

Issues in the ASEAN Electric and Electronics Industry and Implications for Vietnam*

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Hisami Mitarai
Asia Business Consulting Department
Nomura Research Institute

This paper reviews the recent developments of the electric and electronics industry in Thailand, Malaysia, Indonesia and the Philippines in detail. For each country, industrial policy, industrial profile, and priorities from the viewpoint of Japanese manufacturing enterprises are analyzed. The paper also provides some lessons for Vietnam whose electric and electronics industry is in the early stage of development. The information contained in this paper is based on the author's long-term research and consultancy in the electric and electronics industry in East Asia, which is further updated by an intensive study conducted for the Japan International Cooperation Agency in 2003 and 2004.

I. Thailand

1. Industrial policy

During the 1970s, Thailand adopted an export promotion policy for the electric and electronics industry through tax incentives for exports. Following the Plaza Agreement in 1985, it developed electric power supply, industrial parks and other infrastructure while carrying out legal reforms, including the law concerning the ratio of capital participation, to ensure free manufacturing environment for foreign companies. This resulted in a large inflow of export-oriented manufacturers from Japan and elsewhere. Foreign investment increased steadily through the mid 1990s but the country was hit by a serious economic crisis in the wake of the collapse of the baht in 1997. Since then, the Thai Ministry of Industry has been working on a radical reform of the country's industrial structure and the development of small and medium-sized enterprises.

* This paper was originally presented at the VDF workshop on Electronics in ASEAN4 and Lessons for Vietnam on August 9, 2004. The first part of the original paper is omitted here due to the limitation of space. The current version contains the remaining two-thirds of the original paper.

From the second half of the 1990s and onward, the prevailing view was that the investment outlook for Thailand was bleak due to the damage caused by the economic crisis and the emergence and intensification of competition from China. However, the recent SARS epidemic has highlighted the need to diversify business risk geographically rather than concentrating all investment projects in China. As a result, there has been a recovery of investment in Thailand, a country that has a favorable investment climate and high growth potential, especially in the automobile sector. Although the regional investment environment is changing dramatically due to competition vis-à-vis China and the removal of trade barriers under AFTA, the electric and electronics industry in Thailand has rebounded strongly in recent years thanks in part to the progress in the government's efforts in structural reform.

In Thailand, incentive policies for foreign investors have been implemented by the Board of Investment (BOI) in a manner that strikes a balance between indigenous and foreign firms. In the past, there were restrictions on the ratio of foreign capital participation based on the participation in the domestic market and contribution to exports. A prominent characteristic of the Thai system was a zoning system (from zone one to zone three), under which different incentives, including reduction or forgiveness of corporate taxes, were granted to companies located in different zones. This was to prevent an excessive concentration of foreign companies in the Bangkok area. After the economic crisis, however, most of these restrictions have been removed. Since the inauguration of the Thaksin government, incentives have been changed into those for projects for the development of science and technology and for R&D to encourage transfer of advanced technology to Thailand.

The creation of EEI and strengthening of its functions

The Electrical and Electronics Institute (EEI), established in 1998 as an independent public-interest corporation by the Ministry of Industry, was one of the concrete action plans for changing the industrial structure. Some functions, such as the formulation of policies for different industries, budget-making and services to private enterprises, have been transferred from the Ministry of Industry to EEI. Seven similar institutes, including the one for the automobile industry, have been established. EEI began its operation at the beginning of 1999 and has been instrumental in the development of the electric and electronics industry. It plays a particularly vital role in providing a bridge between the public and private sectors and coordinating interests among private enterprises.

The major source of income for EEI is fees from inspections and approvals, seminars and training, and consulting services. Since 2004 when it became an independent corporation, the Institute began to face various problems including securing operational budgets for the entire organization and maintaining the level of technology for inspecting safety standards. The Japan Overseas Development Corporation (JODC) has conducted a follow-up study on EEI and has made some recommendations in the areas indicated

below, but they still remain unimplemented.

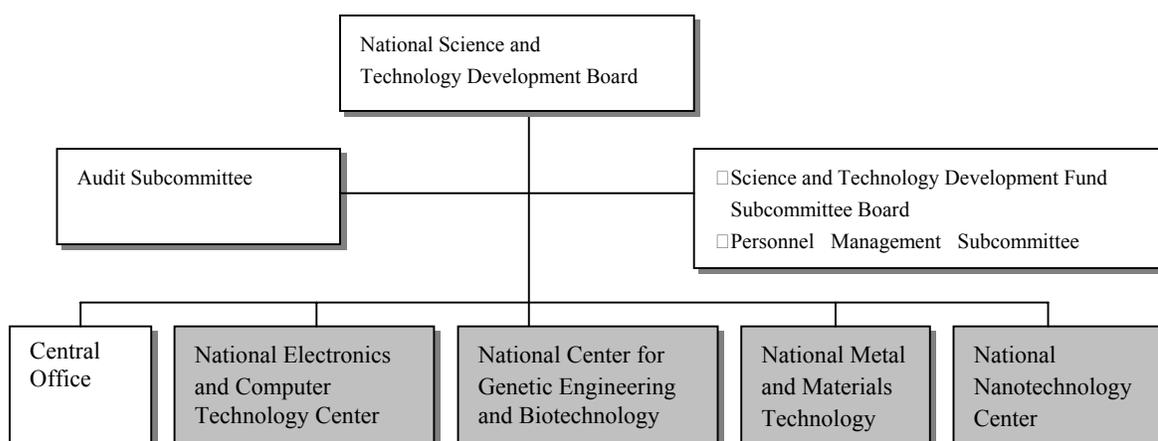
- Product quality, safety and environmental tests related to the electric and electronics industry (i.e., transfer testing facilities from TISI)
- Providing information on production, technology and sales
- Creating a framework for cooperation between the public and private sectors and with relevant agencies in Thailand and elsewhere
- Research on policy and strategy formulation for the electric and electronics industry and recommendations on the drafting of development plans for the industry

