase, very rapid increase of what he called the E-5 industry, mainly most of the energy-consuming

industries. The share of that in this red graph, increasing very fast.

But we do need to point it out though when we compare the tenth five-year plan and the eleventh five-year plan, we see actually the eleventh five-year plan has a much higher share or percentage of these industries. So, you can't really say that the eleventh five-year plan has a less challenging job in reducing the carbon intensity. There must be some other explanations, right?

What are other explanations? Well, if every five-year plan, we're trying to see whether or not there is a national target, national target for energy intensity reduction set in that plan. What is the interesting thing is for all these 35 years, for every 5-year plan, there is such a target. The only one that does not have a target set in the five-year plan was a tenth five-year plan namely from the 2001, 2002. Well, maybe that is one of the important reasons why we see a big rebound of energy intensity in that five years.

Well, people can argue well, there was a target, they can find a target set not in the five-year plan, but set by the Economic and Trade Commission back then. This is a lower level of the government. The problem is soon as this target was set by this very organization, the Commission of Economy and Trade, this entire agency disappeared. They collapsed into NDRC.

So, therefore, nobody was actually enforcing this. We can look deeper into this picture by looking at the energy savings rate, the ninth, tenth, and eleventh five-year plan. In fact, just looking at the GDP growth rate, the eleventh five-year plan is much higher than the ninth and tenth. Then looking at the heavy industry growth, again, we do not receive a big difference between tenth and the eleventh. For the urbanization rate, they are just about the same across the three periods and we look at the exports, the growth rate. Indeed, the growth rate itself of export in the tenth grow very fast.

The main differences are two. One is what I just pointed out. In the tenth five-year plan, there was no target set in the five-year plan for the energy savings for some reason. Then another major difference is in the tenth five-year plan, there was no agencies that are responsible for implementing the policies. So, no target and no implementation. So, it is not hard to understand why you see this bad rebound of the energy intensity in that five years. What happened there? Let's just look closely there, this period of time. Traditionally, the energy policies are implemented, enforced by the ministries that involves all the industries. In the old time, the central planning period, the industries were organized on their nine different ministries. Each of them responsible for a different kind of industry. They, by the way, are the enforces of the energy saving policy, but for this period, for the 2001 and 2005, right before this period, they just totally disappeared due to the institutional reform that took place in 1998 and completed by the end of the year 2000. That's the major differences.

Then, however, entering the eleventh five-year plan, there was this new system introduced. The new system that we call the energy saving target responsibility system, the RTRS. What we mean by that, the target responsibility system, so, basically, there was a national target set at the very high level. Then this aggregated amongst all the provinces and all the major industries.

And the promises are very smart. They know they can't really achieve that. They further disaggregate among all the municipalities, and municipalities in turn disaggregate this target among all the counties and the counties then further down. So, there were these five levels of government, this hierarchical system. Notice disaggregate the target, but also these targets, the performances of this are monitored, measured, verified, and finally to reward or penalize the enforcers of these local governments. So, for the local governments and also for the enterprises.

In the 1990s, something also very interesting happened. They wanted to reform state-owned enterprises. This was a time when the state-owned enterprises began to be reformed and they become more locally administered or privatized.

The second one is organization of the central government because these ministries responsible for industry, they have very little to administer because of this change of the reform of the state-owned enterprises. So, these nine ministries, they simply disappeared by the end of the year 2000. There was also the taxation reform. That gives a much more higher right, a great right power for the central government to track the tax revenue to the central level rather than to the local level. And, of course, there was this overall change in political system that helped to shift the implementation system of energy policy from a very much line-based system, in China we call a *tiao* based to more of a block-based to the local government. We often call it a *kuai* based system. So, unfortunately, the tenth five-year plan was the time when there was nothing, there is no line-based whether it's a *tiao* there is no block-based for implementation.

So, let me just one of these. So, for the line-based, that's the previous system, and for the block-based, relying more on local government to do the job for implementation. So, these are actually not just for these five years, it's actually happened for this entire period and since 1978, when the energy savings program started. So, from the time, 1978 to the time year 2000, the line-based system was in place and played a major role and were effective. And starting from the eleventh five-year plan, the block-based, the *kuai* based system played a major role and the key of that, the target responsibility system.

As I said, the key for the targeted responsibility system to work is this is a technical performance, a technical-based performance evaluation system. It just evaluates the local government and the major key energy consumers, how they do their

work and how well they do their work. But this system is tied to a political evaluation system for the local government, which is administered by the Central Organization Department of the Communist Party.

So, one is administrative system performance evaluation, the other one is a political system for performance evaluation. It's the only when these two systems are put together, we begin to see the effect of this system. So, overall, you see this system is very much a pressure-based from top down. See the local government and the local enterprises were forced to do their work and it worked. And it was effective.

So, the conclusion for that part is energy savings and targeted responsibility system was a major shift of the implementation mechanisms. It worked not only just pressure, but at the same time the resources, the funding, the money worked really due. Due to this pressure, the local government began putting a lot of money, elevated the leadership, a greater priority on energy savings, and also a lot more resource allocated.

So, you can see the resources and also the local government began to set up the centers for monitoring, centers for service, and centers, the ESCOs, for supporting the ESCOs for supporting the energy savings. So, there are a lot of resources poured into that system. At the same time, we see a similar pattern in the enterprises.

You will often think well, the enterprises, they are private and they are the market player. They should play in response to the market forces. Why it has to play and respond to government mandates?

Well, it played very effectively. So, the enterprises also put in a lot of resources into this whole area. So, overall, in the eleventh five-year plan, for example, the government put in a lot of money, $160 billion the figure, and enterprises put in a bigger share, $650 billion. A lot of money put in to ensure this system works.

I know you can't read this one, but just to let you know that CPI, much of our work is known for creating the landscape for financing. We'll also call it the spaghetti chart. So, this is our Chinese spaghetti or you may call it the Chinese noodles. Basically, the idea is if you don't like that one, you'll like this one. The idea is trying to see where the money comes from. The government enterprises, household, international, where the money gets spent. So, I won't get into the details into that.

