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P R O C E E D I N G S

MR. EBINGER: Good morning, ladies and gentlemen, delighted to have you here this morning. I'm Charlie Ebinger, the Director of the Energy Security Initiative and we're delighted to have our old friend Toshikazu Okuya here today and having come to Brookings to release the new summary of Japan's fourth strategic energy plan. We're delighted by the long association we have with METI and the frequent interaction that we're fortunate enough to have and we are still deeply honored that last December we were invited to testify before the Cabinet Committee considering Japan's restructuring program which I hope we hear something about today.

Mr. Okuya is the Director of the Energy Supply and Demand Policy Office with the Agency for Natural Resources Energy at METI. He covers mid and long-term energy policy and critical energy security questions and was in charge of drafting the fourth strategic energy plan which was adopted by Cabinet decision on April 11. And anyone who knows about Japanese Energy Policy cannot envy him the difficult role he obviously had in getting that done.

He has been working with METI since 1995 and he previously worked in the United States to facilitate Japanese-US cooperation in fields as widely diverse as energy security, nuclear non-proliferation, international trade and defense. While at METI, Mr. Okuya has worked to introduce Japanese and Singaporean industries in Southeast and Southeast Asia. He has been deeply involved in promoting the IT efforts and led efforts to reform industrial sectors, obviously including the energy sector.

He has degrees from Tokyo University and the John F. Kennedy School of Government at Harvard where he studied the political, economic and securities structure of East Asia and US-Japan relations. Our format today before I invite him to the podium will be he will come and hopefully in roughly 20 minutes, as close as possible, will

make his presentation and we will then be joined by Dr. Solis, my colleague who's head the of the Japan Chair here at Brookings and our other panelists up here for a free-flowing discussion. I think several of the panelists may prefer to speak from the podium in their initial remarks because they have some papers they'd like to make reference to.

So without further -- and I'd like to urge our panelists to all keep their remarks somewhere in the three to six minute timeframe so we have plenty of time for questions from the floor. Without further ado, Mr. Okuya.

MR. OKUYA: So thank you for your introduction for me. And my name is Toshikazu Okuya from Ministry of Economy, Trade and Industry. Now, actually we had a big debate to introduce a new strategical energy plan. The strategical energy plan is very critical for us because we are very short of natural resources. To manage our energy issue we have to take the strategical approach to manage our energy issue. And actually, in our debate about the new strategical energy plan, Dr. Ebinger visited Tokyo to make his presentation to this -- that's a very important information for us to introduce this strategical energy plan.

And before I start sharing this, the point of strategical energy plan, I would like to share the energy situation in Japan like this. And you have handed out the material right? The first point, Japan is energy self-sufficiency ratio is second worst in OECD countries, 33rd position. Only Luxembourg has worse self-sufficiency ratio. That's reality. And our dependency on overseas fossil fuel is in 1912 is higher than the situation in 1973, the first oil crisis time because of nuclear shutdown.

We succeeded in reducing our dependency on overseas fossil fuel in around three decades but now our dependency on overseas fossil fuel is far worse than the first oil crisis time. And as you know, we heavily depend to Middle East on oil supply but not so many people know about natural gas procurement structure. Before the

Eastern Japan great earthquake we relatively enjoyed a diversified supply source for natural gas.

But now, because really the price of nuclear to mainly gas, our dependency to Middle East on oil energy is rising. 30 percent of oil energy is from Middle East now. If something happened in Middle East, we use gas for power generation is around 40 percent to total power supply. And the Middle East is support 30 percent oil energy for power generation. It's easy to imagine what will happen in Japan.

And also, I would like to touch upon the inventory situation. Now, because of our experience of oil crisis, we build very solid oil stockpiling system. This number 67 days is just private companies inventory for power generation only. The total stockpile for oil is reaching at 190 days. We have in amount of oil stock inside of Japan and in the case where you run in, because we don't need a big amount of fuel for operating of nuclear power in a year. We have already received a (inaudible) amount of uranium, program is aero-energy. Aero-energy stockpile is usually very expensive because we have to keep very low temperature for aero-energy stockpile.

We have to keep -162 degrees Celsius to keep -- liquefy the situational gas. So because of that, our aero-energy stockpile is less than two weeks. And also, we would like to share the scalable impact of renewable in power supply sector.

To increase the relation of renewable energy by one percent to total power supply, in the case of a wind, we have to introduce more around 2700 turbines. It mean, someone mentioned that we can replace nuclear to renewable or we can replace coal to renewable. Such a kind of discussion we had but actually can we do that?

And from economic perspective, we had first trade deficit in 2011 because of expansion of fossil fuel import. Trade deficit is increasing and direct impact of nuclear shutdown is around we estimate 3.6 trillion yen. We pay additional costs to keep

power supply. And of course, electricity price is rising like this. This is one of the cases in Tokyo for a typical household.

They are facing 30 percent of electricity price rising after the earthquake. This is a combination of electricity price among many countries. Of course we, Japan, have high electricity price like this. Other energy rising ratio for household is around 20 percent and the industrial sector in Japan are facing 30 percent of rise of electricity price.

But on the other hand, Germany has higher electricity for household than Japanese one because of feed-in tariff impact. Of course, we also introduce a feed-in tariff system from July 2012. Gradually we are receiving some kind of influence from feed-in tariff system. We are doing the best effort to keep stable power supply. All persons are making a best effort but we cannot stop increase carbon emission, increasing carbon emission.

Industrial sector, the household, those players succeeded in reducing carbon emission but electricity sector cannot avoid increasing carbon emission because of expansion of dependency on fossil fuel. And we would like to move our eyes on Asia-Pacific area. Yes, China, India, those players try to expand use of gas but still call for a central role. And especially Asian countries, yes, Indonesia and Malaysia can export gas but on the other hand, their demand is rapidly increasing and their production capacity is of course limited there.

On the other hand, Indonesia has a (inaudible) amount of coal. Why? They don't use coal. That because of that coal is a (inaudible). Coal will play a central role for power generation in Asian-Pacific area. Point is how to use coal to reduce environmental role. That's the challenge for us.

And Asian countries like Japan heavily depend on Middle East or supplies like that but everyone know we have some kind of risk to keep stable energy

supply. Because of that, many countries want to introduce nuclear as of course domestic energy. Certain restrictions we are facing and how to deal with this problem is our agenda in the strategical energy plan.

