

CARNEGIE ENDOWMENT FOR INTERNATIONAL PEACE

“BREAKING THE SUICIDE PACT”

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JESSICA MATHEWS: I'm Jessica Mathews, president of the Carnegie Endowment. It's a great pleasure to welcome you here today for a discussion of what I think everybody in this room recognizes to be certainly one of the most important issues on the international agenda, and which we feel to be one of the most exciting and important projects that we're undertaking at Carnegie, among all our five international offices.

Being the president of a think tank, one learns very quickly this 90 percent, I think, how good you are at finding the top talent. And occasionally you get really lucky. I've gotten, we've gotten really lucky in the last year at being able to recruit first Bill Chandler to head our energy and climate work here in Washington, and then much more recently Dr. Zhou Dadi to head the energy and climate work in Beijing. These two gentlemen have a long career in these fields. I want to tell you a bit about it before I turn it over to them.

But before I do that, let me just say why I personally – and I have worked on climate and energy issues since the mid-'70s, I'm sorry to say, in the United States, and on climate since the early '80s – why I think this is both so important and so timely. It's pretty easy to say China and the United States are together responsible for about 40 percent of global carbon emissions, and they politically hold the secret, I believe, hold the key for the world to move forward to an effective post-Kyoto world order. I think this is the most important channel. Bill in his policy brief called the current stalemate between the United States and China – you go first, no, you go first, we're not going to act until you do, we won't act until you do – a mutual suicide pact, and that's certainly what it could be, both for ourselves and for the planet.

On the other hand, we also think that this is a moment of real opportunity. We all know that a willingness in the United States to contemplate serious action has changed dramatically in the last two years, really extraordinarily so for anybody who's been around it for a long time, particularly in business, among the public, and at the state level, where in all three sectors views have changed, shifted dramatically, and where states are setting extraordinarily ambitious emissions targets, ones that are far too little appreciated here in Washington.

China at the same time is for the first time beginning to be willing to discuss limiting its own emissions and setting specific objectives. This was one of the most important, I think, developments at the recent Bali meeting. So this seems both the critical channel and a critical moment, and I think the critical people, for heading an effort to build cooperation between China and the United States on these issues, for proposing practical, non-treaty-based approaches that the two governments might pursue; non-treaty-based but yet domestically enforceable. For opening maybe a path towards – for the broader international community for moving forward on post-Kyoto agreements. We don't view this instead of a U.N. deal but rather a way towards it, a critical way towards it.

Let me, before I turn it over to them, briefly introduce them. Bill Chandler, who's going to speak first, has been a leading expert on energy and climate in the United States for 35 years. He is both a thinker and a doer, the author of numerous books in this field, and the creator of energy efficiency centers in Russia and Eastern Europe and China, for which he raised more than \$1 billion financing. Immediately before coming to Carnegie he was president of Transition Energy and cofounder of DEED China, private companies with

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energy efficiency investments in China. So he has studied this field, experienced it, learned it at the level of analysis and at the level of investing and doing and making things happen on the ground.

He was founder and former director of Advanced International Studies at the Joint Global Change Research Institute at the Tell National Lab, and has been an adjunct professor at Johns Hopkins in international energy and environment. He served on working group 3, was a lead author for working group 3 of IPCC International panel on climate change, and has served on the president's council of science advisors, advisor in science and technology.

Dr. Zhou Dadi is formerly director general of the Energy Research Institute of the NDRC, the National Development and Reform Commission of China. He spent a great part of his career there as a research professor, and as I say, ultimately as director general, focusing on energy economics and energy systems analysis. He has worked on China's energy import and export reform policies, its energy price reform, energy efficiency policy, and climate change. He remains very active in policy setting in government. He serves as a member of the expert committee of the energy field, the 863 program in China. He, like Bill, has been a lead author on working group 3 assessments and head of the Chinese team on several occasions, as well as a member of the science and technical advisory board of the global environmental facility.

So their two careers have been tightly joined for many years in China, and yet they obviously bring to this discussion two different viewpoints. Bill will speak first, and then Dadi will bring his viewpoint from his perspective, and then we will open this to a broader discussion involving all of you.

BILL CHANDLER: Thank you. Thank you for coming out in the rain to join us today. This title, "Breaking the Suicide Pact," reminds us that language matters in international relations. When we translated it into Chinese for the first draft, I think the title came out literally something like "demolishing the kill-yourself peace treaty." (Laughter.) So we changed that a bit in the Chinese translation.

Jessica promised not to say how many decades we've been working together on these issues. Zhou Dadi and I have been working together for two decades on energy and climate in China, and it strikes me that even though we've seen these issues wax and wane over the many years, this time all the interest in climate and doing something about it may actually be sustainable. We may actually be taking the issue seriously enough to take action.

I think that's because of two things. One, people can actually see the climate change now. They can see the reductions in the snow packs, the melting of the glaciers, the loss of the Arctic ice cap, which is disappearing at a rate of about 7 percent per decade. So there's more of a consensus now to take action.

Secondly, even for those of us who have been working for 30, 40 years on these issues, it seems worse than we thought. And by that I mean that technically speaking the climate response is greater than we expected, which is to say that the rate of warming, the rate of change in the climate in response to the amount of emissions we're putting into the

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atmosphere seems to be above the median range that we always picked in the IPCC to report these issues. So the amount of time that we have and the seriousness of the issue are pressing us now to take quicker action.

So how do we think about post-Kyoto leadership? I personally think there are three things that have to be included as we talk about a post-Kyoto agreement. The first is that the goals obviously have to be much stronger. Second, the implementation, the measures for deploying technologies and getting emissions reduction measures into place have to work more effectively, more effectively than the clean development mechanism, which has had a lot of problems.

