

# ENHANCEMENT OF JAPANESE R&D AND INTERNATIONAL COOPERATION IN SCIENCE AND TECHNOLOGY

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## ABSTRACT

### 1. “East Asia Science and Innovation Area” initiative and the establishment of an East Asian community

What is the purpose of the initiative?

- Its position in the coming Science and Technology Basic Plan: Building a R&D system integrated with the world
- Economic partnership and Science, Technology and Innovation

### 2. The present situation and future prospects of the integration of the East Asia region

Historical development

Purpose

- Economic partnerships / Economic integration
- The rise of China and the change in the regional order

Recent trend

- China’s unilateral actions
- US engagement in the region

Shift in dynamics

- From Asia-Pacific to East Asia to Asia-Pacific back again

### 3. East Asia Science and Innovation Area -conclusion-

How to proceed?

What is the key to success?

## KEYWORDS

East Asia, East Asia Research and Innovation Area, Science and Technology, International Cooperation, Asia-Pacific

## Transcript (Tentative translation)

My name is Shiraishi. Thank you for the introduction. I would like to take this opportunity to talk to you about “Enhancement of Japanese R&D and International Cooperation in Science and Technology.” Actually, I have a thought about this title. It looks as though the end seems to link two different types of concepts at the same time, all in one, without anyone taking notice. But actually, we are thinking about what Japan should do and what Japan would like to do. And of course, that does not smoothly fit into what the international community would like to have us do. And so this is an area we have to get involved in. What we are doing here in Japan is trying to be able to coordinate our wishes with international requests and needs.

### **“East Asia Science and Innovation Area” initiative**

There's a lot of talk about East Asia in newspapers and other media and you may have already recognized the fact that Japan is thinking about the East Asian community concept and it is talking about the East Asia Science and Innovation Area. And there was this conference in Hanoi last year – the East Asia Summit. At the summit, there was a Chairperson's statement that noted Japan's initiative to build an “East Asia Science and Innovation Area” and its proposal to convene an EAS Informal Ministerial Meeting on Science and Technology. I think that, in a year's time, East Asia Summit would be considered as a formal item on the agenda.

I would like to point out what Japan would like to achieve with this “East Asia Science and Innovation Area” concept which emerged out of Japan and try to think about its position in the East Asian Community initiative and then go on to what kind of meaning does this initiative serve in the integration of the East Asian region which I think has been under discussion over the last 25 years..And lastly, I'd like to take up the point on how this initiative is going to be propelled forward.

Now, the Council for Science and Technology Policy is working on the Fourth Science and Technology Basic Plan. It is in the process of formulating this plan and the first draft has already come out. The Expert Panel on Basic Policy is trying to take this up and discuss and they are talking about internationalization integrated with the vigor of the world specifically: firstly, to try to see new dimensions of Science and Technology Diplomacy; secondly, to proceed with this East Asia Science and Innovation Area, and thirdly, to promote international cooperation in leading edge science and technology. And I think that these three themes will be there in the process of consideration. Actually, the basis of this idea was presented in the report of the Science and Technology Diplomacy Strategy Task Force in February.

The report of the Science and Technology Diplomacy Basic Strategy Task Force thinks about Japan and East Asia in 2020 to 2030, and looks into the possibilities of how developments will take place up to the year 2020 and to try to move backwards and see how Japanese science and technology strategy should evolve. Actually, there are about four different areas which have been considered and there are some points that need to be given adequate consideration.

One is the move to smaller-sized families and aging society, beside lower economic growth. The pull of the younger generation is smaller here in Japan in comparison to East Asian nations and in the year 2020, those in the 20 to 40 year bracket will be reduced to three-quarters of what it was ten years ago. This would mean that science and technology research which will be held and supported by these groups of people, will be reduced to three-quarters. And R&D investment here in Japan occupies about 18% of the global total, but this will decline to 16% even if it increases to about 4% of GDP. So, in terms of the number of researchers and in terms of the volume of R&D investment, relatively speaking, there will be lost ground for these areas. That's the first point I wanted to make.

