

THE BROOKINGS INSTITUTION
SAUL/ZILKHA ROOM

OVERCOMING THE LIMITS TO GROWTH: SUSTAINABILITY LESSONS FROM JAPAN

Washington, D.C.
Monday, October 26, 2015

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P R O C E E D I N G S

MS. SOLIS: Good morning, everyone. I'm Mireya Solís, Senior Fellow and Knight Chair of Japan Studies here at Brookings. It is a pleasure to work this morning with the U.S.-Japan Research Institute in hosting Professor Komiyama, who will discuss his recent book, "Beyond the Limits to Growth: New Ideas for Sustainability from Japan."

Let me just say a word of introduction. I think that here in Washington we have been discussing Japan's economy and its future potential in rather predictable ways. It seems that we have only one frame when we think about where Japan is at today and where it might be going, and that is the framework of economics.

I do not mean to imply this is not a very important conversation to have, but I think we all stand to benefit if we look at the problem with fresh eyes, with a different framework, and think about where Japan may be going by focusing, as Professor Komiyama does, on the very important issue of sustainability.

I also very much appreciate that Professor Komiyama challenges the conventional wisdom, and some of the issues that are frequently considered handicaps for Japan, such as energy dependency, the low fertility rate, the rapid aging of the population. I think he highlights how these issues could be tackled creatively and perhaps they could become sources of strength for Japan in the future.

We are in really for a wonderful presentation and discussion today. Let me just briefly introduce our speaker, who we are delighted to host.

Dr. Hiroshi Komiyama is currently the Chairman of the Mitsubishi Research Institute and President of the Platinum Society Network. He is also a Founder and Advisory Board member of the U.S.-Japan Research Institute, and President Emeritus of the University of Tokyo.

Dr. Komiyama also serves as an advisor to the Japanese Government on subjects such as education and aging.

Please join me in welcoming Professor Komiyama to the podium. (Applause)

MR. KOMIYAMA: Thank you, Mireya. Very good introduction. Because I cannot speak English quick, I will directly go into the details now.

I am talking about overcoming the limits to growth. I believe we are living in a very large turning point of the history of a human being. That is what I would like to share with you first. I will talk about the 21st Century and Japan very briefly, and the Platinum Society, and I think reaction is the key point.

This graph shows the per capita GDP, but divided by the world per capita GDP. Here we have three or four. This means the people in the developed countries own three or four times the average of the world. Back to thousands of years ago, all people owned most the same in the country. This means the major industry was agriculture. It is almost same country to country.

Industrial revolution changed that situation, increasing the productivity of a person, and those countries who started industrial revolution became developed countries, started from European countries and North American, and Australia Continent. What happened to the other continents, Africa, Asia, and South America? Most of them became colonies. That was one of the sights of human history.

Now, look at the most recent decade. The sharp decline. Of course, the GDP per capita of developed countries hasn't decreased, still increasing, very few percent. The world average increased. I show only China and India here.

Now, it's sharply approaching. This is the situation of today, now. So, this is Japan. Japan was here, restoration started. At that time, Japan may have become colonies but we didn't. We caught up with the rest of the industrialization, and we became developed countries.

Twice this drop in economy happened due to wars against China and against Russia, the first one. The second one, the Pacific war, and we lost everything at that time, but except for these two periods, where the economy dropped, we caught up with the industrial revolution very rapidly.

This is the situation for Japan. I think Japan is the only country who could do that.

This is the second great turning point. It is the world average life span. Do you know, in 1900, the world average life span was as short as 31 years old, most of them already died. (Laughter) Now, after 2011, the world average life span became 70 years. What does it mean?

This means now most of the people can eat, can be fed well. I checked persons who I know in the history. Julius Caesar, for example, was assassinated after the age of 67. The longest one

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is 82, but I don't know how reliable those statistics are from that time.

People whose name I know lived long, but the average life span was 24/25 years old. What does it mean? Most of the people, most of the normal people couldn't eat well, so they just died, and there were no refrigerators, and people died. The average was 24/25 years old.

Seventy years old life span means most of the people now can eat. Obesity is rather more important than hunger now in the major part of the world. This is the second very important turning point of our history.