And third, the point of this meeting today, as Jessica mentioned, the U.S. and China really have to play because with 40 percent of the world's emissions, we just really have no chance, no prospect of avoiding the more serious impacts of climate change unless these two countries come together. And we do tend to use each other as an excuse to avoid action. The United States points to China, the very rapid rate of economic growth, 10 percent per year, and says if they do nothing about the rate of growth of emissions related to their economy then nothing we do will make a difference.

China, to be fair, looks at us and says, well, you have put over history four times as much emissions into the atmosphere as we have, and your per capita levels are now four to five times higher than ours. You created this problem, you do something about it. We have a narrow window of opportunity in which we can cut through that, I think, precipitated by two things.

First, on the U.S. side, not well understood in China, I think, almost half of our states have taken the step of setting goals, very ambitious goals, for reducing greenhouse gas emissions, and in some cases implementing enforceable measures to achieve those goals. And on the Chinese side, something that's especially not understood, I think, is the extent to which China does not take the issue of climate seriously. We hear top leadership expressing concern, and even alarm for this issue. The vice minister of the NDRC, Xie Zhenua, in Bali talking in serious terms about cooperation to reduce the worst risks of climate change. And at the same time, very strong policies domestically to reduce the energy intensity of the Chinese economy. Dadi will talk more about this, but this is not well understood, the extent to which China is actually taking actions that do reduce the rate of growth of greenhouse gas emissions.

So what to do? What will work? In our view, in my view anyway, the top priority has to be on the demand side. It's interesting to me how the supply-side options have captured the public imagination because any time any analysis that you can find on measures for reducing greenhouse gas emissions, the demand-side options, and I mean energy conservation in buildings and industry and transportation, are all larger and cheaper and faster than any of the supply-side options, whether you're considering ethanol for cars or nuclear power or wind power or carbon-capture and storage.

I want to share with you a conclusion from a United Nations Foundation study that we participated in last year, which concluded that every imaginable energy supply alternative will come too late, be too small, cost too much to make a real difference, unless matched

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with an urgent, full-scale effort to reduce demand for energy. Clearly, if we have any chance of staying below the so-called doubling of pre-industrial concentrations of greenhouse gases below this magic number of 550 parts per million in the atmosphere, we have to do the maximum amount of demand side work that we can, and as quickly as we can.

I think there's some evidence in the literature now that a threshold of 500 parts per million is actually a critical one for acidification of the oceans, damage to the coral reefs, loss of perhaps a third of the species of fish in the ocean, which, in addition to some of the other problems we're seeing with the food supplies now, would greatly compound that problem.

So our mitigation priorities are, number one, energy demand reduction, and second, de-carbonization of power. What can the two countries do? We won't detail them here, but it's clear that it's cost-effective, implementable, practical options for reducing demand in the building sector in this country are available at a level of 30 percent or so by the year 2030. Doubling passenger vehicle fuel economy in both countries is a priority. I would point out, though, that China has a stronger fuel economy standard in place than we do.

To me it's not the availability of the technical options for reducing emissions that is the problem. The problem is the deployment of existing technologies, and the barriers that get in the way of transferring technology, of financing the investments that are needed, and putting them into place. I speak from experience here. After having worked for 20 years on Chinese energy and emissions policies and technology options, we found that not only were the usual barriers there in getting things into place and trying to build a business to make clean energy in China, but that the barriers were different from and greater than we expected.

I'm talking about unexpected barriers like industrial policy, which reduces the availability of financing for big industry. It's a priority for the Chinese government to reduce the growth of the large industrial sectors like cement and steel and chemicals, and so the way the industrial policy is implemented is to reduce the availability of financing and loans for those sectors. That has the unintended consequence of reducing the availability of financing for clean energy investments. It's actually in the newly built, more efficient modern industrial facilities that you would want to have the production take place, and this policy has a contrary effect from what we'd like to see.

In getting investment into place, foreign-exchange controls are still very difficult to overcome, even though in China you have an ocean of foreign investment reserves. And what I mean by that is, it's difficult to get approval to start a new company. You have to stipulate the amount of investment you're going to make. If you don't make that investment within a few months, you can get fined for that. And then unless the conditions are precisely right, it's difficult to get the money out of the country. I emphasize financing because if we're talking about technology transfer, getting financing into place for these technologies is really on the critical path.

And the last barrier I would mention is confiscatory tax policy. The clean development mechanism has been a nice way of attracting attention to these kinds of investments, but the amount of money made available through the clean development mechanism under the Kyoto Protocol is really only about a third, maybe 20 percent of the

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amount that actually gets siphoned off by very high taxes on technology deployment. And in particular the value added tax.

So what are we proposing to do to overcome these barriers? One key priority is in implementation through the provincial governments. The Chinese central government has very strong, very positive measures for producing, encouraging investment and energy efficiency in industry, and in renewable energy. These policies are delegated for implementation to the provincial level. The provincial leaders don't have the capability, the money, the regulatory authority, or the tax authority to provide the incentives and write the standards and implement the policies that they need in order to meet the kinds of objectives that we're talking about.

So one of our priorities here is to build teams and provide resources for the provincial leaders to achieve the goals that are already on the books in China. The framework that we're discussing – not discussing – Our framework for addressing this set of issues is to, number one, set objectives for what we can achieve on both sides. And I want to be careful here, coming back to my first comment about language. We're not talking about targets. We're not talking about an enforceable cap on emissions. We're talking about goals that we would jointly set to determine what it is we would like to achieve, the extent of reductions that we would like to achieve, because if you don't know where you're going, it doesn't matter much how you get there.

So working together in a bilateral way to set objectives, and then to agree on enforceable measures, a package of financial, technical, research and development and information policies that would help on both sides the two countries to achieve these goals. Here at Carnegie we realize that this effort is a lot bigger than we are. Our role in facilitating this will be organized around the process of creating teams to work with provinces, for example, providing the analytical tools necessary for measuring the progress and determining the level of achievement of the goals. And facilitating communications and exchanges among the thought leaders. I'm very pleased that Kofi Annan has agreed to help us in this regard as a kind of honest broker. Thanks.