NSTDA's research and development framework

The government of Thailand is implementing the National Science and Technology Strategy Plan (2004-2013) which emphasizes networking in science and technology and promotes the linkage among public and private organizations including the government, private manufacturing companies, service providers, financial institutions, educational institutions, and so on. In Thailand, universities are primarily for the training of human resources and have not yet achieved the status of R&D centers. Under such circumstances, the National Science and Technology Development Agency (NSTDA), established under the umbrella of the Ministry of Science and Technology, has been developing and managing a science park since 1996. A great deal of expectation is placed on the park as an R&D center in support of the nation's science and technology policy. Approximately 1,800 people are working at the park, of which approximately 800 are scientists and researchers. They are conducting R&D in such areas as information technology, biotechnology, materials, nanotechnology and so on.

At the science park, joint research has already been conducted with Toyota Motor Corp. and Honda Motor Co., Ltd. in the area of materials development. There are also other plans. Hence, although limited, it can be said that collaboration between Japanese companies and indigenous R&D teams has already started in the automobile industry. Although joint research with private enterprises is not yet very active, more research is expected in the future in the areas of automobiles, biotechnology and related disciplines. Specifically, there are joint studies on shrimp farming with the CP Group, a Thai business capital, as well as on automobile brakes with an automobile part subcontractor which supply to Honda Motor Co., Ltd.

Figure 1. Organization of the Science Park in Thailand

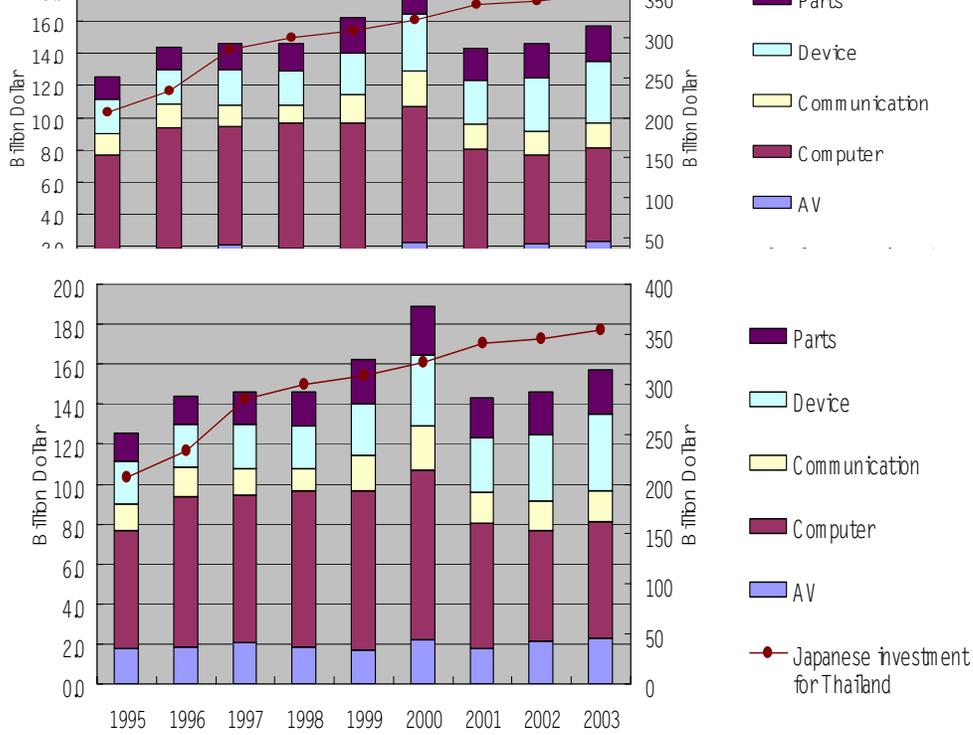


Source: NSTDA homepage.