The third one is saturation, 58 million in Japan, is the current now. I divided by the population, then it makes 0.45. Surprisingly, in most of the countries, from Japan to Germany, it is 0.5. That is the saturation. This happens, including refrigerator, television set, or something like that.

How many cars are sold a year in Japan? It is very simple. Now in Japan, 12 tradeable years in the average lifetime of a car, 58 million divided by 12 years equals 4.9 million cars per year. This is the annual sales of a car. This doesn't grow because the population is almost constant, not only in Japan, in most of the developed countries. The United States is a little different from that situation.

This is the situation. Why? Growth of the economy becomes small. That is the reason why we are doing TPP and other economical treaties, to sell to the new markets, but the importance is the rate of growth in developing countries is very rapid.

2007 took us possessed by hundreds of Chinese people, but now -- if they grow, like Japan, France, or Germany, then within 7 to 10 years, Chinese economy will saturate. I think it has already been starting, Chinese saturation. This is a very big thing. We should be very careful about the situation where economical inching will be disappearing.

What about Japan? First, Japan overcame the risk/danger of becoming a colony. Second, this is Japan, but in the 1960s, 50 years ago, what happened now? This is the present. It took 50 years but we recovered.

The second point, Japan overcame the energy crisis. Maybe you remember the oil shock, past oil shock or energy crisis that happened in 1973. In 1979, a second energy crisis happened. During this decade, the oil price hiked 10 times, 20 times, 30 times, and all the economy in the world had

a huge shock.

Japan was most vulnerable because we depended on the cheap oil to industrialize. So, we overcame the risk by improving the energy efficiency on the manufacturing side. This is the case of cement technology. This shows how much energy is consumed to produce one ton of cement. In Japanese industry, they decrease it to half.

I'm sorry, this is the United States in 2000. It consumed 1.7 times Japan. They used 1960s technology of Japan. So, every manufacturing industry in Japan did it, including steel production, and so on.

Japan formed the world's strongest manufacturing industry. We are proud of that.

This is the second one. In total, I showed the wrong history of 2000 years, but what is Japan? Before we closed Japan outside, when Japan was one of the civilization peaks in the world, showing various indexes, steel production, manufacturing, or average life time, as I showed you, average life time shows how many people could eat -- so, we closed our society to outside for 250 years.

During that time, industrial revolution started in England. The broad scale production by standardization, this is the essence of the industrial revolution. Japan didn't do that. What did we do? We developed very sophisticated culture in this period. For example, tea ceremony, not tea party. (Laughter)

We are proud of our culture. In the 1860s, we had some very big dangers to be colonized. We could come up with that, and our economy could grow. Japan is a small country, densely populated. Severe pollution, water pollution, soil pollution happened, but we overcame that difficulty.

As I showed before, we answered the energy crisis and also realizing the world's longest life span. Consider economy growth, good environment, energy, and long living, these are hopes of the people for the history, or in other words, this is the target of civilization.

Japan succeeded as other developed countries did. Our difficulties, our problems, including global warming, aging of the society, new energy, are the challenges of civilizations from now on.

Japan is in advance of the other part of the world to have these problems. If we succeed

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in solving these issues, then we will be able to show you the new model of 21st Century. That is a very basic idea of mine.

What are the visions? This is the question. I think now majority of the people, regular citizens, not Julius Caesar, regular citizens in developed countries have enough food, shelter, morbidity, information and longevity. This is very unique feature of today. It will not be later, mid-21st Century, that the majority of the people in the world will own them, in China, in India, and I don't know about North Korea, and Sub-Saharan area, I don't know, but the major part, people will enjoy materials which we have in the developed countries.

What do we wish to have at that time? I think quality as well as quantity. We need more quality. Platinum Society shines with unity. Now the governors work with me, and about 80 companies, major companies, help me.

What do we wish to have? That is the real discussion. What do you wish to have? This is the real question, I think, over the 21st Century, because we have materials, cars, televisions, refrigerators, houses. What do you wish to have? What do young people wish to have? This is the real question, I think.