With the next few minutes, let me just talk a little bit about the renewable energy financing. It turned out to be that renewable energy is a totally different story than the energy efficient one. This one, it is the central government and the state-owned enterprises, they worked, they collaborated, they somehow managed to have the policy and also to create the market that created incentives for the enterprises for the market players. All right, the central government, basically what the central government did was to create a high enough price for these developers to work. So, there was an incentive and they created a low enough price for the costs. Therefore, once the state-owned enterprises to get in there and making profit, then the financial institutions, basically essentially the banks, the state-owned banks, they are getting in there, providing the major sources of funding. Eighty percent. Eighty percent of the funding provided by the state-owned, the big banks for most of the wind power development projects. So, therefore, it is not hard to understand why this whole area of wind development, renewable energy development is so active and overachieving their target.

The solar PV is a little bit different story because the central government realized in the early days the cost is simply too high to develop solar PV, but because of the existence of international market and the supply of technology, enterprises quickly pick up the opportunity, works together with the local government, they just push the whole industry within one decade that China became the number one producer of solar

PV panels. Of course, we know now they have a lot of trouble, but these solar PV is yet another story, it's not forced by the government, it's not even a collaboration of the government and enterprises. It is basically pulled and driven by the enterprises and local government; it worked just the other way around in terms of the policy implementations.

So, another way of looking at this in the institutional innovation policy innovation is the local pilots. As most of you know here, is China is having five promises, eight cities doing the low-carbon pilots. Not a lot has happened so far, but this would be a really interesting way to look at the policy innovation, institutional innovation because under that targeted responsibility system, we see a pressure, right?

We see this pressure that motivated the local government, but in this case, the local pilots, it's the local government that took the initiative and they applied the measures they really, really wanted to get into this program. So, therefore, we want to see well, under that kind of circumstances, let's see what kind of a policy and what kind of institutions actually innovation took place. I would like to report that to you in a future time. Already, we have seen some interesting results. All of these pilots, they're having a higher target, more ambitious target reducing their carbon intensity.

One example. Several cities already identify themselves. They want to get a peak, right? We know the negotiators, that they hate to talk about peak, but the cities are already talking about to peak sometime in the year 2020, 2025, so, this is a very interesting, very encouraging to see.

Finally, we see from our big study, these four factors, not just one, not just two, the four of them: economy, the policy, implementations, and funding, together worked as a suite of factors to support this low-carbon development. So, what we learned from this particular study are these three different models of policy implementation or three different models of collaboration between government and

enterprises for the energy savings one or energy intensity. It is the political system and the hierarchy of the ministries and the administrative system. They work together serving as a basis for the targeted responsibility system. Now, what is the key here is is really the link between these two systems. It's a very, very Chinese, very, very typical of Chinese political and administrative system.

The second one is a collaboration for wind, is a collaboration between the government and the enterprises. The role of the government was to simply create this market that is possible and attractive incentives to the market players. Therefore, we see the market simply play, right? It's self-enforcing mechanisms.

Finally, for the solar PV industry, it is the market. First, the international market, not the domestic, international market. Europe, U.S., other places that existed, technology existed, and then enterprises took the opportunity and drove and pulled the local government and the two of them pull the central government to do their job.

My conclusion, when it comes to this low-carbon green growth and there is no place for ideology. Whatever works is important. So, effectiveness takes priority. Thank you very much. (Applause)

DR. ANTHOLIS: Well, it's a real pleasure. I thank Ken for including me particularly with Qi Ye here.

As Ken mentioned, I spent about a half a year with my family traveling across India and China, and one of the first people that everyone at the Thornton Center here and at our Brookings Tsinghua Office in Beijing pointed us to is the first person you have to talk to on these issues is Qi Ye and the two hours that I spent in his office picking his brain was maybe the most productive time that I had in all of China. So, it's really a delight to follow him.

And what I will do first of all, I am by training, as Ken mentioned, I'm a

political scientist. My PhD is in political philosophy. So, what you're going to get is more of an astrologer's view of climate change rather than an astronomer's. I like to tell a story by looking at a lot of interesting data points and it may be more of an illustrative story than a science -- I like to say it's science-based, but I start with a line that Richard Gephardt told me.

Richard Gephardt for those of you that are not from the United States was the House majority leader. He never became speaker of the House, I don't think. He was the House majority leader, which meant putting together coalitions to vote for things. And he described climate change as the most complex and "difficult political transaction in the history of mankind."

If you think about it, our energy is one-sixth of the U.S. economy, roughly an analogist to health care. We all saw how challenging it was for the United States to pass comprehensive health care law a few years ago. If you take that and multiply it by the G-192, which is the U.N. negotiating framework to try to bring down this very global challenge, it gives you a sense of the political challenge involved.

And, so, the way that I want to talk about this today is both a little bit top-down, top-down in terms of the geopolitics, top-down in terms of the politics within the United States, but then also bottom-up, if the complexity of this is too massive from a top-down perspective, how you might think about it bottom-up starting in the United States and then what that tells us about how we should work with countries like China.

So, we're all proud to say in the United States that we're a democracy. As a political theorist and political scientist, I start with that perspective. And at some level, elections matter, but what candidates say in elections perhaps don't matter so much.

So, in 2000, we actually had both candidates running on climate change

is an issue where they were going to do something about it. Governor Bush, then candidate for president of the United States, had actually said that he wanted to regulate in Texas carbon dioxide, and that was part of his platform when running as president of the United States, and if you look back at the debates with Al Gore, it actually was not an enormous issue that was debated between the two of them. And I think in one debate actually, then Governor Bush said that he was for regulating carbon dioxide.

Well, it turned out when he came into power, and Christie Todd Whitman, his EPA administrator, went to a meeting with her G-8 colleagues and wanted to do something on climate change and then was publicly the next day told that she was wrong about that. And that was the beginning of what many people who follow these debates came to know and understand as Bush climate change policy, which extended for most of, but not all the way until the end of his administration, but the first set of years at G-8 meetings and climate negotiations what candidate Bush said and what President Bush did was very different from one another.

In 2008, both candidates, Senator Obama and Senator McCain both said that they wanted to get aggressive on climate change. Candidate Obama had an 80 percent reduction below 2000 levels or 2005 levels, I can't remember what they used the baseline in the campaign. Candidate McCain said 60 percent below, but, essentially, both wanted to do it and both wanted to have a cap-and-trade system.