2. Industry profile

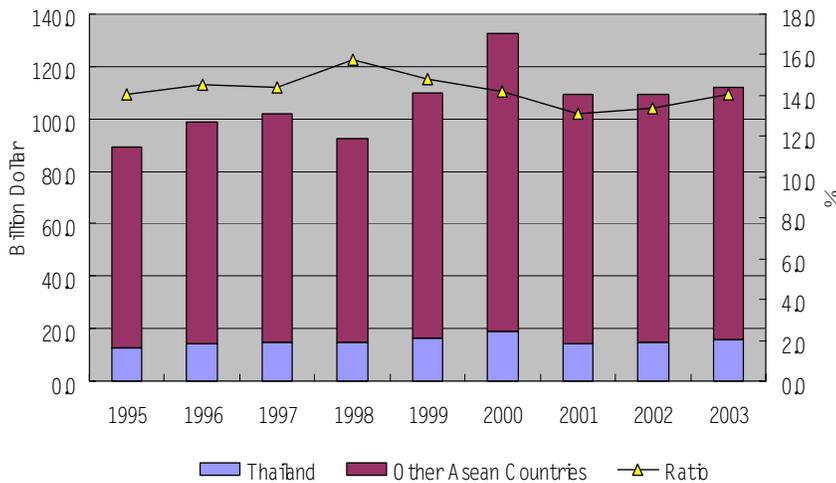
In Malaysia, the industrial clustering of Japanese electronic assemblers and parts-makers has developed, generating a great deal of synergy through mutual transaction. By contrast, there is little mutual interdependence among companies operating in Thailand. A large number of foreign companies manufacture white goods (home appliances), TV sets, video-recorders and information equipment, and there are also many parts-makers for AV products and information and communications. However, the feature of the electrical and electronics industry in Thailand is that these firms operate mostly independently from one another. At the same time, there are more clusters of companies making electrical and mechanical products, such as printers, and their parts than the clusters of companies making electronics products. Thailand, with a larger population size than Malaysia, has a large demand for machinery products and parts, which accounts for its relatively high level of machinery processing technology.

With the emergence of China and the implementation of AFTA, the production structure of the Thai electric and electronics industry is being restructured. Although Thailand is influenced by the policy of Japanese companies to promote selective consolidation within the ASEAN region, this does not mean that Thailand is not competitive vis-à-vis China in terms of labor and logistics cost. In fact, the restructuring process is showing clearly that Thailand is an export center of white goods and information equipment. It is noteworthy that the U.S.-based Seagate has recently announced its plans to rebuild its HDD plant in Thailand. There is also similar relocation by such companies as Fujitsu Ltd. and Hitachi, Ltd. Thailand is replacing Singapore as a major production center of HDD.



Sources: *The Yearbook of World Electronics Data* (Read Electronics Research), and the *Ministry of Finance Statistics Monthly*, various issues.

Figure 3. Thailand's Share in Electric and Electronics Production in ASEAN



Sources: See Figure 2.

3. Priorities for Japanese companies

While Japanese companies are contributing greatly to the electric and electronics industry in Thailand, they are also saddled with various problems ranging from the legal and policy framework to the underdevelopment of supporting industries and shortage in human resources. Fundamental solutions to these problems have not been found despite efforts of the government of Thailand and ODA from Japan.

Legal and policy framework

As far as institutions are concerned, investment related laws and organizations for their enforcement are already in place. However, considerable degrees of latitude are given to the government as well as officials in charge in the actual implementation of these laws. This has caused serious troubles in the business operation of many Japanese companies. For example, foreign companies recognized by the Board of Investment (BOI) are theoretically allowed to import materials tax-free. However, the implementation of this policy takes the form of import tariff refunds at the presentation of the proof of exports. The procedure is cumbersome and many companies point out that refunds are sometimes arbitrarily delayed for an extended period of time. In addition, when import duties are revised, companies are required to pay the differences between the old and new tariff rates retroactively, and this occurs quite frequently. Thus, policy continuity is seriously questioned. A large number of Japanese companies operating in Thailand, including those in the electric and electronics industry, face these problems and call for remedy. Although the principal mission of BOI is to bring foreign companies to Thailand, it is time that BOI also pay more attention to providing follow-up services to the companies that have already come to the country.

Underdevelopment of supporting industries

For Japanese companies operating in Thailand and wishing to promote indigenous enterprises, the fostering of entrepreneurial mind in Thai businessmen is essential in order to realize QCDS (quality, cost, delivery, service), a typical goal of Japanese firms. This is perhaps more important than obtaining manufacturing technology and updating production machinery and equipment. The latter two can be achieved by increasing human resources and raising funds. By contrast, business mentality is deeply rooted in the national character of the Thai people. To change this, fundamental measures, such as a radical reform of the educational system, is required.

In Thailand, the need to promote supporting industries has long been recognized. However, the acute demand for this is becoming ever more apparent as the country becomes more export-oriented. Some transfer of technology and training of skills have been conducted in the areas of plastic and metal pressing which require a relatively low level of precision. However, the current levels of parts and materials processing and surface-treatment technology, such as coating and plating, remain too low for the use in export-oriented electric and electronics products. Further support is needed in this area through expert dispatch and other means. In recent years, as Western and Japanese automobile companies began to focus on Thailand as a production center in the ASEAN region, the clustering of parts-makers is taking place. This, in turn, has further intensified the need to enhance supporting industries. If this goal is achieved, Thailand may be able to start a virtual circle to raise the technological sophistication of its industries.