I think necessary conditions are ecology, that is one thing. In Japan, now the typhoon visit us more frequently than before, bigger typhoon, due to global warming. We have some resources difficulty. We have an aging society. Job opportunities, this is a huge issue because the productivity, production of materials are constant. We will lose jobs. That is a very important issue.

This is Sumida River, same river in 1967, when I graduated from the university, and Ayo, name of a fish, Ayo, which can live only in clean water, recovered in this river. You can enjoy Ayo fishing in most of the Tokyo rivers. This is unique. This is very unique.

Energy. In 1973, we solved the issue of energy crisis. At that time, two-thirds of energy was used in manufacturing, but now, the situation is different. Transportation and business and houses, 60,000 of energy is consumed by daily life of people, regular citizens, ourselves. We can decrease this part quite significantly.

Look at this, reds are European and American. Blues, Japanese. At the same rate, less

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energy is consumed. If there is no friction, automobile doesn't need any energy, where friction exists? If the car weighed zero, it doesn't consume any gasoline. If you ride in a hybrid car, energy consumption will become half. In 2050, car weight will become lighter and lighter. How much gasoline will be consumed in 2050? One-eighth because one-fourth and a half, gasoline consumption by same size of car becomes one-eighth. How many cars we run in 2050? If we assume all the people own cars at the rate of one car for two persons, cars in the world will become -- gasoline consumption will become half.

This is the hope due to technology. Other hope is bicycle. (Laughter) I talked about transportation and houses. Energy from outside is zero. My house is equipped with solar panels, and quite good energy efficiency. Energy consumption from outside is zero. Huge potential. Same as in buildings.

This is question to you. Now housing, business means buildings, buildings and automobiles, these are saturated, in Japan, almost fully saturated, also in Europe. Energy efficiency is being improved significantly. Why is energy consumption increasing?

It's not increasing. It started to decrease. This is the hope. This is Japan data. The straight lines show GDP. The red shows the energy consumption, total energy consumption. Blue lines show electricity consumption. It started to decrease, energy consumption, although GDP still continues to increase.

Next I will show same data but different. I took the values of 1973. Very clear, what is this? Until 1973, Japanese economy depended strongly on heavy industry. GDP growth is made by the increase of manufacturing production. Then if GDP becomes doubled, energy consumption becomes doubled. This is the situation before 1973.

After 1973, I showed in the case of cement production industry started with energy efficiency. What happened? GDP increased at this time, about four percent a year. For 12 years, no increase in energy happened.

GDP became \$2 trillion U.S. dollars to \$3.5 trillion, without any energy increase. Very important. GDP increase doesn't necessarily be accompanied with energy increase. Industry and efficiency improvement. The blue line increased together with this GDP. Why?

This is service businesses. It consumes energy in buildings. It increased but not so much as in this period of industry because the one GDP, energy consumption is one-third in service industry compared to the manufacturing industry.

Finally, it started, saturation and energy efficiency improvement. Clearly, we can increase GDP without increasing energy consumption. This is the hope of developed countries because we are going to services, services, services.

This is China. Still, GDP, total energy, and electricity increased simultaneously. This means still heavy industry weighted and their efforts to increase energy efficiency is not enough. China can increase energy efficiency. They should do it. Economy growth is their right, but efficiency is duty for humankind, I believe.

This is the United States. The United States is a strange country. It is some of a developed country and developing world. It's very difficult to understand.

Energy consumption started to decrease similar to Japan. This is the hope, I think. The United States and China can do this.

I should stop talking. This is my proposal to Japanese government and Japanese people. Because energy consumption decreased, and we have sufficient technology and resources of renewable energy, we can be self sufficient with energy, and the second is urban mines, cars, buildings, and under the condition of saturation, we need five million cars, consider the scraping of five million cars, this means we have all the metals we need including iron and rare earths. Japanese industry recover all the rare earths contained in a car.

Under the saturation of automobiles, we don't need to import new mines or new ores. Urban mines provide us with sufficient and necessary resources. This is the situation for the 21st Century, including these very basic things.

I will stop. Another thing is the aging issue. This is also very important. Aging will be the very important source of new businesses, I believe. I will stop. Please read it. (Laughter)

We need actions to change our world. That is my final remark. Thank you very much.
(Applause)

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MS. SOLÍS: Thank you so much, Professor Komiyama. That was really a fantastic presentation, and you covered so many different topics and with a broad and insightful perspective.