And we have full strategical energy plan. The third one, previous one introduced the 2010. In the third strategical energy plan we mentioned that we would realize 70 percent of zero emission power source, 20 percent from renewable and 50 percent from nuclear. Such a kind of target we have but actually right after the third strategical plan we had the great earthquake and the Fukushima Nuclear Power accident.

Everyone understood we cannot realize this strategy. But we spend a long time to replace the third strategical energy plan because public opinions on energy issues, not only nuclear but also the renewable, coal, were so divided we need a long time to set our situation and introduce the new strategical energy plan. That eventually, fortunately we succeeded in introducing the fourth strategical plan on April 11th.

The fourth strategical energy plan, we give five viewpoints. Usually, sorry for that, six viewpoints. Firstly, we usually say the 3E+ is the base viewpoint for energy policy in Japan, energy security, economic efficiency, environment and safety. We usually call these things 3E+S. This time, we add two other viewpoints, global viewpoint because we are facing the dramatic change of global energy supply structure. And the second point, economic growth.

In Japan, gradually Abenomics effect is prevailing from (inaudible) area to local area but energy cost is one of the serious problems for economy recovery. The how to reduce the energy cost is a big issue for us, for economic recovery. And also, so far, energy industries are protected by a various kind of system including legislation that we would like to break such a kind of legislation to invite new investment in energy

sectors. That we would like to make energy sectors as we are economical energy from now.

So these six viewpoints we have and two principles we have to restructure the energy policy in Japan. That firstly, we would like to build realistic and multilayered energy supply structure. Why we use multilayered? From Japanese perspective, we don't have perfect energy source to satisfy the low-carbon and the low-cost and stable supply blah blah blah. We don't have such a kind of perfect energy source.

Each energy source has advantages and disadvantages. We need all energy source. The point is how to combine such a kind of energy sources and also how to build a stable supply chain for each energy sources. That means we need this kind of multilayered supply structure to stabilize power and energy supply in Japan. Because of that, we use multilayered one. And also, we would like to involve the demand side of power more to make supply structure efficient.

So in the case of a power market, US, some state has already introduced a negawatt market, right? The idea, the reduction of demand size and also, now, we can choose resource of directory. It means, in the case of old car, in previous era we can choose only gasoline fueled cars. But now we can choose electric vehicle, fuel cell vehicle. It means now consumers can select directly resources through buying behavior. Those situations will give big impact on energy supply structure as well. We would like to use such a kind of power to make energy supply structure efficient.

And each that we give the same kind of position to each energy source, renewable, important because of not only low-carbon but also domestic supply energy source for us. We would like to expand introduction of renewable, of course, but on the other hand very expensive and instable, the how to cover such a kind of disadvantage

and the nuclear?

As I mentioned, nuclear is very efficient power supply. (inaudible) and low-carbon and of course, its domestic energy source but we experienced the serious accident in Fukushima. People still have strong anxiety to use nuclear. So because of that we have to prioritize a safety when we use nuclear power. Dependency on nuclear power generation will be lowered to the possible and the nuclear regulation authority -- when nuclear regulation authority confirmed the conformity of nuclear reactors with high level regulatory requirement, we will restart nuclear reactors.

The coal, we evaluate the value of coal with high, a demand through technology to reduce environmental role. Fortunately, Japan has most advanced critical coal assignment plant technology. We use -- we have to use it in Japan but we also want to share such a kind of a technology with other countries especially in emerging countries. When they use coal (inaudible), they should reduce an environmental role with this kind of technology. We would like to make a contribution to reduce environmental load through technology.

And the natural gas? Natural gas has a big potentiality to play a various kind of role for expansion of coal generation to introduce a distributed energy supply and the material for hydrogen. So we would like to expand the natural gas role in Japan.

And the oil very important especially we had a big experience when we faced the earthquake. Oil was last resort for affected people. But on the other hand, oil demand is shrinking. So oil industries' structure is not for previous demand size. The how to keep a stable supply chain for oil is a big challenge for us. That because of that we will promote oil industry restructure to keep stable supply structure.

And based on this idea, we give direction to reform each energy policy, diversification resources in the fossil fuel and also we will develop our domestic resource

like methane hydrate in deep sea bed. We will promote more energy saving and we have already introduced various measurements to promote energy saving by regulatory way and some supportive way. And also, we will accelerate introduction of renewable. But as I mentioned, we have to care about cost. Feed-in tariff such as has already at 650 billion in 2014. That's a big burden frankly speaking. How to curb such a kind of impact is a big challenge for us.

And the nuclear, yes, firstly, we make best effort to restore/reconstruct Fukushima. We have strong will. Then with high level safety we will try to restart the nuclear reactors. This kind of high level requirement, nuclear regulation authority required, 19 reactors are waiting to receive confirmation. And also, we use a big amount -- the big parts to explain about picture of back (inaudible) measurement for spent fuel now.

Government will play a proactive role, a more active role to find final disposal place. Also we promote new technology, relate such activity to reduce and mitigate a toxic level and volume of spent fuel. Actually, still we have a very infant level research activity but we have already have a good track level to mitigate a toxic level of spent fuel. We can do that. Future generations will take such a kind of technology to manage spent fuel well.

We positioned the nuclear fuel recycle policy in big back end measurement picture. That also we will promote use efficient coal thermal plan and we will strictly promote electricity supply systems reform and gas supply system. We did regulate this area.

And if this is one of the cases, if we -- the price of coal thermal plan in the United States, India, China to Japanese advanced coal thermal plan, we would reduce 1.5 billion tons of carbon emission. That size is bigger than Japanese carbon

emission in a year. And we were restoring the energy supply network and we would like to realize the hydrogen society as a leader of hydrogen technology. And storing on the comprehensive international energy cooperation especially with American friend, we can do various things now and strategical R & D is very critical also to string the communication way with the public to implement the energy policy is very critical for us, that we will pass through the new communication way with the people not only the Japanese but to the international community to implement our new strategy. Thank you very much.

MR. EBINGER: Before I ask Dr. Solis to, while we're getting mic'd up, to make the introductions our panelists, I would only say looking at that incredible effort and the way in Japan, I wish we had as coordinated an energy policy in this country as you are at least embarking upon. Maybe Adam will say something about that. But anyway, Mireya, you want to?