(Applause.)

ZHOU DADI: I'm very pleased to have a chance to have a speech here, as a new member of the Carnegie to work on the energy and environment issues. The main purpose is, I think, two aspects. One is to help to promote dialogue between the high-level people of these two countries to discuss and find a solution of how to deal with the kind of change in the coming future.

And the second, I think, target is to really help to move the natural resources, including the – (inaudible) – the experiences, and even the financing support and technology support into China to help China to really do the mitigation. Of course the target is very ambitious because we have only, as a start point, very few people. But of course we have so many friends here, so I think we can work together in the future to make the stream become a torrent.

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Personally I'd like to have a little bit more introduction of myself. Right now I still hold the – I'm the vice chair of the advisory group to the state council, and I am the chair for the sub-team of the energy, economics in the advisory group. We provide advice to the state council and the energy leading team chaired by the premier Wen Jiabao. And personally I'm one of the 13 scientists on the so-called national climate change expert team, to help to develop the scientific basis and policy suggestion before the government. So I am involved closely with the energy and climate change policy process.

When I say that, because to some extent it gives me a chance to really understand what happens and how the Chinese decision-makers and the common people and the scientific community are thinking about the issues, how they think about climate change, how they recognize that, and what's the possible way to really make the policy happen. So I think it can help us in the future to make mutual understanding between the two countries' policymakers and the so-called scientific community.

And we come back to what we face, the challenge. First I think we'd like to start from the global point of view. I think that the whole world faces a challenge in terms of combating climate change. From IPCC there's the first assessment report, and many scientists suggest that a 2 to 3 degree temperature increase is a ceiling. If the temperature will increase more than 3 degrees, a lot of disasters will happen. That means the total greenhouse gas emission will have to be controlled by about, for example, the concentration, carbon concentration in the atmosphere should be about 450 ppm. Then that means that by 2050 the global carbon emission has to be cut down by about half.

How to do that? That means all of the developed countries as total need to cut down about 60 to 80 percent of their current, or even by the European Union's opinion from the 1990s level, not from the current level because the current level is already higher than that. So it's a big challenge for all the countries, including the United States. Not easy for anyone. And of course, on the other hand for the developing countries they have to make some peak period between now and 2050. And even by 2050, all the developing countries as a total have to decrease their emissions by maybe 20, maybe 30 percent from current levels. So this is a big challenge as well. So both sides face big challenge.

From what we have been and what happens up to now, we found it's not easy to do that. For example, although there is the Kyoto Protocol and a lot of countries make some efforts, up to now the significant decrease not happening. Some countries did well, better than others, but as total, the trends are not enough. And of course, as a developing country there are still follow the old industrialization approach, so their emissions, if their economics good, the emissions grows bigger. That's what happened in China. That means we have to do more than up to now. Otherwise, the trend cannot be changed.

But what means the – (inaudible) – treaty responsibilities? I think it's based on the difference. For example, take the United States and China as example; we have different jumping-off points. Per capita carbon emissions, China is less than one-fourth of that in United States. Per capita consumption of energy in the United States is about 8 times all equivalent, if you combine all energy. And in China it's only 1.3. So it's about one-seventh or one-sixth from China to the United States. And GDP, you have about \$40,000 per person, and China has only about \$2,500. It's quite different.

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And especially if you look at the energy consumption sector, structure of the economy, you can find the service sector in United States contributes about 70 percent of your GDP, but China, industrial contribute about half. And energy consumption, your industry only consumes about 30 percent, but in China the industry consumes about 70 percent. So all the energy goes to manufacturing.

Why it happened? Because of course domestically we are in the so-called industrializing of the nation process. But globally it has some kind of results of globalization. For example, in the last year the total export value of China is already around 1,000 trillion U.S. dollars in 2006, and the value is almost the same of the so-called domestic-return value. That means half of the end use commodities were exported. And why it happened? Because after WTO we have a lot of foreign investment – (inaudible). So in this case more than 60 percent of the exporting is made by the foreign investment companies because they make money there. And more than 50 percent of the exporting is from the company, from the plant that uses the so-called imposing free stock and processing in China. So that leads to some experts calculated about 20 percent to 40 percent of the energy for the exporting products.

So it's globalization, you know. So anyway, so the problem, if we try to change the structure of the industry, then we have to find somewhere to produce so much of the goods. For example, last year, you said in 2006, China produced about 11 billion shoes and exports 7.8 billion pair of shoes. So it is chemical products. In this case, you can find a way how to solve that. That means the efficiency and the energy structure is very important, not only for the developed country but also for the developing country, as well. So I have to solve the problem globally.

I'm sorry for the time. Let me review some efforts from China on the climate change. I think that we understand China should attach importance to the climate change because we are the biggest developing country, not only by population and now is by economy scale. And we have high energy consumption and faster increase of the consumption. And we emit more, much more carbon than other developing countries. And now we are almost at the same level as United States emissions. So bigger country, although you are a developing country, you need to think about your responsibility, as well. So the Chinese government has started to think about that and take some measures to deal with the climate change issues.

And it permeates as one of the priorities for the sustainable development of Chinese industrialization and of an Asian approach. What happened is we upgraded the state's leading team on climate change, now chaired by Premier Wen – right before, it was by some ministers. So it becomes highest priority issue, chaired by the premier. And we developed and promulgated the national climate change program and developed in the practice low-carbon development approach as new policy. And that promulgated target by 2010 is to combine with that with our sustainable development policy. First year is to reduce. We have a target to control the greenhouse gas emission.