So, what they said in the election didn't end up happening. I mean, on the one hand, in the international negotiations at Copenhagen, then President Obama obviously did move forward in a more aggressive way than the Bush Administration, but didn't make a binding pledge at Copenhagen, and we'll come back to the nature of the pledge. And then on domestic politics, though his presidential candidate still stayed on record as wanting to do this, when it came to put together a deal in the Senate to match

the legislation that had passed in the House of Representatives, President Obama and Senator McCain didn't come together and forge that deal. And, so, no domestic legislation happened.

Just where we are right now on the elections top-down, neither presidential candidate said anything about climate change in the election. In fact, a long-rumored third party candidate that didn't materialize, Mayor Bloomberg did say something about climate change after Hurricane Sandy, and notably neither presidential candidate addressed whether climate change had anything to do with Sandy.

I think the good news for people who want to look at climate change policy in a second Obama term might be hopeful that what's happened in previous presidential elections where the candidates say one thing and do something else plays out this time where they don't say anything and maybe actually do something.

Now, going from the top-down of American politics to the top-down of this global negotiations, at Kyoto, as we know, the goal was binding targets on all the major emitters in the industrial world and then an agreement called "Common but Differentiated Responsibilities," where developing countries did not take on binding targets, but did other policies and measures to help reduce greenhouse gases.

That framework came into place before the Kyoto negotiations and then at Kyoto, the negotiation, it came into place in particular in Berlin, at one of the global meetings, and then at Kyoto, the debate was about what the responsibilities for Annex One, that is industrial countries, should be.

And going into that negotiation, there was a great act of bipartisanship, the Byrd-Hagel resolution where both democratic and republican senators came together unanimously and said if you actually make binding commitments, we will not ratify them. It was one of the great bipartisan acts in American politics. At the Clinton Administration,

we loved to say that we would bring business and labor together and we succeeded in doing that and bringing them together against what we were trying to do at Kyoto. And that set the framework for a decade of policy in the United States, which is we were not going to take on domestic binding obligations as part of an international binding agreement.

Essentially what the framework that was established was the United States was not going to have its domestic law written by an international negotiation. That was the spirit of what was going on there. It's like the astrology behind the astronomy. The domestic gods would lead the international gods and the international community should not view this in any other way and that led into the domestic approach certainly of the Bush Administration, and in some way, that is now what defines the new U.N. approach to climate change, which was roughly agreed on at Copenhagen, which differs from the Kyoto approach in two key regards.

One is that it's bottom-up and two is that it starts to engage some of the bigger emitters in the developing world in a similar framework, which is to say whatever is done internationally will not now be a binding agreement, at least not right now. What we'll focus on is domestic implications of morally binding but not legally binding pledges that we would make. And that's essentially you can trace it to Copenhagen, essentially it was enshrined at Cancun, and at both Durbin and now the Doha meeting, that's the framework that's come out of this system.

There has been quite a lot of attention given to funding for clean development and particularly in the developing world and also funding for adaptation, particularly among poorer countries who have not contributed to climate change. And those conversations still continue, but the rubber has not yet met the road on that. People are still looking to see when this money is going to start flowing.

So, given that framework, what I like to focus on is the bottom-up approaches, and Ken mentioning my travels to India and China, just to give you a frame for how I think about that, if you look at the four great federal systems in the world, and they're very different.

In China, for instance, it's not a federal system; it's a central government, though some scholars building off the work of Ken Lieberthal's work on fragmented authoritarianism have called it a de facto federal system, but essentially what you've got are these four continentals systems that taken together are half the world's people, but they're also two-thirds of the world's economy: the U.S., the E.U., China, and India. Two-thirds of the world's economy and two-thirds of the world's greenhouse gases. If you add the next four biggest emitters, you get to about 70 to 75 percent of the world's greenhouse gases and, again, 70 to 75 percent of the world's economy. And, again, about 70 to 75. It depends on whether you count agriculture and forests and all of that into the equation.

But roughly speaking, what I'm trying to sort of convey is getting from G-192 to G-4 as a way of thinking about where domestic implementation will come from and where you can get the biggest bang for the buck is a very useful mean. Now that I've made it simplified, I'm going to make it more complex. These are big, complex federal systems. They have had a hard time as Qi Ye very wonderfully described. They have had a hard time across their continental systems developing uniform action, developing uniform policy, and then implementing that policy across their systems.

So, what I thought I would do is quickly give you a sense of how this has worked first quickly in the E.U. and then spend a little bit of time in the United States. And then talk about what that means for our relations with China.

In the E.U., now 20-some-odd members of the E.U., 15 when they

negotiated Kyoto, there were really 3 big players in the game: the U.K., France, and Germany. They were aggressive proponents of action at Kyoto and they took on within the E.U.'s pledge of an 8 percent reduction below 1990 levels by 2012, this year, 3 weeks, they took on the biggest portion of that pledge for themselves. So, whereas the rest of the E.U. as a whole pledged to come down 8 percent below 1990 levels, they took on 20 percent reduction targets. That's a wonderfully ambitious thing.

It was very easy for them to do because they had already done a lot of that work. To some degree, not planning on it because of climate change, but doing it for other reasons. Margaret Thatcher famously shut down the coal mines in northern England. France famously went to nuclear power, where 80 percent of electricity is generated by nuclear sources in France, and Germany shut down the East German economy when the Berlin Wall fell, which was heavily coal-based and highly polluting. So, they got enormous carbon savings as a result of steps taken in the late 1980s and early 1990s, right around the 1990 baseline that really helped them reduce their emissions.

That's not to say that the rest of Europe and those countries haven't taken action since Kyoto. They have, and they're moving well along towards their targets, but, again, in this complex federal system, many European states will not make the targets that they pledged to make at Kyoto in the 2012 frame even with a lot of trading mechanisms that they opposed in the Kyoto negotiations.

So, it's important to understand the federal dynamics, particularly looking forward where eastern countries in Europe, which tend to be poorer and southern countries in Europe which tend to be poorer and more based on coal still are going to have the biggest challenges. And I want you to remember that because when we focus on the United States and on China, the same applies in those two continental systems.

