The 3rd Study Meeting on Asia

1. Date: October 12, 2010 15:00 – 17:00
2. Venue: Meeting Room, the Takeda Foundation
3. Title: Industry and Academia Collaboration in Thailand
4. Speaker: Mr. Masayuki Kondo, Professor, Yokohama National University
5. Participants

01	Masayuki Kondo	Yokohama National University
02	Yoshio Nishimura	Visiting Professor, Waseda University
03	Kazutoshi Oyamada	International Program Department, Japan Society for the Promotion of Science
04	Ikuo Takeda	Chairman, the Takeda Foundation
05	MIstuo Akagi	Senior Managing Director, the Takeda Foundation
06	Ysuo Tarui	Managing Director, the Takeda Foundation
07	Yuzo Mizobuchi	Director, the Takeda Foundation
08	Norio Ohto	Director, the Takeda Foundation
09	Naoaki Aizaki	Program Officer, the Takeda Foundation
10	Aiko Ubasawa	Program Specialist, the Takeda Foundation
11	Setsufumi Kamuro	Program Specialist, the Takeda Foundation
12	Mototaka Kamoshida	Program Specialist, the Takeda Foundation
13	Emiko Mitsui	Program Officer, the Takeda Foundation
14	Takami	Member, the Takeda Foundation

6. **MEMO**

Penetration of Japanese firms in Thailand

From 1986 to 1990, Japanese firms had 38% of their oversea R&D sites in North America, 31% in Asia, and 24% in Europe. However, from 1991 to 2005, their overseas R&D sites shifted from North America and Europe to Asia (54%). As for Japanese overseas R&D sites that produce goods for local markets, most of them are located in China, followed by Thailand, Korea, Vietnam and India. As for foreign investment in Thailand, Japan made the highest contribution. From 1985 to 2005, 39% (4,144 projects) or 41% (volume, 4.6 trillion yen) of the total foreign investment in Thailand came from Japan. The number of Japanese firms

registered at the Japanese Chamber of Commerce in Thailand is 430,000, and the number of local employees employed by Japanese firms is over 1 million, which accounts for 20% of the total employees of manufacturing Industries in Thailand.

Japanese Contributions to Thai Universities

King Mongkut's Institute of Technology Lackrabang (KMTL) was originally established as a vocational education center, to which the Japanese government contributed by providing school buildings and equipment. They also helped develop the curricula for the center.

The Asian Institute of Technology (AIT) was originally established as a graduate school of engineering based on ASEAN treaties, but later became an educational foundation based on Thai law. The Japanese government supported its management in various ways including by sending teachers to teach at AIT.

Sirindhorn International Institute of Technology, Thammasat University was established with matching funds from the Japan Federation of Economic Organizations and the Federation of Thai Industries. Thai-Nichi Institute of Technology was established in 2007 by Thai students who received higher education in Japan and returned to Thailand; all students must take a Japanese language course. In 2007, the Tokyo Institute of Technology established a graduate school of international cooperation in collaboration with the National Science and Technology Development Agency (NSTDA) of Thailand and Thai universities.

Science and Technology and Innovation policies in Thailand

Thailand had no apparent policies for science and technology before the 21st Century. In 2001, the Thaksin Administration was elected, and they have established the National Council for Competition (NCC), and developed and promoted several policies aiming to strengthen certain industries, which provided a foundation for the current science and technology policies. In 2003, they developed the following national competitiveness plans.

- Automotive industry aiming to be the Detroit of Asia
- Food processing industry aiming to be the Kitchen of the World
- Fashion industry aiming to be the Tropical Fashion Base of the World
- Software industry utilizing IT
- Tourism industry integrated with hotel business

In 2004, the Thai government determined the following as the national science and technology strategies for the period 2004 to 2013.

- Cluster strategy
- Human resource development by science and technology
- Development of research infrastructure and institutes
- Building awareness and understanding of science and technology in people
- Reformation of management systems in science and technology

The Cluster strategy is closely related with the industries that are the focus of the National Competitiveness Plans. The Thai government has the National Research Council of Thailand (NRCT), which directly advises the prime minister in matters related to research policy and strategies in science and technology and social sciences. They also have the National Science and Technology Innovation Policy Committee (NSTIC), which coordinates polices among ministries related to the development of science and technology as a base for economic development; however, the NSTIC is not so influential because it does not have its own budget. In reality, the National Science and Technology Development Agency (NSTDA), an affiliate agency of NSTIC, has a significant budget and research forces. NSTDA has many research institutions including BIOTEC, NECTEC, MTEC, NANOTEC, and TMC, which provide small and medium sized enterprises with technological support.