MS. SOLIS: Yes, Charlie, than you very much. So we're going to start, I think we had an excellent presentation by Mr. Okuya with a very comprehensive overview of where Japan is heading and (inaudible) the issue of the energy strategy. And now, we have a panel of renowned experts that will provide responses and reactions to Japan's plan. So let me introduce very briefly our participants today.

Adam Sieminski is Administrator of the US Energy Information Administration and while awaiting confirmation to his post, he also served as Senior Director for Energy and Environment at the National Security Council. And for many years, he was a Chief Energy Economist at Deutsche Bank.

Next will come Isaac Edwards who is a Republican Senior Counsel in the US Senate Energy and Natural Resources Committee where he has a very wide ranging portfolio in areas such a nuclear power and international energy.

Scott Campbell is Managing Shareholder and Senior Public Policy Advisor for Baker, Donelson as well as President of the Howard Baker forum. And is a principle coordinator for the US-Japan roundtable on nuclear energy cooperation.

And of course, my colleague, Charles Ebinger, who's Director of the Energy Security Initiative and who I have to say has such a depth and breadth of expertise on energy matters that I just picked a line from his bio where it says that, "Dr. Ebinger has been involved in most of the energy and environmental policy debates since 1975."

So without further ado, I would like to ask Mr. Sieminski to provide us with his reactions to Japan's fourth energy plan.

MR. SIEMINSKI: Well, thank you very much for the kind introduction and Okuya-san thank you for a great presentation.

MR. OKUYA: Thank you very much.

MR. SIEMINSKI: It's wonderful to see such a comprehensive amount of information presented succinctly and logically. As the first plan since events at Fukushima, EIA has read with great interest the government of Japan's fourth strategic energy plan. It represents a multilayered and diverse to energy issues which emphasizes economic and national security along with environmental protection and safety. That's a great mix of objectives.

I'd like to offer just a very few observations, five actually in nuclear renewables, market reform, efficiency and cooperation. In the nuclear area, Japan's continuing progress in restoring nuclear power as base load capacity in a thoughtful and safe manner is critical. Nuclear energy still has an important role in long term low-carbon scenarios.

Renewables, important work is underway in Japan to promote the

development of renewable resources not only solar, wind and geothermal but also biomass, ocean, kinetic and thermal power. As the Pew Trust has noted Japan's investment in clean energy increased 80 percent from 2012 to 2013. And Japan has nearly doubled its investment in solar energy especially in the residential solar market.

Market reform, as a bridge to sustainable energy policy, Japan expects to continue to use a mix of fossil fuels. Reform and energy markets to introduce full retail competition should help control cost to consumers.

Efficiency, lowering demand through increased efficiency is often an inexpensive and timely path to energy security. And we note that the strategic plan emphasizes this path. Finally, on the issue of cooperation, in the energy sector, the US and Japan have a long history of shared interests and cooperation.

Moving forward, the plan reflects Japan's intention to strengthen this cooperation within the global energy market framework and I think that that's laudable. In general, I think there is a lot to like in the fourth energy plan. Thank you.

MS. SOLIS: Thank you. Mr. Edwards?

MR. EDWARDS: Thank you very much. And thank you for your presentation as well, Okuya-san. Good to see you again.

MR. OKUYA: Yeah.

MR. EDWARDS: I'll start with as Charles said, the fact that you have an energy policy plan at all in the mid to the long term is very comforting, I think, to the Japanese industry. Certainly I think that the US industry would like something along the same lines. When I had the opportunity to travel with Senator Murkowski, Senator Lisa Murkowski, my boss, to Japan in January of 2013, prior to this plan coming out and we met with a number of high level officials and again the government and industry and the common comment was, we don't know where to invest.

We don't -- this was before they were able to raise their rates to the consumers. We just don't know what area we need to put our investment into and what direction to go. So having some level of stability in planning opportunity is going to be helpful to them.

In looking through the plan, there was a couple of issues that I'd like to comment on as well, a couple of the areas. First, on the renewable side, renewable energy, there's always a lot of attention given to solar and wind but your plan certainly highlights, I think, the opportunity for geothermal in Japan. Low cost and it's a base load power which in terms of renewables, I think you only designate geothermal and hydro as potential for base load power.

And that seems and certainly Japan has certainly lots of potential for that and that seems a natural partner for Japan and Iceland to get together since Iceland is the world leader in geothermal as it is. On the nuclear side, if my estimation, unlikely to restart all of the 50 remaining reactors, probably more in the range of 15-20 and then different regulations for the different types whether it's a boiling reactor or a pressurized reactor. So you're talking probably 10-15 percent of the electricity production.

Again, my guess not yours. But also wondering about the potential for small modular reactors within that in terms of if there is an appetite for new builds in Japan or if it would be a continuation of the existing reactors until they are decommissioned, along those lines.

And then also wanted to on the opportunity for methane hydrates and I know Japan is going forward quite a bit with the drilling and working on producing methane hydrates. I would note that in the United States and Alaska, we probably have enough methane hydrates in and off the coast to power the United States for the next thousand years. And we had partnership with Japan in doing that and I would just urge

the US government to continue along those lines as well in working toward that end. Thank you.

MS. SOLIS: Thank you very much. Charlie, would you like to go next?

MR. EBINGER: I have a couple of things I'd like to ask. Obviously, Japan has a great deal still of concern because of your dependency on the Gulf and also obviously some concerns about the Chinese bellicosity in the South China Sea where also a lot of your energy would transit to Japan.

I was wondering if there has been any discussion looking longer term about a relation with Russia. We've seen the big Chinese-Russian deal. There's been talk, of course, for a long time about a pipeline. I'd also be interested in as you look long term, whether you see any possibility again perhaps with Russia or others as the Arctic melts, whether Japan sees the prospect of LNG tankers transiting down through the Bering Sea.

I've also been puzzled, coming completely different, on the restructuring side. How and I realize until you complete your evaluation of how many nuclear reactors come back, but how does nuclear fit in to the restructuring of the industry? Is it for seeing certain utilities would, you know, be given some nuclear plants in their mix? Might you have an independent nuclear agency stand alone without it actually being assigned to a given utility?