We're going to set Indian aside for today's presentation, although, I'm happy to talk about that with people afterwards.

Turning to the United States, where we are now, going into Copenhagen, the Obama Administration pledged an 83 percent reduction below 2005 levels by 2050. That was the law around which the House of Representatives cap-and-trade system was built and they were trying to pass a similar law in the Senate, but that ended up falling apart. Didn't even go to a vote. But that's a pledge that the United States has made and there were interim pledges made, as well, one of which was 17 percent below 2005 levels by 2020.

To give you a sense of what that takes in terms of carbon emissions, we right now emit around 5 gigatons, that is 5 billion tons of carbon. In 2005, we were actually closer to about 6 gigatons. So, the ultimate pledge is to get to about 1 gigaton. So, every single gigaton getting you down to one is an important contribution.

So, to give you a sense of what the 2020 interim pledge is, that's about a 2 gigaton reduction on the way to the five that you ultimately need to take. And the U.S. is actually fairly well on target to make that 2020 pledge and they've done it through a number of different things, both things that by policy they have tried to do and by market forces and other things that are already happening they've tried to do.

So, the biggest thing that the administration takes credit for is the $90-some-odd billion and I've seen all kinds of numbers on this. The latest I saw was $97 billion in either direct spending or tax credits on a range of issues: energy efficiency, a modern power grid, tax credits for renewable energy, spending on renewable energy. There are a whole set of things there and it is believed that that will lead to about a 1 gigaton reduction. So, of the five we need to get, that roughly $90 billion to $100 billion of investment gets you about 20 percent of the way.

And then, in addition, the other biggest policy step that they've taken has been auto fuel standards that are dramatically increased to 2020 and then 2030. And that roughly will produce another .6 gigatons of reduction. So, again, need to reduce about five. They've gotten about 1.6 from what they've already done. That's a fairly significant accomplishment. And the belief is that another .2 to .4 will come from a series of things: market forces, particularly the coming on of natural gas, although nobody really knows the dynamics of that. Nobody knows whether it's going to be even more dramatic or less dramatic because of the leaking of methane. There's still a lot to work out there, not to mention the state and local regulations that have to come into place to really make the natural gas boom continue apace.

Also the regulation of power plants through EPA authority. That's been done to some degree. It could be ratcheted up even more in a second term. It's unclear exactly what will happen there.

And then most importantly and the thing that I want to focus on now is where the real regulatory action is happening on climate change, which is within the states. California this year finally has moved forward and has not just passed, but is beginning to implement at its first auction for a statewide cap-and-trade system. If you take all the states that have some form of cap-and-trade or mandatory state action on climate change, depending on how you count them and what you count, there are about 15 states. California is the most ambitious because it's pegged out to 2050 and it's economy wide, but if you count up these 15 states, that's about 20 percent of the U.S. carbon emissions, it's about one-third of our population, and it's about 38 percent of our economy. So, what you're essentially getting are the most economically productive states: California, a bunch of states in the northeast, and a few others, and already the most energy efficient and economically productive parts of the country taking on

something that everyone is saying is going to be expensive for them to do and they are doing it. And, so, inasmuch as I was saying focus on the big four, once you get within the big four, focus on these engines of economic activity because they're taking on the biggest obligations for themselves, and, in my view, that's where the implementation rubber meets the road.

Now, the challenge in the United States is that the more carbon-intensive places in the country which tend to be our rural places and our places where the energy is actually extracted, those are big challenges that frankly are not doing very much. A few of them taken on renewable portfolio standards, some of them are getting now into natural gas and they're talking about the natural gas they're bringing on as a carbon savings, but, essentially, that's where the politics has not yet come together and where the action will be.

And as a bridge to China, what I was quite struck at in looking at these -- and I've had a hard time counting the provinces because as China has announced its provincial-based system, it's both announced six provinces, but then it also listed Xinxiang as its own unit within Guangdong, which is one of the most important provinces, the biggest province in China. But, roughly speaking, if you look at the six provinces that are engaged in this, some of which have some of these important cities embedded in them, you have about 16 percent of carbon emissions.

So, in the United States, the ones that have taken on things are about 20 percent of carbon emissions. In the United States, you have about one-third of the population, but 18 percent of China is much bigger than one-third of the United States, and you have about 27 percent of the economy. So, again, you have those most economically productive parts of China, already the most energy efficient parts of China taking on the expensive work of reducing carbon.

That doesn't mean that it's politically necessarily harder for them to do it. In some ways, it's easier because you have the poorer parts of the China and the parts of China that have all the mineral resources, particularly coal, but also other extractive resources which are very energy intensive to extract. You have those parts of China not yet taking on action and how you bridge what's happening in the productive energy efficient parts with the poorer and more energy intensive parts, that's the big challenge for China, it's the challenge for the United States, and, frankly, it's the challenge for Europe, as well.

So, where does that lead us in terms of conclusions, and I'm trying to stay under my 20 minutes and I'm at 18 minutes.

So, three quick things. One, location matters. I love to explain 20 years ago when I first started getting into this business and then 15 years at Kyoto that our divided politics on this don't tell us the whole story. Remember, it was a republican governor in California that signed that cap-and-trade system and we have largely mostly democratic states like Louisiana and West Virginia, which have helped hold back national climate change policy in the United States. So, location really matters quite a lot.

Two, the next step is really focusing on these poorer places, including incentives to participate and to think differently.

And then three, local to local really is an opportunity. For 10 years after Kyoto until Copenhagen, U.S. states like California started to learn from European states that are equally sized or similarly sized like Great Britain and Germany, and I think there's a real opportunity for states like California, New York to work with provinces like Guangdong, Gansu, Xingjian, Shanghai, that are already the industrial core of China and have now taken on the responsibility for reducing emissions first.

So, with that, Ken, I leave it to you. (Applause)

MR. LIEBERTHAL: While they are getting miked up, let me just tell you first of all that Qi Ye's slides will be posted on the Brookings Web site and you're free to download them.

Secondly, for Q and A, we have roving microphones, and, so, we'll ask you to identify yourself and ask your question. Feel free to direct a question to one speaker or the other. If not, whoever wants to take it up will.

Qi, you're miked up first. Let me ask you one question, ask Bill one question, and then open it up to the group. Congratulations on coming first.