One of the most important one is to have 20 percent energy intensity decrease from 2006 to 2010. In the five years, we have to have average annual improve rate of energy

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efficiency by 4.4 percent in general – on average. But you know, the whole world in the last 30 years, improvement rates for the efficiency is only 1.2 for the whole world. So we need to achieve about 4.4. That is very ambitious target. And we will increase, develop the nuclear – increase the renewable by 2010, as a renewable – we will occupy the energy supply share by 10 percent. And we will cover of the coal by amassing use for as much as 10 billion cubic meters, as we will have a lot of mitigation effects. And we will increase forest coverage to achieve about 50 million tons of carbon – (inaudible) – increase. So it is already declared as a national target for the five years.

But, of course, we will have not yet – have enough time and scientific support to develop the longer-term targets at this time. But I think if we can achieve the current target by 2010, that means we can do something more. And we continue to deal with the new targets. In our sustainable energy policy of China, we put the energy concentration first and encourage it to develop all the alternatives with the low-carbon energy supply sources: nuclear, hydropower, natural gas, and wind power, solar power, and other renewables. For example, in energy conservation – (inaudible) – we revised the energy conservation law of China. And this law – if you have a chance to read it, we have the English version of that – it is very specific and it details regulation for energy conservation. The law affirms resources conservation as basic national policy and the putting energy conservation first as national energy strategy.

The law says that the central and the local government must develop the long-term annual energy conservation plans. And the energy conservation achievement should become performance indicators of all the levels of issues in the central and the local governments. It is some part of that law. What happened in the energy conservation in China? As I mentioned, we have the target of the 20 percent improvement of the efficiency – it was in five years – how to improve the – (inaudible). The central governments make agreements with the older provincial governments.

Say each province has – you have 20 percent, you have 25 percent, you have 15 percent according their current situation. So the targets are already allocated to local places. And the province makes a contract with all the counties, with all the cities with the specific targets. And now we will have a review process – already happened.

I am one of the experts to join with the so-called inspection team to go to the province to check if you have performance. We have a long list of the checking. (Chuckles.) Say, you have meetings, you have improved your leadership, you have the – (inaudible) – system established. How much you achieved if you achieve your annual yearly target, you are not – you are under the goal. If you achieved, you have to check others, not only for the proponents. So it has already happened.

And the results will be declared next month. Then every province will say, okay, this year I achieved the targets. Some provinces say, well, no, there will be complaint by their people. (Chuckles.) So it becomes a very important indicator for our officials. And the Chinese government, the central government, signed agreement with – (inaudible) – the biggest and are consuming enterprises to have specific targets for each of them – (inaudible). They have to complete that in these five years. And the local governments – as I – about

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100,000 enterprises as it did consumers for the specific energy conservation plan. That is what happened already.

And it is already changed some trends. As you know, in the last five years, especially before 2006, we have a very high growth rate, as I mentioned, because of the WTO and the global effects. (Chuckles.) From the 2006, the efficiency intensity of energy consumption of China started to decrease. And the last year, we achieved about a 3.3 percent improvement. And this year, the target is about six because we have to achieve that 20 percent within five years, so that this year, next year, and the year after next year is 6 percent per year. So the government's policy, taxation, the guideline for industrial investment, land use – plan to push that. But of course, we have a lot of things to do in the future.

For example, last year, the per kilowatt hours electricity generated by the thermo-power decreased about –I think this number may be not precise – eight or 10 grams per kilowatt hours. It is about 3 percent improved in the electricity sectors. So you can find it is a big jump.

And at the same time, we decommissioned about 14.5 gigawatts, the low-level power plants to achieve that target, emit less. And more than 15 million tons of small-cement production – (inaudible) – were decommissioned within the two years. So that is a big job.

You have to look at the end prices. And the government gives subsidies because they came to be really sometimes explode to destroy it. Otherwise sometimes the local enterprises will resume their production. Now it just explosive. And the government gives subsidies.

And the development of the renewable is a necessary important mitigation measures. And we have very ambitious plan to achieve that, as well. For example, the target is by 2020, 15 percent of primary energy will come from the renewables. We will build another 150 gigawatts hydropower by 2020, and 250 gigawatts hydropower by 2030.

And China will become very soon the first of wind power countries. Last year, we built up four gigawatts wind power, 4.5 gigawatts. And this year, we will achieve about 10 gigawatts as total. And by 2010, we will have about 20 gigawatts of wind power. So that means about 2020, we will have about 60 gigawatts of wind power. Our original plan is 30 gigawatts, but now the people think we can really double that.

And for example, we are doing a lot of things on the clean coal technology, as well, 380 CCS demonstration project is under construction in different places of China. I know that the government here give up the so-called FutureGen project. But now in China, we really do that. (Inaudible) – and the CCS. And they already make it as a program. And large-scale coal – (inaudible) – projects under construction in Mongol and in Hunan, big one is 1 million tons per year is a product of liquids from coal. That is to prepare us in the future for CCS and hydrogen.

But, of course, nuclear, another example. Our original plan is to have about 40 gigawatts of nuclear by 2020. And right now the government has started to speed up. And we think, although the time is very limited because the lead time for nuclear need about six

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years altogether and construction time at least five years. So we cannot really do it too quick, but at least, I think the original 40-gigawatts target will be increasing to 60. So that is really speed up.

But it is not enough because it didn't really change the trends that we increase energy supply still a lot. So we need to do more. In this case, I think that we need to explore – what means – what course – low-carbon economy and new industrialization efforts. This last carbon emission to develop the country of China. We have to design and then practice new type of consumption and the production. Yet everyone still use big cars, SUV, or '20s when China open the door and look at the outside. And we say, oh, America is a model. Big house, big cars, good life. And we tried to follow that. But now we have found that you have to change. We need change, as well. So we cannot really do the same. So we need to explore new type of development.

So it is a challenge. We need to develop more clear targets of carbon emission control, not only efficiency, but maybe we have to explore. It is not decided because it needs scientific and technology support to say the target is doable. So we need to develop what we can do by 2013.