I would like the opportunity to ask a few questions and then let the audience. I am sure there are other questions.

I wanted to start with the very famous Komiyama eco-house. First of all, how comfortable is it living in this house? Second, and I think more importantly, I understand this is a model house, but in your mind, what would it take for it actually to become a standard in Japan? What investments, what kind of policies would be necessary so these new communities would develop these new self sufficient houses?

MR. KOMIYAMA: I'm very comfortable in my house. (Laughter) It's probably some special situation of Japanese houses. Of course, 100 years ago, we didn't have any refrigerators, so Japanese homes are very hot. Japanese houses were equipped with thick roofs and very good ventilation from outside.

When we have some heating/air conditioning, it was very inefficient. Your country or Germany, or here, Washington, D.C., it is very cold in the winter, so you need to have very thick walls. Very different.

In Japan, better ventilation, good ventilation, makes people healthier. Now the Japanese house makers provide us with -- people's health is significantly improved. This is the data. So, I'm very comfortable. (Laughter)

MS. SOLÍS: I wanted to move on and ask you a little bit about the demographic challenges. I know that most of your presentation was about energy issues and the remarkable track record Japan has in overcoming many energy issues, pollution, and so forth.

At the end of your presentation, you were getting into the question of the aging society. I know in your book you spend a lot of time talking about how to create a dynamic aging society.

What I am going to ask is a little bit different, but it does go into the demographic topic, and that is I actually have been quite surprised that recently in conversations with many people who visit from Japan -- I find for the first time they bring up the topic that I used to think was off limits, and that is

immigration. That would be perhaps a way to create a sustainable Japan, that is you let younger people come and that would then generate new demand, that would generate supply of a labor force and so forth.

I know this is outside the scope of your talk, but if we are thinking about revolutions, it could be a revolution of a different kind in the sense that you actually lower the average age of the population.

I wanted to know if you have any thoughts about that.

MR. KOMIYAMA: Immigration is one point, but consider how quick the developing countries are developing now. China has an one child policy. The birth rate in Thailand is 1.4, less than Japan. India birth rate, very drastically dropping.

People come to the United States, this is very important point, to accept people from Iraq, that is a different thing. We need to improve our domestic situation demographically. That is my idea. What is society where young people don't want to have babies, we don't need to have such a society. Two children is a very healthy situation. Of course, it's an average. It's freedom. (Laughter)

I think we need to create a society where young people wish to have two children. Unfortunately, my son has one child, and my daughter has one child. (Laughter)

MS. SOLÍS: Thank you, Professor Komiyama. My last question, and this is a bit of a contradiction in the sense that I started the opening remarks saying that it is important to move away from the discussion on economics, and in a way, I am going to come back to economics, even though I started my introduction today in that way.

Many of the policies that you described may have a connection to the current economics framework in the sense of emphasis on technology, on education, and so forth.

I was wondering when you present your plans to the Japanese government, when you talk about energy independent, resource independent Japan, and all these other energy self sufficiency efforts, what do you see in the economic policies that you think is on the right track, what do you think needs to be emphasized more, how do you think the current thinking on how to revitalize the Japanese economy relates to your framework?

MR. KOMIYAMA: Are you talking about --

MS. SOLÍS: Economics 1.0 or Economics 2.0, whichever.

MR. KOMIYAMA: In the 1.0, there are three arrows. The first arrow made weaken Yen. I think because we have too strong Yen before that. The other two arrows, economic growth strategy didn't work at all, I think, because growth policies should be in Platinum Society, I think there are two types of demands, one is saturating demand, like cars, buildings, and the created demands, which would be related to Platinum Society.

The possibility, for example, that I showed in a slide, the robotic technology, to help us, help the people, in the 21st Century, robotics helped in industry. In the 21st Century, it helps us -- if we detect these currents by some means, we know -- the motor rotates. This is robotic technology. Some prototype has already been sold.