The Japanese Chamber of Commerce and Industry and the Thai Industrial Federation have jointly hosted “Productivity Seminar” with the backing of Japan’s Federation of Economic Organizations. This annual event has been held four times since 2000. This program is targeted at small and medium-sized indigenous enterprises and trains 40 persons from 20 companies per course (two persons from each company, namely, the president and the manager in charge). The seminar runs for four days with an emphasis on the on-the-job training (OJT); it includes lectures centering on case studies, factory visits and practical training in the workshops of model companies. This program is evaluated highly for being very practical. It has been proposed that the seminar be held more frequently and the number of participating companies be increased. But the problem lies in the follow-up process after the seminar. Since no company participates on a continuing basis, it has not been possible to evaluate how useful the training has been.

The SME Program Act and a master plan are being implemented for the development of small and medium-sized enterprises. In addition, the Institute for Small and Medium Enterprises Development (ISMED) was established in April 1999 as a core agency for this purpose. It has offered training programs and consulting services in cooperation with major universities and chambers of commerce and industry in different regions. However, the participants and contents of many current programs are designed for very small companies, and few programs are suitable for slightly larger enterprises that constitute the supporting industries of the electric and electronics industry.

Securing human resources

Human resources that Japanese companies in the electric and electronics industry desire most are engineers in designing, manufacturing and information systems as well as administrative personnel including accountants. While they want to recruit talented design engineers and accountants, for instance, very few universities in Thailand have the department of science and engineering or accounting. When a particular type of persons are in great demand while they are limited in supply, it is very difficult for companies to secure talented personnel. To cope with this problem, companies must introduce an incentive system such as paying more to those who do better work. However, due to traditional labor-management practices, it is almost impossible to obtain the consent of the labor union to accept large wage differentials within a company.

In Thailand, approximately 70 universities including Chulalongkorn, Thammasat, and King Mongkut’s Institute of Technology graduate students in science and engineering. Although national and other public universities alone are estimated to graduate just over 20,000 science and engineering students every year, approximately 10,000 of them are majoring in chemistry or science and only about 10,000 are in engineering disciplines such as electrical or mechanical engineering. By contrast, in China, 1,225 universities graduate over 450,000 science and engineering students annually (2001 data). While it is relatively easy to continue hiring inexpensive but talented engineers in China, companies

operating in Thailand do not know whether they can hire engineers of high caliber at all. Even if candidates are found, they would cost dearly to the hiring companies.

Currently, a plan is underway with the backing of Japan’s Ministry of Economy, Trade and Industry (METI) to establish in the near future an organization to train workers for Japanese companies operating in Thailand. The curriculum under discussion calls for three to six months of education and training in the areas of administration (accounting, labor management, legal affairs, etc), design related fields, and production related disciplines (assembly department and production technology department). Each session is proposed to have approximately 10 instructors and 100 trainees. The remaining question is how to incorporate OJT in the program in addition to lectures.

Table 1. Educational and Human Resource Supply Systems in Thailand

Educational system of the Ministry of Education	There are two education paths. The first consists of 6 years of compulsory education, 3 years of lower secondary school, 3 years of upper secondary school and 4-5 years of university education. In the second, pupils obtain a vocational training certificate, followed by 2 years of study for a diploma and another 2-3 year study for a Bachelor’s degree.
Educational system of the Ministry of Labor and Social Welfare	Under this system, 6 years of compulsory education is followed by vocational training (equivalent to 3 years of lower secondary education) and additional vocational training for Grade 1 certificate (equivalent to a vocational training certificate), for Grade 2 (equivalent to a 2-year diploma course) and for Grade 3 (equivalent to a Bachelor’s degree). However, education for Grade 2 and 3 is not being implemented at present.
Skills development and training centers	<ol style="list-style-type: none"> 1. Department of Skills Development (DSD) of the Ministry of Labor and Social Welfare <ul style="list-style-type: none"> --Approximately 50 vocational training centers nationwide (RISD established in 1994, PCSD established in 1999) --In the electric and electronics field, training in computer operation, electrical works, TV and air-conditioner repairs, mechatronics, etc. 2. Bureau of Supporting Industries Development (BSID) <ul style="list-style-type: none"> --Formerly, Metal Machinery Processing Training Center established in 1988 --With JICA’s support (1999-2004), focuses on the fostering of plastic processing and metal molding 3. Thai German Institute (TGI) <ul style="list-style-type: none"> --Established under a joint project of Thailand and Germany in 1995 --Skills training in three areas: automation, CAD/CAM, and metal mold designing for presses and plastic processing 4. Ayuttaya Technical Training Center (ATTC) <ul style="list-style-type: none"> --Established as a joint venture between Canon and King Mongkut’s