China is experimenting or beginning to experiment with cap-and-trade systems in seven localities with the thought at least of building on that experience to develop nationwide cap-and-trade system by the year 2016 or so, right? How do you expect that to affect the several models, the three models that you laid out? Is this going to change your presentation dramatically by 2017 or I just have a little hard time figuring out what the implications of that are for the analysis that you just laid out.

DR. QI: The way I look at it is cap-and-trade was introduced in China as a system targeting on reducing the carbon emission. Just as more of generic thinking, this is a market system; therefore, this can be used theoretically to correct some of the weaknesses which is based mostly on the administrative climate control system.

Besides that, there is a lot of research to do whether or not any effect the cap-and-trade system will benefit this large entity. Particularly when we look at what happened in the cap-and-trade system for sulfur dioxide which was first introduced to China in 1998, first pilot started in 2003, and there was not much success to speak of. Particularly when we look at the cap-and-trade system in Europe, that had its own problems of that. So, I think the cap-and-trade would be a really interesting way to look and try, which is what China is doing, but in the end, there are more questions that need

to be answered to fit in this system. But, as I said, China is a system that believes white cat, black cat, the cat and the mouse, it's a good cat. So, cap-and-trade may be a good cat. We'll see, right?

MR. LIEBERTHAL: Okay, thank you.

Bill.

DR. ANTHOLIS: Yes.

MR. LIEBERTHAL: Let me ask you as you gaze in your crystal ball, we are now having fiscal cliff negotiations here.

DR. ANTHOLIS: Yes.

MR. LIEBERTHAL: How to increase revenues without raising marginal tax rates seems to be the cat's meow, if you don't mind my saying so.

Can you see any possibility of sooner or later getting to a carbon tax in the U.S. as a fiscal measure?

DR. ANTHOLIS: Look, frankly, right now, I think everything is possible from complete failure on the fiscal cliff where nothing happens to some combination -- some marginal rates will go up.

MR. LIEBERTHAL: Yes.

DR. ANTHOLIS: How much the marginal rates go up, how much revenue that generates, how much spending is cut, and what the delta between that and whether people would be willing to look for a carbon tax is an open question and I think that's a good thing if you're rooting for a carbon tax. It's not off the table. And there are a lot of people working and organizing to try to make that a more vibrant part of the discussion.

And part of the question is, frankly, what is resolved between now and then end of the year and how much of this gets put off until the first quarter of 2013? And

if that's the case, I think the chances are better because the coalition of forces that would need to come together to push this forward I don't think have aligned themselves yet and right now the biggest challenge is getting it through the current House of Representatives, which is more conservative than the one that's coming. My own sense is, I don't see this House having one of their last acts being not just raising marginal rates, but also taking on a new energy tax.

Now, and I say that remembering that it was a very different House of Representatives that passed cap-and-trade and the reason that I say that is that there were eight republican votes for the Waxman-Markey Bill that passed. And some of those people are still in Congress. There are some moderates who want to see action on climate change and would be willing to consider a carbon tax and some of those people will be around in 2013. So, I do think it's still out there as possible.

One thing that's very important in this is not just a new carbon tax, but the current tax breaks for fossil fuel industries that will probably go away in tax reform one way or the other. So, if you talk to energy companies right now, frankly, they're just focused on that because they're on a carbon tax and many of them would welcome a carbon tax if they got to keep the other tax break. They like those other tax breaks because they're particularly in the world of exploration, research and development, and they see that as critical to American industry staying innovative. So, they would be willing to deal with a carbon tax if they think the things that help make them competitive internationally are still on the books.

MR. LIEBERTHAL: So, to sum up, as we look forward here, two things are true. One is there is a lot of feasible room for change in both systems in the next couple of years on this issue. It is by no means a frozen issue.

DR. ANTHOLIS: Yes.

MR. LIEBERTHAL: And, secondly, Yogi Berra was right again. Prediction is always difficult, "especially about the future." (Laughter)

Let's open it up to the audience. Okay, well, then why don't we start in back and work our way forward? Back there, sir, on the right-hand side. Yes.

Again, please identify who you are and then ask a question. Thank you.

MR. BLANEY: Yes, Harry Blaney, Center for International Policy. Onetime CEQ, as well.

One of the questions I'd like to ask is looking at the future and particularly what is the belief of Professor Ye about whether or not China in terms of the future trajectory and the politics that are involved in that will go as against what we're seeing in the present when looking back?

The second question related to that, and one issue I'm very interested in, is whether given the relative failure of being able to get a treaty, particularly through our Congress, whether there's a way in which both China and the U.S. -- topic of today -- can find some kind of agreement that is less than the treaty, but moves both countries more further along in meeting what I'll call the goal of dealing with climate change and CO2 in ways that make real progress since both countries see an advantage in doing so from what I see. Thank you.

MR. LIEBERTHAL: Promoting U.S.-China clean energy cooperation shy of a treaty is your second one.

Qi, why don't you begin --

DR. QI: Okay, I will start. I see, as we know, China just changed the leadership last month and in March it is expected another layer of leadership will be changed. The good news is in the last month's meeting when we look at the general report, there is a whole chapter dedicated to something we call ecological civilization.

This generation of leadership for sure have a much higher expectation from the society that they will do more on the climate change, on sustainability, and what's behind this is they're trying to use these issues to drive the change for the so-called economic transformation of the economic development model.

China, as I see it, is among one of the few countries that political consensus has been built at a very top level of the leadership. They see the problem and they're willing to do it, to take action. So, I actually am more optimistic for this generation of leadership to continue if not even more on that trajectory of doing this.

On your second part of the question, I think Bill actually gave very, very great ideas there from that idea of G-192 to G-4, I think is a very important strategic thinking for collaboration. So, collaboration built among the four of them is theoretically much easier for 192 and also toward the end of his talk, he pointed out this regional level, region to region of province to state, this kind of collaboration. I also see that would be a very practical way and could be really, really effective. Already, we have seen that kind of effort is taking place in say California, Shandong, and Gansu province. They are very keen on these ideas and I see that would be a great place to start with.

MR. LIEBERTHAL: Bill, do you want to add anything?

DR. ANTHOLIS: No, I think that's great.