As long as our brain is ripe, we can be independent. That is our vision. This area creates huge possibility of new businesses using technology. I think we should go that way. This should be the third arrow of Economics 1.0, but we failed to do that, so it didn't work.

MS. SOLÍS: Let's open it up, if you could please wait for the mike and identify yourself, and ask a concise question. I have a gentleman here in the front.

QUESTIONER: Thank you very much.

MR. KOMIYAMA: My ears are not so good.

QUESTIONER: We are on the same level almost. Thank you so much. It's very exciting to listen to you. I used to be involved within Europe and Japan. This was in the 1980s and 1990s. My conclusion was the potential of cooperation between Japan and all industries, from nuclear, computers, and so on, and the European countries, as well as the European Union and Japan, was much larger than what we could get.

My question is -- I'm very excited about your idea and you have a number of members, quite impressive, on Japanese side. One problem we had is cultural translation and sustainability of cooperation between Japan and various countries.

To be more specific now, in your case, with energy, the environment, and so on, I would

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advise to have you pick up like Nordic countries in Europe, about implementation of your ideas, one of my questions is how do you generally speaking go about this, and more specific, I would suggest having a specific partnerships with Scandinavia for environment, for eco-friendly production, so on, with France or something else, with Italy. More specifically, when are you going to be ready for the next step for implementation of your vision? (Laughter)

MR. KOMIYAMA: You should give some other advice to me. (Laughter) I think you are right. I'm doing several efforts to talk with Scandinavian countries including Denmark, Norway, and Sweden. They have some sympathy to my idea, but I think East Asia is very important because I'm a chemical engineer originally, and I have many friends in China, and we agreed before that kind of pollution happened, the cheapest way to avoid it, they could do that, that was much cheaper, so we have many corroborations now with East Asian countries, including Indonesia. For example, in Surabaya, the second biggest city. They introduced Japanese recycling system of garbage, various things, NPO based or NGO based communications started, but not quick as I wish.

MS. SOLÍS: In the back.

QUESTIONER: Thank you very much for the very thoughtful presentation. I have two related questions. One is very fundamental. As you pointed out, we are very proud of the fact that Japan could overcome so many difficulties, but I cannot help asking you why Japan could. I think there is something secret in Japanese characteristics.

My second question, we are facing lots of difficulties even today. Following up on the first point, how do you think we can kind of reproduce such a potential of Japanese people to overcome the difficulties? I think mainly by education. What do you think we can do right now to realize the Japanese people's potential to overcome these problems? Thank you.

MR. KOMIYAMA: Yes, I wish to have two of us. (Laughter)

MS. SOLÍS: I think the audience wishes that, too.

MR. KOMIYAMA: I talked with her before this meeting, what is the characteristics of Japan. Tidal, he is a very famous archaeologist. I have some sympathy with his idea. There are two areas which are very high civilization, Far West, including England, France, and Germany, and Japan,

Far East, and why.

There are very different kinds of people in the middle, like Genghis Khan. They invaded all around them, even China was invaded and controlled. The civilization was crushed. Only these two parts were not invaded. So, continuously, spontaneously, civilization developed. That is not my idea. I agree with it.

Another point and answer to your second question, in Japan, we had 650 years of peace from 800 to 1200, and 1600 to 1850. In these 650 years, we didn't have any war, domestically and internationally. So, Japan is a very peaceful country. We love peace.

This interferes with the breakthrough of Japan, I think. We are not good at very rapid change, which the people on the West Coast can do, in California (Laughter), not New England but California is a very singular point of human history. Japan is very different.

This is how we can overcome these difficulties in globalization and rapid change, this is a very quick answer.

MS. SOLÍS: Now I'm going to take questions two at a time because we are running out of time. I'm going to the back first. If you can be very concise so that everyone has a chance to pose a question to Professor Komiyama.

QUESTIONER: Hello, sir. I am from Tokyo Broadcasting System. Thank you for your great presentation. My question was on energy, you were talking about efficiency. Do you think Japan should still stick to the nuclear power plant after the Fukushima incident? If so, why, and if not, how gradual do you think we can substitute it by any other resource? Thank you.

MS. SOLÍS: Thank you.