	<p>Institute of Technology, north of Bangkok in the Ayuttaya Industrial Park (1992) --Presses, electric/electronics, CNC, automation, and plastic processing</p> <p>5. Technology Promotion Association (Thailand-Japan) (TPA) --A seminar company established with the backing of Japan’s METI and Japan-Thailand Economic Development Association --Holds seminars on production management, IT, quality standardization and other aspects of business management</p> <p>6. National Electronics and Computer Technology Center (NECTEC) --Established in 1994 as an arm of the Ministry of Science and Environment --Holds seminars for human resource development, such as business support with IT, IC designing, and R&D activities</p> <p>7. EEI --Established as an independent agency in 1998 under the umbrella of the Ministry of Industry --Also holds seminars on technology, business and management</p>
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Source: Compiled from “A Study for Planning Supporting Measures for Structural Reforms of the Electric/electronics Industry in Thailand,” (JODC, September 2001).

II. Malaysia

1. Industrial policy

Under the strong leadership of the former Prime Minister Mahathir, the Ministry of Industry Development Authority (MIDA) has executed industrial policy comprised of the development of natural resources, the attraction of foreign companies in the electric and electronics and related industries, and the domestic production of automobiles. Especially under the “Look East” policy, which aimed to emulate Japan’s high economic growth, the government strongly promoted the policy of export promotion through the attraction of foreign investment until the mid 1990s and successfully created a vast clustering of the electric and electronics industry. Economic management was very difficult during the regional economic crisis of 1997 and the nation was forced to reform its industrial structure. However, Malaysia has overcome the difficulties by adopting an independent foreign exchange rate policy (a fixed exchange rate) against the will of the IMF and is now exploring the path to new growth in the 21st century.

The economic policy based on the absorption of foreign capital proved successful, and Malaysia has become an economic forerunner in the ASEAN region. However, as a multi-ethnic nation with the Malays accounting for 60 percent of the population, Chinese for 20 percent and Indians and others for 20 percent, the Bumiputra policy, which was designed to improve the status of the Malays, has had both favorable and unfavorable

impacts on the country. Contrary to the then Prime Minister Mahathir's intention, the society that treats the Malays favorably in politics, economy and business has not been conducive to spreading the philosophy of *monodukuri* (manufacturing products) which Japanese companies seek. As a result, there has not been much transfer of advanced technology to the Malays or indigenous enterprises.

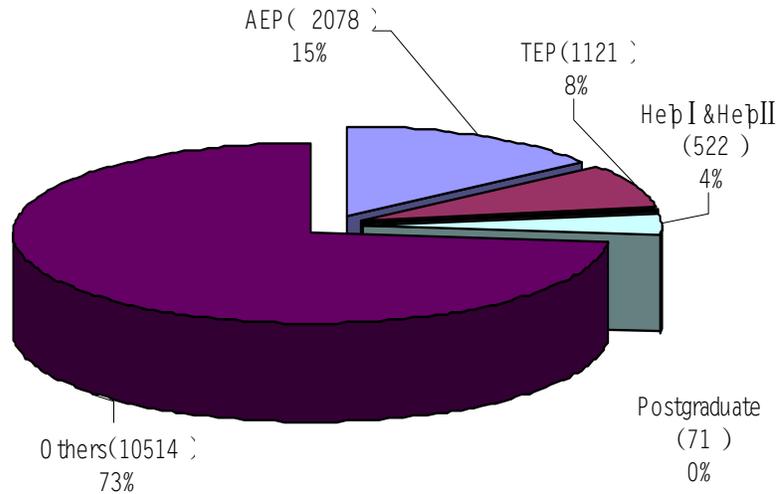
Given the limited domestic labor supply and the erosion of cost competitiveness, the government has announced a policy shift from production-based economy (P-economy) to knowledge-based economy (K-economy) in the mid 1990s to grow out of the simple assembly industries dependent on foreign capital. Although Malaysia appeared to be in a relatively good position to cope with Chinese competition thanks to its vast clustering of Japanese and other foreign companies, it has sharply changed its foreign investment policy after the regional economic crisis. The attention has now turned to the development of high value-added industries through R&D and IT investment. Malaysia is making great effort to realize the Multi Media Super Corridor (MSC) initiative launched in the mid 1990s.

“Look East” policy

In designing a nation-building strategy for Malaysia, the then Prime Minister Mahathir adopted “Look East” policy in 1981 to learn from the economic development of Japan and Korea. In conjunction with the Bumiputra policy, he built a system of sending Malays to countries around the world for further studies. As Mahathir took special note of the work morale, ethics and managerial capability of the Japanese, approximately 14,000 Malay students have studied in Japan under this scheme through 2003. Students who wished to study abroad under the “Look East” policy program received preparatory education in the Japan Center on the campus of the University of Malaya and went on to different departments of Japanese universities. To date, 1,580 Malays have completed the studies at Japan's national universities.