MR. LIEBERTHAL: Okay. I will note the Chinese government is going to undergo a massive restructuring this coming March and one of the things I'm told will be the major winners of this will be the Ministry of Environment, which we plussed-up quite a bit and with significantly expanded authority.

Yes, over here. Ma'am. Halfway back.

MS. DE NEVERS: Thank you. My name's Michelle de Nevers. I'm from the Center for Global Development.

Thank you for your interesting presentations about what the U.S. is doing and what China's doing. What I'm wondering is if you can say something about the interaction between the two as the two largest emitters in the world aside from some state to province coordination and collaboration, do you see any prospect for a kind of competitive race to the top to reduce emissions or is it just going in the other direction?

DR. ANTHOLIS: Well, it's a great question and I think it's a great question particularly if you think who the "it" is, right?

So, if you take a real step back from this, I have heard people on both sides of this issue in China say on the one hand, a lot of our emissions have been driven by industries that are exporting to the United States. And, so, you should be paying for those emissions, but then on the other hand, there would be great consternation in China -- this is just the industrial and firm level -- if the United States put border excise taxes tagged to the energy intensity of the products that came across borders.

So, if you get even outside of government-to-government, at an industrial level, there is already U.S.-China cooperation on climate change and it hasn't necessarily been a good one. We've essentially been exporting our carbon to China, but how you get at that just in terms of the firms involved is incredibly controversial. Then if you build up to the national level, are we talking about essentially negotiators talking to one another where they're representing state departments or foreign ministries or other negotiating ministries or are you talking about energy departments talking about clean energy development, agriculture departments figuring out low-carbon agriculture? I mean, our governments are such multi-headed hydras, without even getting to the state and local level.

And, frankly, I think that's a good thing that the various heads of the multi-headed hydras get to know one another better because this is a long-term thing.

That we could put carbon taxes to do this in a fast and easy way, it's just really hard to get there and if we wait for the carbon tax, we're not going to get action done. So, I think these bottom-up methods are actually quite critical.

MR. LIEBERTHAL: I think actually if you look at U.S., China, it's our energy departments that have -- the U.S. Energy Department was several departments in China. The NDRC and the Academy of Sciences and a few others have done quite a bit together.

DR. ANTHOLIS: Right.

MR. LIEBERTHAL: Before that, Hank Paulson over at Treasury promoted cooperation on climate change quite a bit. So, you're right, the hydra-headed thing is really what's key here and our diplomatic side has been the weak link in this rather than the strong side of it.

DR. ANTHOLIS: Yes.

MR. LIEBERTHAL: Let me come back. Yes, ma'am, back on the right-hand side there. Yes.

MS. LEGGETT: Thank you. I'm Jane Leggett from the Congressional Research Service.

And I'd like to just play devil's advocate a little bit on the G-4 idea.

DR. ANTHOLIS: Yes.

MS. LEGGETT: Not to undermine the potential significance of what those economies do domestically, but we are in an integrated global economy and to a certain degree, if you look at China and the Asian regional economic integration or interests, for example, in the U.S., and exporting cheaper coal to any place in the world that will buy it, how do we deal with the idea of focusing on our domestic targets while, in

fact, in some cases encouraging the development of emissions-related activities in countries that are not part of the G-4?

DR. ANTHOLIS: Well, I don't see the G-4 as an exclusive group. As I said, if you look then quickly at the next 4, you get another 10 percent of emission reductions, and if you go out to the 18-odd countries that are in the major emitter's forum, which is roughly the G-20 plus or minus a couple countries, you're now getting into the sort of 80 percent of the world's economy and population and all of those things. I just think it's critical that those four be roughly in the same place because if any one of them drops out of the equation, you lose not just enormous parts of the economy or emissions, you lose enormous political voice.

I mean, if India were to drop out of the equation, its impact on the way the G-77 negotiates is just extraordinary plus there's all the learning that happen at the low end of the Indian economy which are critical for places like Africa, too. So, I just think it has to be a starting point. It's very, very hard in these negotiations. There's a reason they stay up all night for a week on end at the end of this every year and it's because managing 192 countries is just impossible.

MR. LIEBERTHAL: Yes, up here, please.

MS. STERN: Thank you. I'm Paula Stern. Thanks, Ken.

My question is based on kind of a case study that I've been involved in, and having been a scholar at Brookings and wrote a dissertation in the book on case studies, I think there is some value. And it's because I've been working with a company called Sierra Energy, a California-based waste to renewable energy company, and trying to help find a partner in China to license this technology.

So, what I have discovered from my case study is that, indeed, China and the United States have encouraged solar energy, wind energy, but not waste to

renewable energy. And, yet, when we talk about emissions, and I think we seem to know more about it in China than we do in the U.S., from a public point of view, there is this recognition that we have a huge waste management problem which is highly carbon-emitting. And that China is continuing to spend enormous sums aided by international banks like the Asian Development Bank on incineration to put more CO2 in the air. And I am having a problem in spite of the fact that the State of California has recognized Sierra Energy and told the Chinese government that this is a wonderful technology gasification, we can't really get through, maybe because we're a small business, but I think it's also because we have ignored this whole waste to renewable area.

MR. LIEBERTHAL: Okay, Paula, I'm sorry --

MS. STERN: And I'm wondering where --

MR. LIEBERTHAL: I have to ask you --

MS. STERN: -- it's going to go in the future on that.

MR. LIEBERTHAL: All right, so, the question is --

MS. STERN: So, the question is --

MR. LIEBERTHAL: Where are we headed on waste renewal?

MS. STERN: Where does waste to renewable energy --

MR. LIEBERTHAL: Okay.

MS. STERN: Where is it and in the thinking of the future implementers here and in the United --

MR. LIEBERTHAL: And in China.

MS. STERN: And in China.

MR. LIEBERTHAL: Okay.

MS. STERN: With regard to incentives and all the other regulatory --

MR. LIEBERTHAL: Do either of you know?

DR. QI: Yes, that was a great question.

MS. STERN: Thank you.

DR. QI: My answer is just earlier this week, two days ago, there is this council meeting and past the twelfth five-year plan on what China calls circular economy and this is one of the centerpieces talked about. So, I recommend you look at this.