The GDP ratio of the total investment in R&D in Thailand is 0.24 – 0.26 %, which is smaller than those of Japan (3%) and the US (2.7%), and the actual amount of budget is rather small. Public institutions including government institutions and universities spend 60 % of their total investment in R&D, and the expansion of investment in the private sector has been a major challenge for Thailand. Government institutions conduct mainly basic research in agricultural areas. Thailand also has royal projects whose budgets are not included in the government budget, although the amount does not seem negligible.

To become a professor in a university is rather difficult. Candidates need to be approved by a government committee. Universities can appoint associate professors or lower ranked professionals. The mobility of university teachers is low. Basically, a person with a Ph.D. degree can be appointed as an instructor, and no one hired by universities from other areas. Thailand has very few doctoral course graduate students, only 5 % as many as in Japan, which is

a major reason for the very low amount of research activity in Thai universities. Since research activities in universities are limited, most academia-industrial collaborations are short term projects based on personal connections. However, some of the higher ranking universities are active in academia-industry collaborations such as Mahidol Universit,y which has developed venture capital and actively invests in ventures.

Research and Development in the Private Sector

Most private firms in Thailand are developed from trading businesses and are not active in R&D activities. Foreign firms see Thailand as a manufacturing site and are not active in R&D activities. However, as globalization progresses, other countries with low cost labor are catching up with Thailand as manufacturing sites, and there is a growing need for R&D in Thai private firms. The following is a list of areas that have certain numbers of R&D human resources, accounting for 83% of all R&D human resources in the private sector.

- Food processing, beverages, tobacco 2800 personnel
- Chemicals, petroleum, coals, rubber, plastics 2500 personnel
- Machinery, equipment 2200 personnel

Overview

- Thailand has been mainly serving as a manufacturing site for domestic and foreign firms, but recently are converting themselves into a R&D site.
- The importance of innovation in own country increases.
- The importance of academia-industry collaborations increases as a tool for the promotion of innovation

Academia-industry collaborations are now developing as a reflection of the above mentioned factors.

QUESTIONS AND ANSWERS

Question 1

You mentioned that Japanese firms are shifting their overseas R&D sites from the US and Europe to Asia. China is a big market and I understand why they want to conduct R&D in China, but I don’t understand why they would locate their R&D sites in Thailand, which does not have a large market. You already mentioned that Thailand does not have many engineering students or engineers

in industry. Why do Japanese firms want to locate their R&D sites in Thailand where there are not many local human resources.

Professor Kondo
It is quite difficult for Japanese firms to develop goods for Asia in Japan. If you are not living in an Asian country, you would not know what kinds of goods local people want. Japanese goods in general have too many and too high functions, which can be accepted by Japanese consumers but not by their Asian counterparts. Commodity goods are usually produced in Asian countries, and to manufacture these commodity goods it is necessary to obtain parts that are available in local places. You would not know how much these parts cost unless you are living in an Asian country. For these reasons, Japanese firms are now establishing R&D sites in Asia where they have manufacturing plants.

Question 2
You mentioned that there are not many science major students. Does this mean that there is not a high need for engineers in Thailand?

Professor Kondo
Higher education in Thailand did not aim to nurture professional engineers. Good students used to go to American or European universities after graduating from good Thai universities. Thai industries are developed from trading businesses, and they did not need engineers. If necessary, they bought foreign machines and introduced foreign technologies to do business. Foreign firms saw Thailand as a manufacturing site and did not conduct any R&D in Thailand. According to the NSTDA study conducted in 2000, less than half of all private firms possess designing capacity, and less than one-third can conduct reverse engineering. Only 15% conduct R&D. Reflecting this situation, there have been many humanity major students and only a few science major students, especially graduate students, in Thailand. Currently, the Thai government is trying to tackle R&D through academia-industry collaborations, but the effort has not been successful because the research capacity of Thai universities has been low. The Thai government is considering developing measures to benefit science major students to change the current situation.