Against the backdrop of the “Look East” policy, Institut Teknologi Mara and other national universities have produced an increasing number of graduates under the continued policy of favoring the Malays. As a result, Japanese companies recruiting locals often find that those who have studied abroad with their own expenses are generally more talented than the graduates of universities that favor the Malays. However, as the “Look East” system already has a history of 20 years, some former students in Japan have taken advantage of their experiences with Japanese companies to establish their own business. Recently, 25 such successful entrepreneurs got together to start “Look East Venture” and, by developing it into a chamber of commerce and industry, are now working to serve as a bridge between Japanese companies (especially the Japanese Chamber of Commerce and Industry) and indigenous businessmen.

Figure 4. Results of Foreign Studies by Look East Policy



Source: Japan Bank for International Cooperation (JBIC).

Note: The Look East Policy in Malaysia contains the following programs: (i) Academic Education Program (AEP); (ii) Technical Education Program (TEP); (iii) Japanese Language Program for Malaysia Teachers (JLPMT); (iv) Industrial and Technical (In-Plant) Training Program (ITTP); (v) Short Term Training for Malaysian Executives (STME); (vi) Business Management Training and Attachment Program with Japanese Companies; (vii) Sponsorship by Japanese Government/Agencies.

Multi Media Super Corridor (MSC) initiative

Although Malaysia continues to be the principal production center of the electric and electronics industry in ASEAN, it is beset with two major problems: (i) the underdevelopment of supporting industries which causes dependence on imported parts and materials; and (ii) labor shortage and the resulting increase in the labor cost. As part of the MSC initiative, the government has announced the policy of strengthening the electrical and communications field by turning its attention to the fields such as information and communications equipment and software. This means a shift away from electric and electronics assembly of household appliances. At any rate, because AFTA will force each country to specialize in fields in which it has competitive advantages, the growth of the conventional assembly of household appliances is likely to slow down sooner or later.

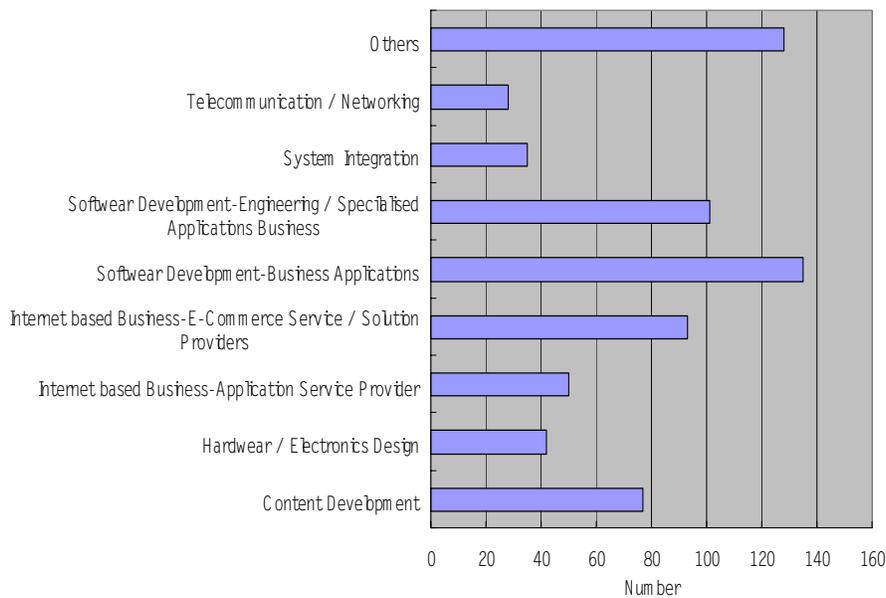
The MSC initiative creates a research and development center for the industries based on IT. It covers an area of 15km by 50km ranging from the center of Kuala Lumpur (KL) in the north to the KL International Airport in Sepang in the south. It contains a total of eight special projects including distant healthcare, smart schools, R&D clusters, multi-purpose cards and electronic governments. Companies engaged in any of these projects are accorded preferential treatments such as the choice between a pioneer status for 10 years and 100-percent investment tax exemption (ITA). They are also allowed to employ foreign professionals as needed.

Table 2. Multi Media Super Corridor: Participating Enterprises

	1997	1998	1999	2000	2001	2002/11
Malaysian capita(50%<)	47	84	181	276	410	522
Foreign capita(50%<)	44	84	112	144	198	239
JV (50%-50%)	12	31	34	38	50	53
(Global big company)	3	6	7	9	13	18
Total	94	197	300	429	621	779

Source: MSC.

Figure 5. Multi Media Super Corridor: Participation by Sector (Nov. 2002)



Source: MSC.