QUESTIONER: Thank you very much. Thank you for inspirational presentation. I am from Johns Hopkins University. I'd love to ask your own views on the resource of self sufficiency, compatibility between that vision and global commercialism, trend all over the world. Your own view about the compatibility between self sufficiency --

MR. KOMIYAMA: Compatibility of what?

QUESTIONER: Your vision on the resource, more self sufficient society with global

commercialism. For example, TPP, the shared gas.

MR. KOMIYAMA: Nuclear issues, if we can use existing nuclear reactors, it is much easier. Even Germany get out of the nuclear vision. I think from the economical and technological point of view, we can do without nuclear because renewables become cheaper and more economical. Of course, huge investment has already been done to nuclear, so not using them is already a difficulty for Japan. I think we can do that even without nuclear. That is my opinion.

Compatibility, I don't understand the question, sorry.

MS. SOLÍS: I think she was just referring to Japan seems to be going in the direction or you are suggesting that Japan become energy independent in a world economy where it seems the consumption of resources increasing are decreasing, so where there is a gap.

MR. KOMIYAMA: For example, already oil prices dropped huge. Why? Chinese consumption came down. Why down? I think it's background in saturation. For example, the case of cement I showed, I am following cement in the country. In China, per capita of cement is now 18 tons per capita. In United States, it is 16 tons per capita. Per capita of cement is already bigger in China. In China, more than five times concrete made things, roads and buildings, exist now. I think it is more than saturation. That is the very basic background of oil price decrease.

It is already happening, I think. Compatibility of my idea with the global economy has to be done. That is my idea. It is already occurring. I think one way to avoid this economic crisis due to that saturation is my way.

MS. SOLÍS: Thank you. Two more questions and that will be the end of it. The gentleman in the back and the gentleman on this side, and if you can be very brief because we are out of time.

QUESTIONER: Yes, sir. Daniel Vasquez, CEO of Intelliwings International Consulting. Samuel Huntington in his book, "Culture Matters," said some cultures are just naturally better at adapting and improving than other cultures. Do you think Japan's methodical approach culturally will ultimately help it? Will that help Japan in the long run or hurt Japan, and how can American international consulting companies like mine help Japan in such a process? Thank you.

MS. SOLÍS: One last question.

QUESTIONER: Thank you. Alex Forster from the East-West Center. My understanding is there is a trend in Japan where single family homes often don't last, they are not passed on from generation to generation or sold, instead they are torn down and rebuilt. Does this have any implications for widespread use of renewable technology or major impacts as you see it on efficiency and resource consumption, and if it is problematic, is it something that can be tackled and addressed at a social level? Thank you.

MS. SOLÍS: Thank you.

MR. KOMIYAMA: The first question was what?

MS. SOLÍS: Talking about natural characteristics that help explain Japan's success in the past, and the question was Japan is known to be a country of a methodic approach to problem solving, and if you see that as one of the reasons Japan has been so successful in the past. I think there a plug for how consulting companies --

MR. KOMIYAMA: I think the weak point of Japan can be compromised by the strong point of the United States. The frontier spirit of the United States is what we wish to have. Both countries are very strong in technology. In 20th Century, we had 16 Nobel Laureates. This is the second largest number. First, of course, is in the United States, close to 100. After Japan, England is 12, I think, Germany, eight or something.

Japan is the world's second strongest country with respect to science. Both countries, the United States and Japan, are very strong in technology and science. If we can corroborate, I think it is the world's strongest.

The second?

QUESTIONER: (Inaudible)

MR. KOMIYAMA: We have to be smart. We are competing with Germany. We are 1.44 in Japan, 1.42 in Germany. Very close. This is a very important question. I think information and communication technology and the change of workstyle is key for better life and larger birth rate, because now the telecommunicating is not so -- I think it is enough.

The Mitsubishi Research Institute's people are working from computer, then only once a week they should commute physically, and other four days, they can do it teleworking. Then the young ladies who have babies can continue to work. I think that is very important.

Such technological support can change our society.

MS. SOLÍS: I would vote for that teleworking system. (Laughter) Thank you so much. It has been a delightful conversation. Please join me in thanking Professor Komiyama. (Applause)

MR. KOMIYAMA: Thank you very much.

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