And finally, I'd be interested in what you see as any positive steps the United States could take to help you in the transition period in terms of what we might provide. We've recently seen, for example, the Department of Energy selling part of -- a small part of our strategic petroleum reserve to establish a strategic product reserve in New England. Might there be any way if the US with our changed circumstances don't need as big an SPR? Could we possibly have some kind of product reserve or crude

reserve perhaps positioned in Alaska that could be a standby activity for Japan?

MS. SOLIS: Thank you. Mr. Campbell?

MR. CAMPBELL: I'm going to speak from the podium. (inaudible) a real long time so. But I would like to begin by congratulating Okuya-san and his many colleagues for what I believe is the masterful crafting of a strategic energy plan that is both sensitive to public concerns and they are huge, but is also realistic about Japan's security and competitiveness. Much more realistic, I might add, that Prime Minister Noda's earlier plan which ultimately was extinguished fortunately.

What we have here is an all-in plan that looks to renewables and new technologies increasingly to meet demand but it responsibly recognizes that it will take time to do these things. Just think about it was just two years ago, maybe a little over two years ago, that Toshi and his colleagues began this process. This is after Prime Minister Abe had taken control. But it's still very much in the aftermath of Japan's worst nuclear disaster at Fukushima Daiichi.

And under that kind of a cloud, METI began its work setting out to understand and explain to really an angry and fearful public that Japan's historic energy security problem cannot be wished away and the nation must balance the risk of available power sources including nuclear power to provide secure and affordable energy. This was not an easy task but if we remember this is not the final word. This is a strategy document. It's a plan as Toshi says, to reform energy systems. It is a starting point to reconfigure Japan's energy policy. And so, it is a very bold enterprise indeed.

I think what I take away from all this is that we have to keep in mind that Japan is an island nation with an historic energy security problem. It's an island nation with very limited indigenous natural resources. It's still the third largest economy but it's an export economy, competing globally and consumer markets. It's an energy intensive

manufacturing economy where energy costs are a major determining factor in the price of goods and in the price of competiveness.

It's an importer of fossil fuels that must transit vulnerable sea lanes, come a long way including through the narrow prospective choke point at the Straits of Hormuz where 25 percent of the LNG comes through and the Straits of Malacca where about 34 percent comes through with about 35 percent or so coming from the Middle East as a whole. It's a nation sharing it's surrounding seas with an expansionist energy voracious China, a China that claims the South China Seas as sovereign domain while building a naval fleet and air power capable of exercising control over that domain.

This is a very stark situation if you are a major economic power dependent on foreign insecure sources of supply. Though we wish it weren't so, I think renewables, hydrogen, fuel cells; renewables of all kind, other promising technologies presently lack the scale to resolve the problem to replace nuclear power in this case. Maybe some of these will happen as a basic energy strategy postulates but not today. We have to keep it in mind. I think renewables are under two percent of the energy supply in Japan.

And we've been working at it pretty hard and we're at nine percent. And we're not talking about base load in most cases. We're talking about interruptible power.

So the energy plan, I think, is realistic. It's accepts this reality. It plans for the careful closely regulated steady restart of its nuclear power plant to bridge the economy to a time when new technologies and fuels can replace it. At least that's the hope.

Why is this reality? The closure of the nuclear fleet has pushed up the energy prices already up by 30, 40 percent. Loss of nuclear base load has forced reliance on coal, LNG and oil for electricity, expensive, vulnerable interruption

contributing to climate change. As Toshi pointed out Japan's dependence on fossil fuels has risen to 1973 levels.

I know their stated goal after the oil shocks of the seventies was never go back there again and they find themselves there again today. This new dependence on imported fuel has weakened the yen, it's weakened their economy. The kadan-ran of course warned last year, if you stopped the nuclear power plants, national wealth is going to flee the country. And I think we've seen 3.6 trillion yen per year flowing overseas because of fuel cost.

With electricity prices high, they went on to say there could be no new capital investment in domestic industry which is power intensive. In other words, if you want to kill or slow an economy, simply a burden, new manufacturing infrastructure with very high energy prices, that will kill it and they'll go elsewhere. So anyway, these are the realities. And I think that with this plan you've made a good start, a very good strategic look at how to get to a better place and congratulate you on your effort. Thank you.

MS. SOLIS: Thank you very much. So a lot of issues on the table. I would like to ask Mr. Okuya to respond to some of these comments please.

MR. OKUYA: Okay, so thank you very much. I receive the various kind of (inaudible). And firstly, I would like to the mention about energy security. That in the strategical energy plan the intro section, that in the first paragraph, we mention about energy security. Energy security is always seen as an issue for Japan. We recognize that (inaudible).

And Dr. Ebinger mentioned and that Scott mentioned like that. So high dependency to Middle East for fossil fuel, how to manage it? That sea lane issue that all those things are very serious frankly speaking. And that this fourth strategic energy plan is the first strategic energy plan to touch upon sea lane issue for example. We

recognized.

And also we mentioned that this strategic energy plan introduced the special period to reform our energy supply structure. This is the first time. From now to 2018 through the 2020 is our special period to reform energy supply structure. Why we set that time?

Firstly, we will receive aero energy from the United States that from 2017 (inaudible). And the Mozambique will start aero energy export to Japan from 2018. Canada will start export from 2019 and like that. It means aero energy; global aero energy supply structure will be changed dramatically. That some cases we can avoid to use the traditional sea lanes, right? We can use the most safe, the safest ocean lane, Pacific Ocean. We can receive the fossil fuel from the United States and Canada.

That those kind of impacts will be very big to strengthen our energy security. And also I would like to explain about why we introduce special period. Now, we would like to complete our electricity supply systems reform by 2018 through the 2020. We will make, we will introduce a full retail competition and next step legally unboundering the structure between the transmission sectors and the power generation sectors. We would like to complete such a kind of reform as well as gas supply system.

And also, that Japan has right to develop oil field by ourselves in Middle East area especially in UAE. We have to extend such a right in UAE by 2018. That also, we, Japan, the US, have to extend our very important cooperation agreement, nuclear agreement by 2018. All these events will happen before 2018 through 2020.

If we will be able to manage these big events well, maybe we will -- that Japan will be able to stabilize relatively compared to the -- stabilize our energy supply structure compared to the previous era. So those are all kinds of things that is heavily related to energy security issue for us.