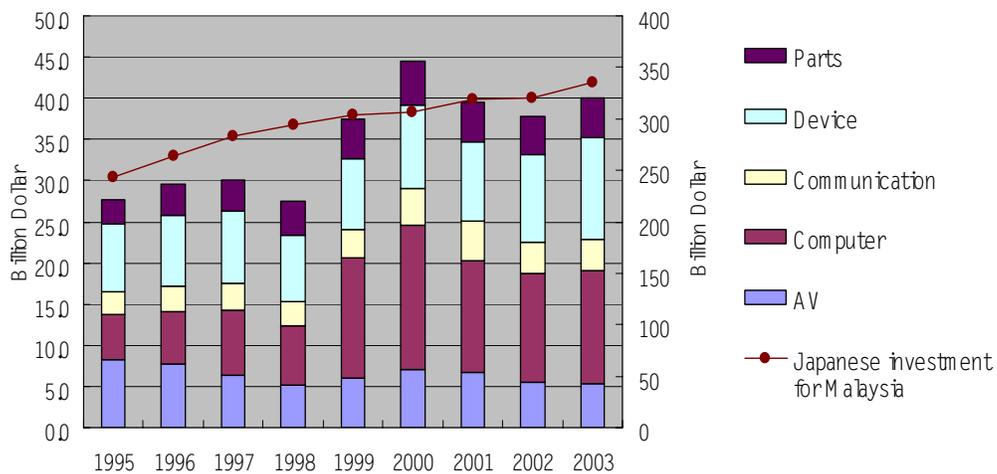
Initially, doubts were raised over the construction of MSC as a symbol of shifting to the K-economy in the aftermath of the economic crisis. But in reality, MSC has expanded steadily. Approximately 800 domestic and foreign companies have obtained an MSC status to participate in the electronic government project promoted by the government of Malaysia or to use it as an R&D center for their own business. There is very little participation of Japanese companies at MSC, however. The operations of participating Japanese companies, such as NTT and Matsushita Electric Industrial Co., Ltd., are small and have only scores of researchers and development staff. On the other hand, IBM and other Western companies have built R&D teams here with hundreds of research related personnel.

2. Industry profile

The electric and electronics industry is a key industry in Malaysia accounting for 3.5

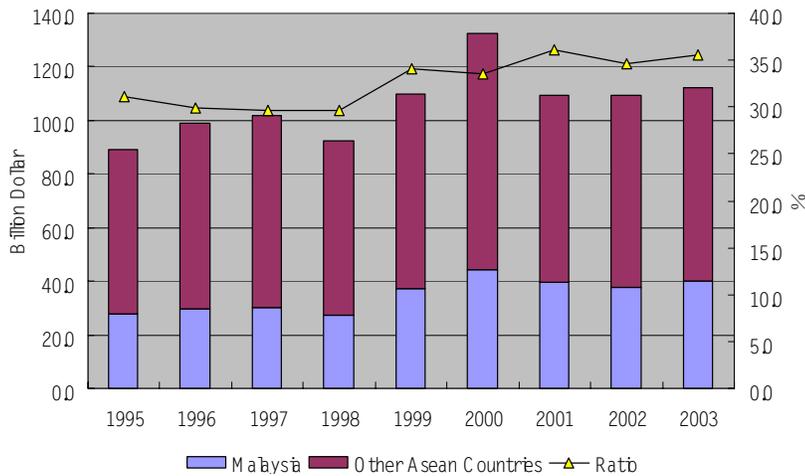
percent of employment, 56 percent of exports and 49 percent of imports. Originally, foreign manufacturing companies came to Malaysia because the conditions for low-cost production existed thanks to various incentive schemes, availability of low-cost labor force, export processing zones (EPZs) and infrastructure such as roads, harbors, airports, and communications. Furthermore, the sustained increase in investment for over 30 years under political stability, transparency, policy consistency, the ability for English communication and a favorable living environment has transformed Malaysia into a major production center for the electric and electronics industry. Also at the local government level, individual local governments have fine-tuned their policies to bring in foreign companies most suitable to their conditions and provided relatively appropriate follow-up services to those which actually came. This has led to a virtuous circle of investment projects inviting more investment projects. At present, there are 14 export processing zones and more than 200 industrial parks which have been developed primarily at the regional level.

Figure 6. Production Trends of Electric and Electronics Industry in Malaysia



Sources: *The Yearbook of World Electronics Data*, Read Electronics Research; and *Ministry of Finance Statistics Monthly*, various issues.

Figure 7. Malaysia's Share in Electric and Electronics Production in ASEAN



Sources: See Figure 6.

Companies manufacturing electric and electronics products and parts in Malaysia, which are mostly Japanese, have formed clusters and contributed significantly to Malaysia's exports. Companies forming these clusters are mutually interdependent and benefit greatly from the synergy effect of clustering. However, their business is primarily among themselves (Japanese companies) and they conduct very little business with indigenous firms. In this sense, there is only a very small degree of transfer of technology. This is not because Japanese companies are intentionally restricting technology transfer but rather due to the effects of the Bumiputra policy. The greatest reason for the lack of linkage with the indigenous sector is the shortage of ambitious entrepreneurs among the native Malays who want to run technology-oriented manufacturing operations.