Also, when you look at the 18th Congress, the report, China calls this green development circular development and the low-carbon development together. So, this is a great question. It's being addressed.

MR. LIEBERTHAL: "Circular" is basically recycling --

DR. QI: Recycling-based economy with --

MS. STERN: Yes. (Inaudible 1:12:11) the department of --

MR. LIEBERTHAL: Wait a minute, I'm sorry.

DR. QI: NDRC.

MS. STERN: Huh?

MR. LIEBERTHAL: Okay, NDRC, but let me ask you to --

MS. STERN: Okay.

MR. LIEBERTHAL: -- follow-up afterwards there, okay?

MS. STERN: Sure.

MR. LIEBERTHAL: Thank you.

MS. STERN: Thank you.

MR. LIEBERTHAL: I think way in the back there, a gentleman. Yes.

MR. VALDERRAMA: Rodrigo Valderrama, Plantation International.

Can you address the difference in transaction costs of the carbon exchange in China in what's foreseen as well as in -- or versus what's going on under the U.N. system? And, also, under the Kyoto system, you had the idea that all of these taxes

were for phasing out of old technology into new and how is that going for whatever will succeed the Kyoto?

MR. LIEBERTHAL: No, I don't --

DR. ANTHOLIS: I'm not sure I understood the question.

MR. LIEBERTHAL: Yes, I'm afraid --

DR. ANTHOLIS: Maybe that I didn't hear it, but the transaction. I heard something about transaction costs and I'm not sure --

MR. VALDERRAMA: The difference in the transaction costs between what's foreseen for China and for the U.N. system as it stands, which is already high anyway.

DR. QI: Well, I'm not sure if I understand the question correctly, but what I can say, this transaction costs under the TRS is pretty much. That's why we keep saying this may be an effective system, but when you look at the cost effectiveness, this may not be that great in terms of efficiency.

MR. LIEBERTHAL: Okay, back there. Yes.

MR. McCRAY: Hello, Chris McCray (phonetic) friend of the --

MR. LIEBERTHAL: I'm sorry; I don't think that microphone is working. We're having a very hard time hearing the question up here. That's it, okay.

MR. McCRAY: Chris McCray, friend of the Ashden Awards, which is the -- can you hear me or not?

MR. LIEBERTHAL: I'm sorry; can you speak very loudly, sir? The mike is not carrying up here for some reason.

MR. McCRAY: Okay, Chris McCray, friend of the Ashden Awards, which is a micro entity, awards prizes around the world, sponsored by Prince Charles, amongst others.

My question is: Do you have a feeling this is the right time sort of politically and at the top of China to actually celebrate some of the bottom-up movements on things like solar? I think particularly that's Grameen Bank which has just installed its millionth unit of solar and it's doubling every 18 months. Equally, people who started back in 1996 with Grameen Bank have another system which is called micro energy credits, which basically enables local auditors to combine together so as to give credit which then can be amassed on the carbon exchanges because most of the carbon exchanges are not going to sort of give any credits one by one, but if you get 50,000 in the community all doing something at the same time, you can then -- so, it's working on, if you like, the ability of the electronic world and the local world to be able to audit what's happening and then get a credit up at the mass segregate level.

MR. LIEBERTHAL: So, I'm sorry, the question is whether the Chinese government is what?

MR. McCRAY: Is this the sort of right time perhaps for the Chinese government to actually want some of these bottom-up --

MR. LIEBERTHAL: Oh, okay, so --

MR. McCRAY: Of which those were two examples.

MR. LIEBERTHAL: Yes.

MR. McCRAY: So, it'd be yes --

MR. LIEBERTHAL: Very good, thank you.

DR. QI: I think it is time to work on these opportunities for connecting those smaller -- for encouraging these smaller-scale, bottom-up initiatives and programs.

For instance, in just recent months, in responding the international market that's not doing well for solar PV than other national programs for helping to

connect this local level distributed smaller scale to the big, great. There are more kind of policy to be expected. So, I see it is a time to be optimistic for that particular area, right?

MR. LIEBERTHAL: Thank you.

Sir, over here, if we can get a mike up there. Thanks.

MR. BARNES: Donald Barnes from Guangxi University.

I'd like to follow-up in a comment you made and ask, address it to both of you, as you look at the United States in terms of the reticence of certain fractions of our population to exceed to international norms or treaties or whatever, can we get past that or do we get past that? And in China, how does this idea of noninterference with the internal affairs of other countries, which China has articulated as a policy, how does that play out in terms of international treaties on energy?

DR. ANTHOLIS: I'm not sure if the United States, at least in lifetime, will get past the idea that an international organization should tell it what to do in constitutional terms as opposed to technical terms.

So, let me unpack that a little bit. As a political system, we take sovereignty very seriously in terms of setting our own policy agenda, but we've also come to learn through a number of international agreements like the World Trade Organization that if we help design a system that basically serves our national interests, we're willing to live by the rules of that system.

So, I think in the design of a global climate system, we need to figure out how domestically we're going to take this on as a priority and I think we're on our way to doing that. I tend to be an optimist about that. If you look at where we are 15 years later after the lead in to Kyoto, we now have major American industries and major American labor unions recognizing that climate change is an issue and that we should do something about it. How we actually get into the details of that, we're still not there, but

when you've got Ford Motor Company and General Electric both agreeing that there is something called climate change and that we should do something about it, that's real progress. ExxonMobil now acknowledges that humans are probably contributing to climate change and that carbon emissions have to be reduced. That's enormous progress and I think once we design a system in the United States, we're going to design it with market principles in mind and we're going to think the international system should be patterned on that.

Is that the best way to govern the planet? I don't know. It's the way that we have for our lifetime and if we're going to -- Strobe wrote in this little book that we did together, it's his line and I always give him credit for it, "We're the first generation to know about climate change, we're the last generation that has a change to do something about it," and that's pretty important. So, we have to act with what we can do in this generation.

MR. LIEBERTHAL: Qi?

DR. QI: Well, we hear a lot of this kind of rhetoric on noninterference for sure. On the other hand, when we look at what happened, you see China actually has not missed any major international conventions related to environment, climate change, sustainable development. Be it Kyoto protocol, UNFCCC, the denitrification, biodiversity, or (inaudible 1:19:58). So, we certainly hear a lot of rhetoric, but when it comes to the action, I think it's a little different. It's a very important concern, but people are trying to work out these issues, right?