And regarding nuclear, still so we have not yet gave the numerical target how much we use nuclear in total power supply structure. That we have not yet seen the restart of nuclear reactor, we cannot give such a kind of number frankly speaking. So we -- the Japanese government have a plan to give such a kind of numerical outlook, the numerical outlook for power supply structure but we have not yet make such a kind of target. We need more time to examine what -- how much we will see the restart of nuclear power, how much we will be able to introduce the renewable especially that I mentioned the feed-in tariff system has started from since the July 2012. And three years is a special period to introduce renewable with additional, or what to say, the preferable buying price in three years.

So we have to examine the actual impact from such a kind of preference for introduction renewable. And just one moment. Regarding the potentiality of SMR like new generation reactors, that we touched upon our R & D activity for high temperature that's cooled reactors. That's a typical new generation reactors. The high safety and the combine the plutonium itself, that those tech we will keep such a kind (inaudible) activity with international community to make nuclear technology safer than unsafe.

And energy savings is always critical for us. But actually, that we have already completed some -- the high level energy saving society but we have room to promote more energy savings especially in household area. We have not yet introduced a complimentary energy savings standard for buildings. The California state in the United States and Germany has already introduced such a kind of complimentary standard to promote energy savings for buildings like that.

We would like to introduce such a kind of system to facilitate more energy savings. And the relationship with Russia that we touched upon our view on relationship with Russia in the strategical energy plan as well. The Russian case, Russia

doesn't have variety of options to sell their fossil fuel, frankly speaking. They are losing the open market and because of that, they have -- they are eager to develop new market especially in Asian Pacific area. Because of that, we receive a lot of requests from Russia not only Japan but also South Korea and China. But this time, eventually, Russia succeeding in making an agreement with China.

But the condition is good for Russia or not? It's very difficult to say. Firstly, I would like to say that in the maximum year, Russia will provide 28 million tons gas through pipeline. This size is almost similar of Chinese gas import size. Now, Chinese the gas import is around 30 million tons per year. Pretty big number. How do you think about it?

But on the other hand, pipeline used by only Russia to China, the how to give influence from Russia to only one consumer and also China has already cultivated a new gas supply lines from Turkmenistan. Also they have a plan to diversify the aero energy source. Who has option to manage energy security issue?

So that all those things will affect Japan's behavior, the how to -- what kind of relationship we will build with Russia, not only Russia but also other suppliers, right? And most difficult the question will be the relationship between the electricity supply reform and nuclear plant operation. Firstly, I would like to say, the operation cost for existing nuclear plant is not high. Still, the nuclear existing nuclear power has cost competitiveness compared to other energy sources.

So because of that, utility has incentive to operate nuclear power, nuclear power plants. And also, we touched upon we need to improve the business environment for nuclear power operation. We clearly touched upon that point in the strategical energy plan. But we have not yet give the detail about it. We have just launched the working group to discuss about it.

As I mentioned and Dr. Ebinger and Scott mentioned this is a starting point to reform our energy policies structure. And we have already launched some working group to examine and discuss about detail of coming energy prices; renewable area, energy savings area, nuclear, fossil fuel management. And the future of the cooperation between the US and Japan, we have a lot of the options to introduce deeper cooperation between us.

You mentioned about the oil stockpiling systems like that. Maybe, so that if US will decide to start oil export, yes, such a kind of thing is good, of course. And the Asian area, Asian Pacific area, especially the Southeast Asian countries should introduce stockpile system to stabilize oil supply structure in that area. Maybe US will be able to make a big contribution to transfer your know-how like that, tech, with Japan. And how to build a new aero energy market in aero energy, for aero energy, is -- will be one with a big good issue for us.

US will be able to competitive gas to the market and Japan is the first country to use aero energy for power generation. We have a lot of other know-how and technology to use aero energy. Our partnership is strongest to make such a kind of new aero energy power supply structure in Asia Pacific area. We will be able to make various kind of contribution to other Asian countries that which want to use more aero energy.

MS. SOLIS: Thank you so much, Mr. Okuya. Very interesting remarks and before I open it up for questions from the public, I have two questions that I would like to ask you.

MR. OKUYA: Yeah.

MS. SOLIS: The first question, I must say that on your remarks you already said you cannot provide an answer to this question I have and I realize I want to put it out. And then maybe rephrase it in a way in which perhaps you can provide some

comments. And that is, I'm not an energy expert. And therefore, one way in which I could very easily see where Japan was heading in its energy policy was this very simple graph on the energy mix. And therefore, you know, how much percentage of nuclear percentage, of renewals and so forth.

And that's what's not available as you were saying. Numerical targets for how these different sources of energy will play out in Japan's overall energy supply is not yet available because we don't know about the cost and the speed at which you can transition to a larger role for renewables. Or when will these other nuclear reactors be able to satisfy the new safety standards and so forth.

But nevertheless, you know, I don't want to be too impatient, but I think that to many people that would actually be the one piece of information that would clarify where is Japan heading. So if you could please elaborate as to by when do you think, you know, and I understand that this if your first step.

MR. OKUYA: Yeah.

MS. SOLIS: And what will be the --

MR. OKUYA: The time of introduction of energy mix, right?

MS. SOLIS: Of energy mix and some numerical timetables and some concrete details as to what will be the role of nuclear in Japan? And the process by which we'll arrive at that decision.

And the second question has to do actually with the politics of energy in Japan. I think that undoubtedly I was actually giving a talk yesterday where I was talking about the fact that I can use today two words that I cannot have used in the past six or eight years in Japan and that is that I think Japan has entered in a period of political stability and executive leadership. And this allows, therefore, the government to embark on really decisive policy measures and I see the new energy plan in that light in the

sense that it finally acknowledges that going off nuclear is extremely costly for the country in terms of security, in terms of efficiency and therefore, that nuclear has a role to play in the future for Japan.

But nevertheless, even though Prime Minister Abe's extremely popular today, there are many demands on his political capital, if you will, because he's pursuing structural reforms of Abenomics, because he's engaging in new directions in foreign policy through perhaps the reinterpretation of the constitution with collective (inaudible) events and because he's laying out a new direction in energy policy. So, you know, this political capital is going to be used quite actively and therefore, it would be extremely beneficial if there would be strong public support for nuclear power so that he doesn't have to invest a lot of his capital there.

So my question to you, I know as you were preparing this plan that you spent a lot of time visiting local communities, talking to people who may have strong reservations about the restart of reactors in their communities. I would if you could please elaborate for us how that process was and how you rebuilt trust in nuclear energy in Japan to make this plan gain traction and become a reality in the medium term.