Maybe when is the so-called peak time for the energy consumption on China. No one can really say right now, you know. But we have to try to find if there is kind of a peak as soon as possible or earlier than what is expected before or with lower level than baseline because it will peak early and peak lower than we can mitigate faster and quicker. But no one right now – I don't think we will have enough scientific and technology support to say, China, you can increase only 20 percent by 2020 based on political – (chuckles) – it is not a really scientific way. So we need to work on that. And I think we need to reorient the market because you have a very global solution. We need to provide new signals for develop the low-carbon economy.

And of course, finally and most importantly, we need technology innovation, and there is an urgent need because current technology could not be enough. So we need to prepare, not for only for 2010; we will prepare for 2020, 2030, 2040, 2050. We have to start right now. I think why I told us here because I think America is very important leading force in the world. Economically, you are big as well. Technically, you have very strong research power. If you work on this side, this direction, you can have a big contribution. But if you say, okay, we stay on, as we always stay on the old style, then the world loses it chance. Thank you very much.

(Applause.)

MS. MATHEWS: Okay, let's turn over to you. There are microphones. Please raise your hand and do introduce yourself. Harry. Right behind –

Q: Thank you very much. I'm Harry Harding of George Washington University. I have a question for Zhou Dadi. As expected, the question of climate change came up during the recent summit between Hu Jintao and Prime Minister Fukuda in Japan. The joint statement said that China thinks highly of Japan's idea of setting sector-specific emissions targets. My question is does that simply mean that China thinks that is a good idea for Japan

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and is glad that Japan is doing it? Or is China actively setting emissions targets by sector for itself, as well?

MR. DADI: I am sorry. I was in the United States from this week. I haven't had a chance to really get the details of that agreement between China and Japan, but a sectoral measure helping discuss it for some time. I think the Chinese government would not oppose or refuse any measures that really help including sectoral solutions. But personally, I think sectoral solution need a lot of work to do. I think we can work on some sectors to make, especially the so-called carbon intensive sector to do something on that. That is correct. But how to do that, we have to study. If you use general thinking about when we get a high-level standards, for example, each product of the (steel?), you could submit only how much. Then, that leads to maybe only one country will have the technology all the others will buy from. (Chuckles.)

That is very difficult to use such a thing. Like a car, you see, if you have only hybrid can be run; then maybe two years ago at least, only Japan had a hybrid car. So every country will buy car from them or buy the license or destroy your industry right now. So it is a big challenge how to really do the sectoral way. So I think we need to work on that. We need a lot of technical analysis, economic analysis, and how to include – (inaudible) – measures, and how to really help each country can really improve significantly on the carbon-intensive sectors. But I think the direction is good, but it is too early to say what specific measures we can use.

MS. MATHEWS: I think this question of how you align steps in different sectors in two economies that have enormous differences in where the big energy savings might be is one of the most interesting things that we want to explore. So maybe I'd ask Bill to say a bit more?

MR. CHANDLER: I just wanted to underline Dadi's comments that the question of how you do it is really the central one. I participated in an OECD ministerial in Paris last week, in which all the environment ministers participating were wondering how to make the Japanese proposal to work. And the international agency was trying to provide some technical assistance to understand it. But I think the biggest barrier to that proposal is not political, but it is technical, how to make it work.

Q: Hello. John Lyman from the Atlantic Council. Have you given, Zhou Dadi again – have you given any thoughts to – you made a comment on clean development mechanism has flaws in it, and we all know that. Have you given any thoughts to the kinds of changes that you would like to see in the clean development mechanism?

MR. DADI: This is one of the measures to move resources to help the developing country to do some more on the mitigation. But up to now, compared with real needs, the CDM mechanism is a little bit too slow. And as I know, the answer, for example, the Chinese projects on the pipeline will contribute more than 60 percent of the total CER of the CDM because we have a bigger scale. And the Chinese government really promotes and gives a training cost to all the provinces to say what means this CDM and how can you process that? But the process is very long, you know. Many projects cannot wait for

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another two years and then wait for the CER – (chuckles, inaudible). So I think we need to improve that.

And another problem for CDM – CDM only accounts how much so-called emission reduction and the price. So they don't care if there is new technology or old technology. And they come into the most so-called cheapest measures. But that's all the – (inaudible) – and no one want to touch it. So in this case, it is not a long-term solution. I think we need to think about how to really have to move the mainstream, but not only from very specific small projects. Thank you. But it helps.

MR. CHANDLER: If I can add a point. Reducing the uncertainty for the developers would be the top priority, I think, because the regulatory burden on the developers to prove additionality that the projects they invest in and develop would not have happened anyway is a difficult one, a very expensive one. The rules are changed regularly, every two or three months by the U.N. executive board. It is very difficult for people to allocate investment dollars or RMB into those kinds of projects unless there is more certainty that you can actually benefit from the incentive once you have done the job.

MS. MATHEWS: Okay, in the back here. Actually you know what I want to do just before you start. I want to take say, two or three questions because I see so many. And so if the two of you can keep notes, we will take two or three and then address them. Please go ahead.

Q: Okay, I am Helen Raffel from Resources for the Future. And Mr. Chandler, I guess I am aiming this primarily at you, you spoke at the beginning of the necessity to work on the demand side more than supply side. And yet, most of the talk seems, to me, to have been on the supply side. I wonder if you have given any thought, any suggestions about how to make the demand for carbon products get reduced.

MS. MATHEWS: Hold. Who would like to – I just saw a whole bunch of hands. Yes.

Q: Bill Nell with the Aspen Institute. This relates to that question. Connected to the subsidy of fuel cost in China, it is my understanding that the price of gasoline in China is about half what it is in the United States. And we all know that the cost of gas in the United States is far less than it is in Europe, and how does that relate to consumption?

MS. MATHEWS: Anybody else? Yes.