And the second point I want to make is that in comparison to this backdrop, the Asian nations, particularly China, the Republic of Korea and Singapore are nations where there will be splurging on science and technology research in the future. And at the same time taking Asia as a whole, the issues of resource constraint, especially energy, water and food will be of very important concern as economic development take place and Japanese science, technology and know-how will be able to

serve a purpose in this arena. But, of course, countries such as Singapore, China and Republic of Korea will no longer be developing countries which solely need our support, but these will be countries which we will also require to build partnerships and sometimes build contemplative relationships among research institutes.

And the third point has to do with security which may not be a central issue here, and how we are going to develop weaponry jointly for the sake of defense. Looking at the period from 2010 to 2030, even the United States will find it very difficult to try to develop and produce all the necessary defense equipments for that alone. And so Japan would be facing the same situation. As I was talking with the Co-chair in the Council for Security and Defense Capabilities in the New Era, we were discussing about how we were going to proceed with the three principles regarding the export of defense weaponry and defense equipment. And we were talking about the development of defense equipment in this circumstance and how it's going to be important to develop them jointly with allied countries such as the United States, although there is no intention to export.

And the fourth point would be that R&D facilities, particularly when they become very large-scale will require international collaboration. It is going to be very difficult to try to confine activities within Japan alone.

### **Science and technology diplomacy strategy**

So, in science and technology diplomacy strategy, probably there would be four propositions that would be necessary. One is that R&D system should be established so that it can be integrated with the world. We need to build an international collaborative mechanism, particularly create a capacity-building framework.

But of course, the framework-building does not serve all purposes, so the second important thing is to try to engage in R&Ds which will promote developmental activities conducive to the development of the Asian area. "Green innovation and life innovation" are the key words that are being used very extensively these days, and so it's going to be important that there should be pilot projects which are able to put these R&D areas into actual implementation.

And thirdly, there are some innovative collaborations that are going to be also necessary--- International standardizations, collaboration on various certifications, etc. And fourthly, to try to build people's capacities in this respect as well. And these are the basic ideas of the current Japanese Science and Technology Diplomacy, which pushed the idea of East Asia Science & Innovation Area to be included in the Chairperson's Statement at the East Asian Summit.

Then, if we are talking about the East Asian community, how should these concepts be positioned and streamlined? It was summarized in a report of the Working Group on Exchange in East Asia which was held by the Commission on International Exchange Policy of the Ministry of Education, Culture, Sports, Science and Technology. The report was discussing about cooperation to try to bring about a stable, peaceful and flourishing East Asian community, and proposed the following five points.

1. Promoting economic partnerships, particularly the processes of EPAs and FTAs
2. Making regional steps to counter climate change and other environmental issues
3. Promoting cooperation in epidemics and disaster prevention, aiming at saving lives
4. Promoting cooperation in anti-piracy measures, search and maritime rescues to build a "Sea of Friendship"
5. Enhancing cultural exchange activities including human exchange programs

"Saving lives" or "Sea of Friendship" are the catchphrases of ex-Prime Minister Hatoyama. And he was very much interested in collaborating in areas of economic partnership, climate change, disaster prevention, epidemics, food security, capacity-building, and others in the establishment of an East Asian community, which the Japanese government has been emphasizing on.

### **Past and present regional integration in East Asia**

I would like to talk briefly how regional integration in East Asia has been made and how it is going to move. First of all, we use the term “East Asia” which include Japan, Korea, China, Taiwan, Hong Kong and Southeast Asia. Recently, we include India, Australia and New Zealand as well to the term “East Asia”. But I must say that this is a recent phenomenon. Originally Japan, Korea, China, Taiwan and Southeast Asia were called “East Asia” at around the 1990s. This is something that is well known. In 1985, there was the Plaza Accord. At that time, the exchange rate was at 260 yen to a US dollar prior to the Plaza Accord. And in 1990, it depreciated to 120 yen to a US dollar. With that the Japanese company had to maintain international competitiveness, and in so doing, they needed to establish manufacturing facilities overseas. That was also true for the Korean and Taiwanese companies. As a result, the production network has expanded in Asia and there was de facto economic integration that was created between 1985 and 1990. So that is one step we need to keep in mind.