MR. OKUYA: Okay, thank you very much. And first question, the timing to introduce we usually say the energy mix, numerical target or outlook, like that. And we mentioned about it in the strategical energy plan that we would like to introduce a numerical outlook or a target as soon as possible but on the other hand, as I mentioned, when I gave my answer to Isaac, it's not easy to give such a kind of number now because we have not yet have enough amount of information to give such a kind of number.

But on the other hand, my minister also mentioned like this. We don't wait. We don't wait two, three years like that.

MS. SOLIS: We do not wait two or three years?

MR. OKUYA: We would like to publicize such a kind of energy mix as soon as possible that maybe before two or three years later. And actually that we will delegate the power supply sector like that so what kind of effect we will be able to give the industrial sector from the energy mix target is one of the questions of course. But on the other hand, feed-in tariff system is one of the ways to expand the introduction of renewables like that.

And also, the taxation preference we give some energy sources and to support our energy to reduce cost, all these kind of things help to realize such a kind of numerical outlook or target. So that we will use, that we will combine the all kind of measures to accomplish our goal and that this goal will have to satisfy the balance of cost efficiency, carbon emission, the stable supply, blah blah blah.

And second question about political situation, so that firstly, so before start discussing how to use political capital of this government, that we should share what kind of situation we are facing in Japan with usual people, not only in urban area but also in local area. So actually, we have already started send our colleagues to each local area to share that what kind of strategy we introduce. That what kind of strategy we are facing.

We would like to share our strong the concern about the energy area in Japan with usual people. That with such a kind of knowledge, the people easily can say we can price nuclear to renewable, we can price or we can price coal to renewable like that. But reality is very different. We have to share to reality with firstly with people.

And also, we try to share our idea, our thought through strategical energy plan. Why we introduce this strategical energy plan? We have to explain and we have to receive the understanding usual people. And myself, also, that I frequently repeat it that

various areas, Hokkaido, the Tohoku, northern part of Japan, northeast part and west and the central, that in the -- and in a week, in maximum case I visited three or four towns in a week. And every week we have such a kind of activities now.

Before thinking how to use political capital, we should make best effort to receive understanding the people and especially use the restart of nuclear reactor is a very critical to that we need to receive the understanding from the people it's very critical to restart the nuclear reactors. And actually, the place with nuclear reactors are a bit -- are positive to restart the nuclear reactors especially in (inaudible) like that.

Because such a kind of situation is perfectly depend on local areas conditions but some area has already showed a very positive opinion to restart the nuclear reactors, that some area, the local areas people has strong pride. We bolster this (inaudible) Japanese energy supply structure so far. We can do this. So we would like to cultivate such a kind of situation.

MS. SOLIS: Thank you so much, Mr. Okuya. So now the floor is open. I would like to ask you to please raise your hand and wait for the microphone to reach you and then identify yourself and pose a very concise answer -- a question. There you go.

MR. EVANS: Hello, my name is Peter Evans and I'm with the Center for Global Enterprise which is a new think tank that's just been established by the former CEO of IBM. Fabulous discussion, fascinating, largely focused on supply side. There's a whole new phenomenon since your previous energy plans and that is the growing information intensity of the energy sector. The focus on big data. Some people call it the internet of things. Others talk about the industrial internet.

So I'm interested if you had a discussion or if you've thought through the role in which information plays and how you can harness some of the analytics around

information which can apply to safety. It can apply to maintenance of the system as well as to energy efficiency goals. There's a whole host of ways in which harnessing the way that the Internet now has allowed for a platform to delve into the energy space and given the thoughtfulness of the plan, I was surprised to see that there was nothing on information. But you may have a component of that that you didn't discuss. So I'm interested in your strategy around information and energy.

MR. OKUYA: Okay, so thank you very much. So always the innovation, especially the information management area, help reform all industrial structure. And in the case of energy area, so the typical case will be demand response. So US has already, that some states have already introduced a negawatt system to deal with the reduction of power demand. And in the case of Japan, we have such a kind of cross in Electricity Business Act that utility company has a special contract with big consumer.

If we give request to you to reduce energy demand, you have to do but usually we give the special preference on your electricity price. So such a kind of system we have. But we have not yet had to use the small consumers' power that when we introduce such a kind of negawatt market, usually you use an aggregator to gather such a kind of small consumers' reduction of power demand.

If we will be able to use such a kind of system, aggregate the centered by aggregator, we will be able to introduce such a kind of negawatt market maybe. Such a case, we need big data. The how to use data quickly and correctly is very critical to manage such a kind of negawatt market, to give impact on supply structure.

And we also have the four big pilot project to review the effect of such a kind of demand response system in Yokohama, Keihan, Kitakyushu, blah blah blah. That we actually had good record, we are very serious that always how to use information, the big data, is very critical. But we have to introduce some kind of standardized protocol to

use different type of data like that. We need time.

And also so other area we can use a various kind of data to introduce more (inaudible) in supply structure. In the strategical energy plan we touched upon the big potentiality to use what say, space information network to check the weak point in energy infrastructures like that. We also touch upon such a thing.

So I perfectly agree with you but the how to use and what kind of experience we will be able to have is very critical.

MS. SOLIS: Thank you. I have a question from this gentleman, a little bit further up there, thank you.

MR. FORSTER: Hi, thank you. I'm Alex Forster with the East-West Center. My understanding is that one obstacle for Japan's energy supply security is the two different grid system, the southwest system and the northeast system. And if going forward, part of maybe a future strategic energy plan would be reforming that either through micro grids or localized grids or reform and creating a unified grid for the entire country.

MR. OKUYA: Okay, thank you very much. That's a very good question. And yes, so we have two types of frequency for power supply in Japan. And actually so that on March 14th, 2011 we introduced a rotating blackout in east side especially the Tokyo utility companies' district. But at that time, the west has enough amount of spare generation capacity. But because of the concern to all the frequency combaters, the capacity, we couldn't transfer the power from west to the east.

So actually we have such a kind of experience. Now, we have already start expanding the capacity of frequency combater between the west and east from 1.2 million kilowatt to 2.1 million kilowatt. And also we would like to expand capacity to 3 million as soon as possible. Such a kind of plan we have and also, to have smooth

electricity supply system reform, we have already decided to introduce a new organization for cross-regional coordination for transmission operators.