Q: Yeah, I have a question. I'm Eric Weynand. My turn? I'm Eric Weynand. I'm graduating from SAIS in May with an international economics degree. My question is your comment about China's energy conservation law and its specificity seemed to contradict what Mr. Chandler said about the fact that these responsibilities are allocated to the provincial governments. And then they don't have the capacity to implement the fiscal and the tax incentives to motivate the type of investments, especially in energy efficiency. So is there any effort within the Chinese government, between the state council, the NDRC, and the Ministry of Finance to sort of translate these more broad laws more quickly into fiscal and tax incentives, so that the target, such as a 20 percent reduction in intensity can be met?

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MS. MATHEWS: You'll be the first in the next round, okay?

MR. CHANDLER: The question about demand for carbon-intensive products really is a broader question of what is it we are going to do here. What is the set of measures that we hope to promote, develop, and implement? And I would divide them into several categories, the first one being at the macro level. Removing price subsidies, price controls. There is no larger incentive for energy waste and generating emissions than distortions of price.

In the United States, we might adopt – we will probably adopt a different approach to creating incentives than in China at the macro level. And this would be a cap-and-trade system, which I think is likely to happen within the next two years. It may not be Lieberman-Warner this year. I think there is probably less than a 20 percent chance that that will pass. But I think within the next two years, we will see something like that.

Working still in the macro area, removing these industrial policy barriers, these tax disincentives for investment, which you stand them on their hands, they are incentives for consumption. That package of macro efforts is a top priority. SECA standards – in the transportation and building sectors, clearly standards are the most effective policies. They have to be bolstered by prices. But there is an opportunity for us to work there very closely in putting the most advanced building materials into place, especially during construction of new buildings in China. And corporate average fuel economy standards, even though China has a 35-mile-per-gallon standard that comes into effect (before hours?), I think both approaches are too little, too late, and ratcheting that up is a priority.

In finance, the key measures will be both in terms of packing equity and packing debt finance. There is a very successful program that the International Finance Corporation has implemented, in which they provide simple loan guarantees for industries implementing demand-side measures in these big factories. For a few tens of millions of dollars donated by the Global Environmental Facility and the Finnish government, they turned that into private bank lending of a billion dollars within six to nine months or so. So leveraging money, taking small amounts, providing things like guarantees and turning it into much larger private sector investment is a set of activities that is going to be a priority for us. And finally, all of the R&D measures, especially on carbon capture and storage like Dadi mentioned.

MR. DADI: I fully agree with what Bill says, as a demand side is very important. If we only change our supply structure, we may have not enough – (chuckles) – measures to really supply so much energy only by solar or by wind or by renewables. We are going to have to change our consumption style, and we will cut down some demands, otherwise – we calculate how much, for example, from wind, from solar, from water. And we cannot really fit – (inaudible) – demands are going up. So we have to change that trend first.

Second is about the oil and the oil – especially the refinery products problem. That is just a long story, but it is not so simply to answer because now as China becomes a so-called oil importing country, the Chinese have to – you know, we have a long time so-called energy price reform in the 1980, 1990. And of course the oil price is one of that. And in the

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1980, the oil produced domestically in the Dao Ching (ph) is only about – in the current – is about \$10 per tin, not per barrel. Now we move into almost the internationalized crude oil price in the last century.

And for the refinery, at that time because we have two track oil price, and we tried to become to one track, so go to international price. But at that time, the oil – the gas station is operated by almost only two companies, the CNPC and the Sinopec. So if you ask them to decide the price by themselves, the people would not be happy. (Chuckles.) So to some extent, the price is regulated.

Then, we decided to follow the change of the international oil price. And we found out that after that, it is very difficult because oil price internationally had jumped so frequently, and the government cannot regulate the price of the industry. So every day, we declare a new price. (Chuckles.) So as it becomes administrative, difficult it is to really follow international price. And later on, the price just soared. So the gap becomes higher.

Then when we have already – (inaudible) – a lot on time. But, you know, from last year, the CPI, the consumption price indicator, becomes relatively high. And this first quarter is coming to about 8 percent. So it is very – a lot of concern about the inflation problem. So the government is very reluctant to change the oil price dramatically because, you know, the international oil price from 80 percent. Now it becomes 120. So if you jump in so much, the government's fear, that will push the CPI significantly.

So they are trying to find – but of course, I agree we have to change that. We are changing it as soon as possible. And we need to give the proper signal to the market not to consume in a waste way. So that is correct. But how to do that, we have to try to make a comprehensive solution on the price issues including electricity price. And I think we will have a lot of study on that.

Third one is so-called local capacity. That is true. Although the government has already allocated the target into each province, each cities, but for the local governments the most important thing is to promote economic growth. How much GDP you have and compare. I am here; I got higher GDP. You become – (inaudible) – against lower one. But now they have new indicators and the leader has to learn – (inaudible) – whole system for that, even the inventory. A lot of enterprises, the smaller ones have no inventory of any consumption. So they have to accept the whole system, auditing standards, everything, and the institution arrangement, as well.

So you need the people to take care of what is the energy consumption, what is efficiency, how to calculate what is the potential, what is the technology we need, what can helpful measures including the taxation, the fiscal measures to do that. So we need time. And I think all the provincial and the lower-level governments are learning. So there is a time to help.

MS. MATHEWS: You wanted to add something quickly?

MR. CHANDLER: Just one quick point. While price reform is important, I don't want to give the impression that energy is really cheap in China. The price of coal at the

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border now is up to – spot price is \$120 a ton, up from 30 or 40 a few years ago. And the price of electricity in Guangdong is 10 or 11 cents per kilowatt hour. And compare that with what I pay in my home in Maryland, it is 11 cents per kilowatt hour, up from seven a few years ago. These are not low prices. And even so, there is room there for getting the prices right.

MS. MATHEWS: You have been very patient.