In 1997 to 1998, there was the Asian Financial Crisis. It was said that if you leave everything in the hands of the market, there would be some failures, so there need to be institutions that have been created to address these, should there be some issues in the market. We started with the corporation in the monetary aspects. ASEAN Plus Three was kicked off in 1997, just the year when there was a financial crisis and this became a regular meeting in 1998. East Asia Summit started in 2005.

The objective of creating these institutions was twofold – one is that in different East Asian nations, the urbanization is proceeding rapidly. Lots of young people are entering into the labor market each year. In case of China, the number will differ depending upon how you include those engaged in agriculture, but approximately 14 to 17 million Chinese enter into the labor market. And 2.5 million people enter into the new labor market in Indonesia. The only answer to this is economic growth so that the purpose of politics was to enhance and promote economic growth. And in order to do so, it wasn't possible to be done by one nation alone. Then economic partnership promoted economic integration in this region. So that was one major purpose.

Another was that China was gaining its power and growing rapidly. As China grows, if an order is established centered on China, that's not necessarily desirable. And we don't want China unilaterally acting on its own. Thus, China has to be invited so as to create various rules and norms so that these norms and rules are to be abided by everybody, be it China or other nations in Asia. So that was the dual purpose which continued as an effort up until 2008 when there was the Lehman Brothers Crisis as people endeavored to create the East Asian Community.

Following that, in the last two years, I would say that there were a number of important events. One is something that appeared in the media almost day in – day out. Especially in the East China Sea and the South China Sea, the Chinese are asserting their territorial rights which are stated on a unilateral basis by China. The other is that although this is not too often taken up by the media, in East Asia, or should I say Asia and the Pacific, the trading system is beginning to change in the last two years. After the Plaza Accord, up until the financial crisis in 1997 – 1998, there was a triangular trade between Japan, Asia excluding Japan and the United States. The “flying geese” type of growth was possible, which was said to be led by Japan. However, after the financial crisis in 1997 – 1998, it was China, Asia excluding China and the United States, which resulted in the triangular trade – a shift has taken place in a short span of time. Japan, Korea, Taiwan and the ASEAN nations like Thailand and Malaysia, where there was a clustering of the industries, exported the capital and intermediate goods to China. Then, they were assembled and exported to the United States, resulting in triangular trade.

However, after the Lehman Brothers Crisis, there were two very noteworthy events. One is that after the Lehman Brothers Crisis, naturally the US market shrunk and therefore there was more expectation towards China. Actually, China put up a very major government led stimulus package of 54 trillion yen. However, if you look at the market for the final goods in East Asia and look at the scale by market, prior to the Lehman Brothers Crisis in 2008, in China it was valued at about 9 billion which went down to 6 billion. And in Japan, 30 billion did not change. In the States, it went down from 120 billion to 75 billion. So you can understand the extent of the crisis in which the US market has shrunk substantially. This is an important aspect. If there's a recovery in the US market, there should be a recovery in the East Asian market, as well. The market for final goods in China is less than

10 billion and I would say it's about the same size as Korea. So that is the importance of China. In other words, despite the fact that China had launched a stimulus package, it did not increase the domestic demand in Asia. In a sense, the Chinese market is so self-sufficient that you can't expect as much in final goods.

And with advancement of the industries in China, especially from ASEAN to China, the intermediate goods export has dropped. In case of China, capital and intermediate goods are exported from Japan because these are needed by the Chinese. However, if it were from ASEAN, the intermediate goods are not that sophisticated in technology and the Chinese do not require these, they can produce on their own. That is why ASEAN is losing ground.