So now, Japanese utility company has dominated position in each district. Such a situation is not good to use efficiently to let's say transfer the powers among them. So we would like to find solution on such a kind of problem. Because of that we decided to introduce a new organization to support and in some cases order to transmission operator you have to support as a transmission operator. And also, that this kind of what to say, the macro framework is very important but also introduction of distributed energy structure in each district and even the small community will be helpful for us to power supply, to stabilize power supply.

So we are very positive to introduce distributed power supply system. So that Isaac mentioned about the big potentiality of geothermal in Japan. Actually, some cases geothermal can play a very important role as a base load for some distributed energy system in local area. And we will be able to use other renewable based on such a kind of geothermal base load power.

So each area can make something. So we would like to reduce burden on main grid through expansion of distributed energy system. Okay.

MS. SOLIS: Thanks. Other questions. Yes, this lady in the front and then we'll go to that gentleman in the back.

MS. BLAKELEY: Thank you. I'm Katherine Blakeley. I'm with the Center for American Progress. I'd like to ask you a little bit about natural gas which we didn't have a chance to talk about in too much detail. Obviously, there's a lot of potential there as a lower environmental cost fuel. Your slides reference establishing a stable and flexible LNG supply demand structure with a long term strategy for Japan to be the hub of the coming Asian market.

I was hoping you could speak a little bit more about the short term and the long term actions you need to see that become a reality, how you envision it working several years into the future and what you would need cooperation not only with regional cooperation but cooperation from the United States. Thank you.

MR. OKUYA: Specifically the natural gas?

MS. BLAKELEY: Sure, natural gas, yes, LNG and should -- what you would need sort of short term, long term to make a regional Asian gas market come into a reality, thank you.

MR. OKUYA: Okay. So firstly we are waiting your gas.

MR. EBINGER: You'll be waiting a long time.

MR. OKUYA: That's very important thing and actually such a kind of sound from the United States is very helpful for us to keep our bargaining power as well. And also that we touch upon, we would like to improve the conditions of long term contact for aero energy.

So maybe not so many people know about this (inaudible) growth in Japanese long term contract. So we have some special condition with gas supplier. We can't receive aero energy from supplier to only limited ports like that. Such a kind of situation is -- such a kind of situation hinder to transfer aero energy to other area. It means we don't have potential to build a spot market like that.

Those situations affect price itself. So we would like to mitigate the constraint of this situation cross or (inaudible) destination cross. And clearly, we mentioned about it in the strategical energy plan. And based on this idea that we succeeded in put this idea in joint statement in GS7 energy summit in Rome in the end of April. And last week we have G7 top (inaudible) summit. Also we can see that we would like to mitigate the constraint of the destination cross in the joint statement from top

leaders.

So such a kind of message also will be very helpful to improve the gas market condition, the condition of our contract. Maybe not only Japan but also other countries which are using aero energy will receive the big benefit from such a kind of international message.

And we have already had two time aero energy supplier/consumers conference in Tokyo and this year we will have that conference in November. Please many people join to that conference from the United States to improve the conditions. That's the short term.

MS. SOLIS: All right, I have this gentleman in the back who's been very patient.

MR. COLE: Will Cole, Johns Hopkins University. Thank you, Mr. Okuya, for a very rich presentation. I've a question relating to nuclear safety and regulation. I think several studies post-Fukushima pointed out that if Japan is going to resume nuclear power and reopen reactors that you need a much stronger and particularly more independent nuclear authority.

MR. OKUYA: Right, yes.

MR. COLE: And my question is, where does that stand? Have steps already been taken? Does it require new law? Or is this too kind of a process over several years that you're going to figure out how to have a more independent authority?

MR. OKUYA: Okay, so we have already introduced new regulatory authority to manage nuclear safety. Before the earthquake certain functions was under METI but we divide such a kind of function from METI to independent organization. We said nuclear regulation authority. And they are very independent organization from the government. So they strictly review the safety situation and the conformity of the nuclear

reactor with, as I mentioned, the very high regulatory requirement which is one of the most stringent safety standard of the world.

And they have already started such a kind of activity. They introduce a new regulation in last July. And based on new regulatory requirement utility companies have already submit an application for restart of their nuclear reactors. And we are on the way of reviewing the conformity with regulatory requirement.

Then as I mentioned 19 reactors are waiting to receive confirmation from independent nuclear regulation authority. And the government never intervenes their activity because they are -- they have -- they received a guarantee from the government about their independency. That we would like to keep strict process to check the safety of nuclear power before using nuclear power plants. It's okay?

MR. CAMPBELL: Yeah, pretty good answer.

MS. SOLIS: Before I take more questions from the audience, I want to ask the panelists if you have reactions to what has been said so far because there is such a wealth of expertise represented here that if you have any comments based on what Mr. Okuya has said?

MR. CAMPBELL: I would just say that one of the problems the nuclear regulatory administration or agency now have is that they don't get any input from industry as of yet. And that's been part of the success story of our nuclear, our NRC is that they have a good relationship with industry, there's NPO, there's a variety of vehicles and mechanisms to share information and expertise and in this political aftermath of Fukushima Daiichi the commissions who have been appointed really are living in a silo and I'm hoping that there'll be some way in which they'll loosed up and have more and more access to actual expertise because otherwise you get unrealistic and very expensive safety requirements. You have to strike a balance.

MS. SOLIS: Thank you. Any other comments?

MR. EDWARDS: I would just say on the NRA, I agree with your comments about where they get their input from but also if I'm not mistaken, each of the members were appointed by the previous Prime Minister. So in terms of the independence of their ability to say that they're not influenced one way or another by the current government, they all were appointed by the prior administration and not the current one.

MR. EBINGER: And I was wondering on why have certain rea -- what are the criteria by which certain reactors are possibly going to be restarted and others are not? Have those truly been detailed safety reviews in each case?

MR. OKUYA: So actually, so firstly, I would like to give comment to the first (inaudible) so that we just introduce a new regulatory authority and still Japanese people have anxiety to restart nuclear reactors. Because of that, firstly, the nuclear regulatory authority have to receive the confidence from the people and also they need a little time to have mature the process management capability.

So maybe we have various kind of opinions on the new regulatory authority but anyway, we have to show the true safety situation to the people to use nuclear reactors. That's the first point.