Q: Thank you. Could you talk a little bit about how you think global population growth factors into reducing emissions growth and how that also affects demand for energy?

MS. MATHEWS: We will take a couple and then – yes.

Q: There were two buzzwords, ethanol and methane. Should we reverse course on ethanol, perhaps, this week? And how important is methane compared with carbon?

MS. MATHEWS: Yes?

Q: Hi. Takashi Sadahiro with Yomiuri Shimbun. Question to Professor Zhou. You mentioned the need for developing country to reduce 20, 30 percent by 2050. What do you think is the best way to achieve this? Each developing country should have mandate stipulated on some kind of international agreement or it can be achieved through global scheme like sector approach, or it's still too early to have any obligation for developing country.

MS. MATHEWS: Okay. One more for this round? Yes, right – yes.

Q: Hi, my name is Steven Ni (ph) from TechCorp (ph). Today's discussion, solution or problem on non-treaty basis. But one thing Mr. Chancellor should have over world organizations, would it be helpful – for example, Taiwan; I'm from Taiwan. Taiwan has been getting the shutting up of all environmental office, (Mato?) WEO, Mato of the WHO, or World Health Organization, or WTO, World Trade Organization. How do you think would these be feasible or any helpful? Thank you.

MS. MATHEWS: Thank you. Okay. You want to start?

MR. CHANDLER: Population, this is a very emotional issue so I'll just – there's an E.B. White quote about in a technocracy such as ours, one must go behind the facts. And in this case, I'm going to go behind the facts and stay there, and never come out.

On population, we did a study for the Peace Center a few years ago in which we looked at China's response to climate change. And we found that a variety of measures, including population planning and afforestation and energy efficiency measures, had reduced the annual emissions of CO₂ – measured in carbon, in fact – by a quarter of a billion tons per year in the latter part of the '90s. In CO₂, that's about a billion tons per year, so significant number. Two-thirds of that was due to the population policies, we estimated.

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On ethanol, I'm a firm believer in government policy drawing the boundaries around the market, which is to say it's – what government does best is to determine the level of emissions and let the market figure out how to best achieve those standards; picking the winners, which is to say, saying we mandate that we use ethanol, or we mandate that we use nuclear power or whatever, I think is the wrong approach.

On methane – methane, if by that you mean liquefied natural gas imports into China, natural gas for China, I think that's a major opportunity that has been missed because of the lack of cooperation between Russia and China, for example, in developing pipelines. The opportunity there, particularly with respect to Russia, is a big one.

And on the World Environmental Organization, I don't know enough about the details to even comment.

MS. MATHEWS: Dadi?

MR. ZHOU: Population is one of the important factors in the IPCC scenario of development, and they have a lot of studies on that. And one of conclusions is along with development, the population growth rates could be lower than the country under development. So that's what happens, and if we develop quicker, I sense the population will increase lower. But that's a different scenario for that.

But from Chinese crisis, as is the case, we'll have very strong family planning policy and we will continue to work on that. We understand – at my age, at this time, I think that maybe more than one baby is better. But you know, in the China situation we'll have to make some social arrangements otherwise, you know, you cannot really – on the one hand, you want everyone can share the modern life, and on the other hand, you have no control about the population. So we have to make choice; we have to.

For the ethanol issues, it depends on if you can get good resources. For example, for pricing all they have is some big land and very good, better condition, and (it's in China and they have sugar-cane ethanol, they use it. That's good, but for some other country, if they cannot solve the food problem it's very difficult to use that for ethanol. So I think you have to think about it as a comprehensive measure. If you look at the side effect, for example, recently the people talking about the food shortage compared with the ethanol development. And I think that we could have a different choice. For example, the car, plug-in hybrid, then it could help us, also. With technology, I think we have more choices.

And the question is, how to achieve so-called – the global target by 2050 for the developing country. I think they are good questions, and we have to explore that. You know, we have not yet modeled, say, look at industrialized data and realized undeveloped, but with very low carbon emission. We need to find a way – need to find good models. That's why, in my opinion, why we look for – you know, the developed country takes the lead because you have better technology, you have better financial and other capacity. And if you cannot do that, why the developed country is more capable to do that, I don't think so. So we have to try both. The developed country cut down the emissions significantly, and as quick as necessary.

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And then, the developing country will find a new type of target, say okay, we'll not follow the old style; we'll follow the new style. That's a solution; I think you cannot separate that, say okay, you use this method, you use that technology because technology spreading is so widely in the world. So everything happens here, next day maybe happens there. So you cannot isolate the two paths, technically. So I think they're very important. And I think that along with the time – for example, if you talk with some African country – they have no economy, almost, and you say you have to cut down, they don't care. But if they developed and catch up, I think you can talk how to develop the some kinds off that table – (chuckles) – measured for them. So it really depends.

And I don't think – the question I would like to answer about Taiwan. Taiwan is one province of China, and we will welcome you to join with us to do some mitigation with us. Thank you.

(Laughter.)

MS. MATHEWS: Okay. On the aisle, right there.

Q: Hi. Jennifer Turner, I direct the China Environment Forum at the Wilson Center.

Being someone who – I did my dissertation looking at local governments; I'd like to know a little bit more about some of your plans on – you know, you were talking about building the capacity of provinces, and I'd like to have an idea about maybe where you see taking that. I mean, the NRDC model of being the, kind of the eHarmony bringing California and Gansu together on demand-site management, or doing trainings. I'd just like to have some insights on where Carnegie might be going to actually do that capacity building. And I think it's wonderful that you're going to do that, by the way.

MR. CHANDLER: I think the NRDC model is wonderful, also. There are several provinces that really need that level of assistance, and the approach that we need to take, I think, is to cut across the lines of responsibility for different parts of the economy at the provincial level. You have one portion of, say, the Guangdong province that is responsible for state-owned enterprises, and another for private companies, and another for tax policy. There is no framework for the people responsible for those different sectors and issues and parts of the economy to work together to put together a coherent set of standards and incentives and financial packages to achieve the energy and emissions reduction goals. So team building, providing the tools and the support for those teams, is the basic approach that we're taking.