Another point is that the United States has been involved again in East Asia. One is the issue of security in which the U.S. has started to support the position of ASEAN in the South China Sea and the issue of Japan in the East China Sea. The other is that while the absolute importance of the U.S. market was reconfirmed after the Lehman Brothers Crisis, the United States is advocating PPT which seems to be quite likely a scenario as a road toward economic integration of Asia and the Pacific free trade area. In summary, it is not just that there are some increasing concerns about China which is true, but an excessive expectation towards China in the economic aspect is also equally diminishing. And then the importance of the U.S. was reconfirmed once again and that was the timing in which the U.S. government decided to re-engage itself in East Asia.

In the 1990s, APEC led the economic integration in Asia and the Pacific. And in 1997 – 1998, the financial crisis shifted more to East Asia. There are many reasons but one of the reasons is that after the financial crisis of 1997 – 1998, the U.S. involved itself very aggressively in East Asia. It was not welcomed. The other is that there is again a shift in which the pendulum has swung back to focus on Asia and the Pacific.

### **Regional integration of East Asia and the significance of East Asia Science & Innovation Area**

Let me go back to the East Asian science and innovation area once again and consider its significance. It's interesting to note that each country recognizes the importance of innovation and no country would question that, but when you talk about science, technology and innovation, up until now there were no joint efforts of sorts placing importance on those areas. The East Asian Summit that took place last week would be appreciated in the future, as it announced that what is important is to reconfirm the importance of science and innovation and foster it.

How do we promote the East Asia Science & Innovation Area? What is the purpose? What needs to be done? I would say that there are three major things. One is that in the Asian region, we need to have accelerated exchanges of resources for science and innovation, so that the capability for research and development will be enhanced for the area as a whole. Secondly, on issues that are commonly faced by Asia, Asian nations can accumulate the expertise, the researchers and the resources and mobilize them together so that we can embark upon solutions to the challenges. And in order to implement this, there are some major pillars. a) The funds, the goods and the people need to be moved beyond the national borders in order to rejuvenate this science and innovation system. b) We need to promote joint research for the solution of Asian common issues and c) In order to disseminate the results of the above to the public, innovative measures are needed as well as efforts for international standardization.

So what is important is that this East Asia Science & Innovation Area is not an initiative in which the Japanese government alone is to provide funds. In the days of the Bush Administration in the area of counter-terrorism, there was the Coalition of the Willing. And probably this Coalition of the Willing is once again needed for East Asia Science & Innovation Area initiative. I'm not going to say how much money is to be provided, but let's assume that joint research is to be carried out. And it should not be an effort in which Japan will be the sole provider of the funds. So we are proposing this basic idea for this initiative and joint research is to be carried out within it. But if we talk about the framework alone at the outset, that would not be sufficient. There are a number of researches which Japan considers to be important. And for these researches, the Japanese government is going to

appropriate the budget so that it could implement the pilot project. It's not that we do have any specific projects or programs, but disaster prevention, infectious diseases and food supply are the three major issues in mind. And the Council for Science and Technology Policy has already asked for the funds to be provided for this purpose from the Special Coordination Funds for Promoting Science and Technology.

### **Conclusion**

In a nutshell, I feel that Japanese science and technology capability in 2020 would not be behind that of Asia, but it is a fact that other Asian nations are going to enhance their capabilities. Japan's presence in the science and technology fields or strategic position in technology in the world arena will be becoming less. So if I may say bluntly for those capable researchers in the world, we would like to invite them to Japan so that they could make contributions in strengthening the capability of research and development in Japan. And for the research that cannot be done in Japan, for example, open air GMO experiments may be carried out in one of the East Asia nations because some nations do welcome such an effort. But here again, it's not going to be single-handedly Japan's effort, but rather as the Chinese people often say, we need to restructure this to be a win-win situation. And this is what is meant by the East Asia Science & Innovation Area initiative and for the same basis, we need to resort to the capability of science and technology in China, and at the same time to elevate the level of the industries in China. Here again, not just Japanese, but Koreans, the Taiwanese, and other Southeast Asian nations, especially the nations in ASEAN are fearing the threat of a rising China so that these nations would like to further increase the capacity of their resources for the elevation of their industries.

I would like to conclude my presentation at this stage. Thank you so much for your kind attention.