And second point, a criteria, as I mentioned we have all -- that the nuclear regulation authority has already introduced new regulatory requirement. And maybe you saw a lot of the maybe a little interesting behavior by utility companies. That make a big call to check the activity for to situations like that. So that all those things that utility are -- utility are managing that to check the safety level of their nuclear reactors. And if they have some kind of confidence, yes, this reactor will be able to receive confirmation from the nuclear regulation authority, they will submit an application to the

authority.

And now, the utility companies gave the application to restart relatively new nuclear reactors. And some cases, utility companies are still managing, are still digging up big hole to check the activity for situations like that and if they have some kind of -- they are convinced they can manage this, they will submit more applications to the authority. I'm sorry, so the criteria -- we don't have such a kind of clear criteria but that we have already the clear requirement from the authority.

That based on the requirement, utility company gave the self (inaudible) which reactors should be restarted or not so far.

MS. SOLIS: Okay, so I think we have --

MR. CAMPBELL: Can I ask?

MS. SOLIS: Oh, yes, of course.

MR. CAMPBELL: This is such a great opportunity. I'd like to thank Brookings for the chance to ask a question rather than always answer it. So with Japan and Alaska sitting so close on the platform I'd like to follow up on the LNG question and ask if there's been any progress on the possibility of developing the North Slope gas reserves through LNG for consumption in Japan.

MR. OKUYA: It's a good question. It's perfectly depend on the market situation. Anyway, we need -- we are facing lots of work to (inaudible) the price of energy, the price now. We need a cost effective energy source that if Alaska will be able to provide a cost effective gas, yes, Alaska will (inaudible).

And also, so please check EIA's report about Southeast Asian countries energy demand and special power supply. The coal will play a central role but on the other hand, what kind of impact we will receive from the US aero energy export? We have not yet had correct calculation what kind of impact we will receive in especially

Southeast Asian area.

If they will face barely cost effective, the cost competitive gas from the United States, maybe they will introduce more elements, more gas. Such a kind of situation will help Alaska to develop new field. So the perfectly depend on the multiple situations. That's my understanding.

MR. CAMPBELL: That isn't a market decision or would Japan because of your security consideration with Malacca and would you be willing to possibly pay a small premium if that's what allowed the Alaskan gas to actually (inaudible).

MR. EBINGER: A security premium.

MR. OKUYA: But we also have some kind of limitation of our budget.

MS. SOLIS: All right, so I opened it up to the panelists but I have to give it back to the audience. There's time, I think, for just two short questions. Here in the front. But please wait for the microphone and very short these two. I think you have it first.

MR. HAROLD: Scott Harold from RAND. Just to follow up on Dr. Ebinger's question at the outset about what US-Japanese cooperation could be helpful for Japan. My understanding of the NRA issue is that we haven't -- one aspect that we haven't touched on, yes, you've got lots and lots of filings from the individual reactors that are looking to be recertified but there's a shortage of actual inspectors, a big shortage.

So the bottleneck there is not there's not a clear process but rather there's not enough inspectors to go about and I'm wondering if you think that's an area where the United States has any role or the international community has any role to play in assisting Japan in accelerating that process? Because if you've got 50 reactors that you need to recertify and it takes five years or two and a half years to recertify but you've only got four teams and you just don't have enough people, I'm wondering if that's an

area you think there's any possibility for cooperation.

MS. SOLIS: All right, thank you. Let's go to the second question and if you can answer them together.

MR. SCHRADER: Robert Schrader with International Investor. Mine was just a follow-up of Adam's earlier. I'm going turn this to the other panelists because there's been a lot of pressure on you. Can you imagine a scenario where Congress because of Japan's longstanding nature as an ally and a supporter of the US, Congress could make preferential treatment or an exception as far as our natural gas exports? And if that's impractical from the LNG point of view, perhaps a trade in kind with other neighboring nations. Can any of you imagine such a scenario?

MS. SOLIS: Thank you. Final answers from all or any panelists. So please feel free to jump in.

MR. OKUYA: Okay, I will react to the first question. So that actually that after the great earthquake and the Fukushima nuclear plant accident, that we deepened the relationship with the United States in nuclear area actually. That we frequently discuss with American friends and we launch some working group and nuclear between the US and Japan and also, that we have very good discussions with French friends about first reactor issues.

And I would like to maybe I should not make some kind of comment on nuclear regulation authority's behavior because they are independent organization. I can stay that. So that nuclear regulation authority also place their eyes on the international community's opinions like that and also they receive some advices and some support from the nuclear international community that actually that some American friends is that became advisor for nuclear regulation authority that we have such a kind of very close and deep relationship now between us.

And the expansion of human capacity is -- I can't say that what kind of impact we will receive because maybe, for example, in the case of Japan, so we have to severely check the seismic risks that are very different from the conditions in the United States. All those things are somewhat related, I think so, yeah.

MS. SOLIS: Okay, we have one minute left if anybody would like to answer the other question that was raised.

MR. EBINGER: I would like to ask Isaac because Senator Murkowski has been such a leader on LNG exports, on the shale revolution, have you had any conversation with the Japanese at the staff level or through working levels about creating this hub and having a linkup, creating a whole new market for LNG in Asia which would certainly help Japan's situation and be good for us?

MR. EDWARDS: Well, I think the question is can I imagine a scenario that Congress would provide preferential treatment or at least provide. I can imagine a scenario. Can I imagine a scenario that this Congress does it? No. But certainly, coming from Alaska, taking the Alaskan perspective, it's natural gas that doesn't necessarily go into the rest of the United States, into the rest of the United States' market so it's a completely different scenario than when you're exporting from the lower 48, from the rest of the United States.

Whether the other terminals that are hopefully going to be coming online here in the next several years, so and also what you were talking about the Japan-Alaska connection. Alaska's been exporting natural gas to Japan for the last 42, 43 years as it is. Not on a large scale but we've been having ships go to Japan for the last 40-something years. So there is already a relationship there that I think is recognized on both sides. So certainly lots of potential and we'd like to live up to that potential.

MR. EBINGER: Thank you, why don't you talk afterwards see if we can't

put something together.

MS. SOLIS: All right, so this conversation will continue after but meanwhile we're out of time and please join me in thanking the panelists for an excellent discussion today.

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