MS. MATHEWS: Yes? And we'll take that one in the back, just one minute.

Q: Hi. Darren Samuelson, reporter from Greenwire. I'm curious, what advice would you give to the next president of the United States with respect to the – I guess the title of this discussion, the suicide pact going into post-Kyoto negotiations, both you guys.

MR. CHANDLER: Would you like to be the advisor to the next president?
(Laughter.)

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The key for the United States is to take action. We really have to show leadership. The framework that we sketched out here is taking the state approaches and goals and bringing them into a federal framework. I think, on the one hand, cap-and-trade is a big part of that. Many of the states are already putting together their own cap-and-trade systems. Clearly, a national system is going to have to be a fundamental part of any U.S. climate response.

I don't think it's enough. I think because it's difficult to get some of the incentives, particularly in the current types of legislation, to feed through directly to, say, residential consumers, it's going to take supplementary policies in terms of standards and incentives to bring the residential and transportation sectors along in the same way that the industrial and utility sectors will be prodded by a cap-and-trade system.

MS. MATHEWS: And building codes.

MR. CHANDLER: And building codes. And I think you can't make standards work in a vacuum. Many of my colleagues, to my great frustration, think that prices don't really matter, but I think that's clearly not the case. If you don't have prices to support the logical level of standards in regulation, it just doesn't work. And the prime example of that is CAFÉ, Corporate Average Fuel Economy standards, in the United States, which – we have a relatively strong, had a relatively strong policy on the books for many years which was not enforced; there were ways of reducing the effectiveness of that policy because nobody cared. The price of gasoline was so low that the regulators really couldn't regulate to the level that they had the authority to do.

Q: What about outreach to China, I mean, in terms of do we go first or do we – what? (Off mike.)

MR. CHANDLER: What about the U.S. and China? I want to emphasize that we're not talking about – here, we're not talking about a substitute for a post-Kyoto agreement. My concern about a post-Kyoto agreement is in two parts: one, how long it takes us to get started. Kyoto expires at the end of 2012. There are things that we can together, need to do together, if we have any chance of a 500 ppm goal of getting started right away. So my advice would be start right away, pick a set of implementation measures for the deployment of technology, negotiate those with your Chinese counterpart, and put them into place.

MS. MATHEWS: Is there anything you want to add, as an advisor to the next president of the United States?

MR. ZHOU: Excuse me. If I could, I would. (Laughter.) I think that, frankly, to say that China is not a prerequisite for Americans to make decisions on climate change. It could be related; mostly, it's political but not practical. For example, if China really say okay, we will stop, we will stop the developments, if you can right now say okay, we cut down 20, 30 percent of the emissions, it's not really related. But so I think – I hope, I wish American decision-makers really look at what's your real challenge, what's your real problem, what's your real opportunities, and decide what you can do. Don't say okay, because China doesn't do, we will not do. So it's not a good way to do that. So every country, I think, should think

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about what it can do by themselves first. So that is correct, I think it's correct, and it's my good suggestions. Thank you.

MS. MATHEWS: Let me follow up a bit, put you both on the spot a little bit. As you listen to Dadi's opening remarks, it's clear that the comments – that the conviction in the United States is that China is not going to do anything on this issue, or not interested, not concerned, is a myth and that arguably, China's already done a good deal more than the United States has done, certainly over the last eight years, in a whole range of fields, both efficiency and renewable mandates, et cetera. And yet, notwithstanding the enormous shift in sort of public opinion towards a cap-and-trade bill, towards real action, I think one has to assume that the closer we get to actual passage, when we're talking about 10 percent of the economy, as we've seen with health care, the closer you get the higher the opposition, the resistance, climbs and it climbs kind of asymptotically.

So how much – what needs to happen, notwithstanding Dadi's comment right now, which is that the U.S. ought to make its own decision and not base it obviously on the merits, an enormous truth to that, but we all know there's Bert Hagel sitting out there still. What more has to happen to make it politically possible for the United States to pass a transformative piece of legislation, or pieces, in 2009 or 2010, with respect to the U.S.-China understanding? In other words, the core of what we came here to discuss.

MR. CHANDLER: Well, I think you're exactly right. I think the perception that China does nothing is something that can become reality, and it's something that can be used by players to frustrate the political system to avoid taking action. I think what we should do is, in working together – and I do think it's essential to work together to cut through this conundrum – I think what's essential in this two-step process is more the second step than the first step. The first step is defining goals and agreeing to work together to try to reach a level of emissions reduction, but the thing that really matters is real progress on the ground. And I think defining specific programs, standards, finance, R&D, and demonstrating real progress as quickly as possible would help cut through that knot. And so real programs, real fast, and make them specific; that's the key.

MS. MATHEWS: Dadi, we'll give you the last word.

MR. ZHOU: And we'll have to encourage the dialogue between the high-level people of the two countries. And to make them understand more, and then how to make decisions, I think, is another – (chuckles) – another target for these efforts.

MS. MATHEWS: And will the key actor in China be Premier Wen?

MR. ZHOU: I think we cannot only start from the presidential – (chuckles) – level. It's too high, too short. We need to work on the senior experts, senior officials, senior decision-makers, then make some consensus from a group, then make some ideas; then, finally, maybe presidential meeting will guide some things. So I think that's the way. We cannot only say okay, Premier, come, and the presidents come; that's not the way. (Chuckles.)

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MS. MATHEWS: Okay. I want to thank all of you. I want to thank, especially, Bill Chandler, Zhou Dadi, and we look forward to keeping you all, making many of you part of this really important effort in the years ahead. Thanks for coming.

(Applause.)

(END)