MR. LIEBERTHAL: Thank you. We have a lot of hands left and only four minutes left. So, I'm going to take three questions and then the panelists will respond to what they wish. And I really stress it's got to be a one-minute question at most from each of you.

Let's go back there. One, two, three. Okay. Yes.

SPEAKER: Thank you. My name is Ijun (phonetic) from the University of Maryland School of Public Policy.

My question is in terms of the bottom-up approach. So, do both of you think that the bottom-up approach refers to the same meanings in the United States and China because for the United States, the state government, really, it doesn't have the obligation to meet the national goals and they don't have the legal national goals at all, but the Chinese Central Government, they have the national goals and it seems for me that the local government is just a response to the central government's call. So, do the local governments really have the authority to make their own plans? And, yes, that's the question. Thank you.

MR. LIEBERTHAL: Thank you.

Second one, yes, sir.

MR. MORROW: My name is Dan Morrow. I teach about climate change policy at George Washington University.

And a question for Bill. If in say two years' time there is serious climate change legislation that come before the U.S. Congress to enact a cap-and-trade program, clearly, one of the issues will be well, is China doing enough? Do you think you could go before a congressional committee and make a convincing case that China is doing enough?

MR. LIEBERTHAL: Thank you, and there was a third hand over here. Yes?

Ella, right up here. Ella, forward toward me on your right. Thank you. Right there, yes. Thank you.

MR. HULTMAN: Hi, Nate Hultman, University of Maryland and Brookings.

We've skirted around the issue of international discussions a couple of times. There's a process in place right now to negotiate a treaty or other legal outcome by 2015 out of Durbin, and the question is: Could the U.S. or China conceive of doing anything more than what it is already inscribed in the Copenhagen and Cancun agreements under the international regime?

MR. LIEBERTHAL: Okay, good. Thank you.

You got the three questions. Why don't each of you respond as you wish? Since Qi Ye began, Bill, why don't you be first?

DR. ANTHOLIS: Sure. So, the first question is: Is local, national the same in China as in the U.S.? No, it's not. I think you've actually framed it really quite well, which is in the United States, as I said, President Obama has this national target that he's laid out and committed to and none of the states are obligated because of our system. In that sense, we are federal in a way that China is not. None of our states are obligated to help meet that. And many states, if they wanted to, could explicitly try to prevent us from meeting that and some of them I don't think they openly say that they're out there to prevent it, but remember, it was a democratic senator that was elected to the Senate by putting a copy of the Cap-and-Trade Bill on a tree and firing a rifle at it in a television ad. And remember, our Senate is the way that the states are represented at the national level. And, so, when you have people from the president's own party saying that that's their view of the president's policy, it'll give you a sense of how hard it is to get things done at the local level.

That said, at the local level, you do see in many important states in the country governors seeing it as in their political interest to not just say they want to do something about climate change, but actually do something about climate change. And the most noteworthy thing in California was that even in a hard economic environment,

not just the government, but the people in the state voted down a statewide referendum that would have undermined the preexisting law. So, what you're seeing is true bottom-up in the United States and some states. It's not just the local governments, but the people engaging, and that's obviously not something -- political reform has not gone so far in China to allow that kind of truly bottom-up support for these things, although one takeaway that I had from my experience, different in different parts of China, but the level of education and the level of public awareness of the issues, thanks in part I think to the consensus among the leadership in China that this is an important issue is very real.

On that, is China doing enough? I mean, I would start in my congressional testimony by laying out the provinces in China that are taking on these actions, the states in the United States are taking on these actions, and then, frankly, I would talk about both greater public awareness and the fact that there's actually a committed national leadership to the issue. But the devil's in the details of implementation.

And then the next thing I would do is pick up the phone and call Qi Ye because, frankly, he is at the top of the authorities in China for understanding where implementation happens and doesn't happen and that's critical just like it's going to be critical in the United States.

In Europe, which European states are actually meeting their targets and which isn't is a really important question particularly as it moves further east. Several eastern European countries, states, whatever you want to call them, have prime ministers who don't believe climate change is real. And, so, in Europe, that state level implementation I think is critical and Americans should be asking Europeans the same question. I'm Greek American so I can say this. We've seen in the financial crisis that

what states in Europe say and what states in Europe do are often very different. And this is a critical thing there, as well.

MR. LIEBERTHAL: Well, thank you, the --

DR. ANTHOLIS: I didn't answer Nate's question, but maybe you can get that one.

DR. QI: Yes. I think there are certain differences when people are talking about the term "bottom-up." Certainly in China, we see local government respond to the central government every occasion. Sometimes it responds in a positive way, sometimes they respond in a gaining way.

When it comes to this low-carbon development energy savings, renewable energy, we actually see there are lots of local initiatives that they do take a bottom-up approach. I mentioned solar PV. Also, the low-carbon pilots. As I said, the low-carbon pilots, this local government, they were not required. In fact, they have to compete in order to get into that program. So, they have to take a lot of local initiatives to -- I see that as a very, very positive, very encouraging sign, would like to see more of them doing this.

China is doing enough? I guess that is a great question, but the answer of that is really there is a subjective judgment whether it's enough. This actually relates to Nate's question. If indeed we see by 2015 the negotiation can reach the global agreement, I think that itself is what I see they already do more than what we can expect from Copenhagen. On the other hand, I think U.S. and China, we all need to do more as countries and also individuals, we need to do more to meet these climate change challenges. I think there is probably never to be enough when you look at the massive scale and scope of this challenge.

MR. LIEBERTHAL: Right. Thank you very much.

My sense is it is very likely to be the case that the biggest changes in policy are going to occur because on the ground changes in climate are occurring, that local governments have to respond to, local government is where the rubber hits the road. Higher levels can be more abstract, right? My guess is we're going to get local adaptation, local initiatives to then eventually coalesce into national policy to moving national policies and international agreements. But we'll have to see.

In any case, this is an enormously complex, tremendously important topic. I really am grateful to both speakers for taking the time to give us their wisdom today and appreciate all of you coming and I hope you'll join me in thanking our two speakers. (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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