3. Priorities for Japanese companies

The electric and electronics industry in Malaysia depends heavily on the activities of Japanese companies. Although many improvements were made under the Mahathir government in such areas as the legal and policy framework, supporting industries, human resources and other reforms, the investment climate is not yet sufficiently favorable. The problems of underdeveloped indigenous businesses and the shortage of human resources, in particular, are not likely to be solved soon. They have become serious impediments to the future growth of the Malaysian manufacturing sector.

Legal and policy framework

On the one hand, the revised investment law in 2003 permanently removed the restriction on foreign capital participation in manufacturing industries, which had earlier been eased provisionally in the wake of the regional economic crisis. The incentive mechanism has also been enhanced through the granting of pioneer status in R&D and international

merchandise distribution and the creation of other incentives. On the other hand, the continuity and consistency of government policy are being questioned as some officials have not been able to catch up with the rapidly-changing technology. For example, tariff rates on parts and materials used in the electric and electronics sector are often applied arbitrarily by officials in charge. Some procedures which are legally in place, such as land registration, relations with the labor union and court procedures are extremely time-consuming. Many problems are also reported regarding the low morale of government officials as well as the inefficiency and ambiguity in the procedures for application and approval.

Underdevelopment of the supporting industries

Although the government is trying to develop small and medium-sized enterprises through the Small and Medium Industries Development Corporation (SMIDEC), there are still very few indigenous companies that can supply parts to Japanese companies on a continuing basis or export products through independent marketing effort. The Vender Development Program (VDP), aimed to strengthen supporting industries by assisting indigenous enterprises with the cooperation of Matsushita Electric Industrial, Ltd. and other foreign companies is one of the key policy vehicles for this purpose, but its initial goals have not yet been reached.

VDP is a program initiated by the government of Malaysia in the middle of the 1990s to promote Malay-capital companies with the cooperation of primarily Japanese companies. Under this program, [the foreign anchor company is to be linked with a commercial bank and supplier companies, and asked to create one or two local business partners per year.](#) Indigenous suppliers that are competitive enough to work with foreign companies are found only among plastics processing companies in the Shah Alam region or among HDD parts and related product makers in Penang. Successful indigenous suppliers are those receiving Japanese technicians and engineers on a fixed-time basis or those that have been successful in expanding the customer base. Suppliers that depended solely on the assistance of anchor companies have not generally been successful. By contrast, Chinese-capital companies which are not the beneficiaries of the program have worked to expand the customer base more aggressively and do business with foreign firms more closely.

It is essential to develop supporting industries, a crucial element in enhancing competitiveness, to keep the Japanese companies in the electric and electronics industry from relocating their plants out of Malaysia. Foreign companies themselves are making significant efforts to support indigenous firms. However, faced with intensifying global competition, they do not have enough time or human resource to support them on a one-on-one basis. Although the government of Malaysia, the government of Japan and Japanese companies have made various joint efforts to develop supporting industries, including the VDP program mentioned above, they have not been very successful partly

due to the Bumiputra policy.

At the end of 2002, the Japanese Chamber of Commerce and Industry in Malaysia (JACTIM) made a new proposal to Prime Minister Mahathir regarding the importance of the development of supporting industries. In July 2003, it hosted a symposium jointly with the MIDA, SUMIDEC and others with the participation of important official and business figures from Japan. It is making an appeal to the Malaysian authorities that the development of supporting industries is essential for the country to survive the changes in the international investment environment such as competition against China and the implementation of AFTA, and to maintain the competitiveness of its manufacturing industries. It is also proposing a new program aimed at fostering strong supporting industries, such as the leveling up of workers in die casting, plastic processing and metal pressing, by taking advantage of the subsidy system of SUMIDEC.

Securing human resources

In the assembly of electric and electronics equipment and its parts, Japanese companies need and expect a stable supply of a large number of workers. However, the population of Malaysia is only 24 million and its labor force is 11 million. The country is therefore obliged to rely on approximately three million foreign workers. As Malaysia recovered from the economic crisis of 1997, labor shortage is again becoming a serious problem. Many Japanese manufacturers in Malaysia employ female foreign workers on a two-year contract. There are approximately three million such workers, of which Indonesians are the largest in number. At a higher skill level, it is also difficult to find engineers such as die casting processors in Malaysia. Japanese companies often outsource such engineers from India or Bangladesh on a contract basis.

As a part of MSC, the Multi Media (MM) University was established as an institution open to all students including non-Malay Malaysians. A great deal of hope is placed on it as a source of acutely needed human resources. It is principally aimed at the education of IT-related professionals, but it also produces technical engineers in the electric and electronics industry. The MM University has two campuses in Malaysia, namely Cyberjaya and Meraka, and plans to open a branch in Thailand in the near future. It is likely to contribute significantly to the business community by supplying human resources. It currently enrolls a little over 7,000 students at each of its two campuses. Since admission to the MM University is not bound by the Bumiputra policy, the technical level of its graduates is quite high. However, many of them are reported to be working for Western companies such as Motorola and Intel, and very few have come to work at Japanese companies.

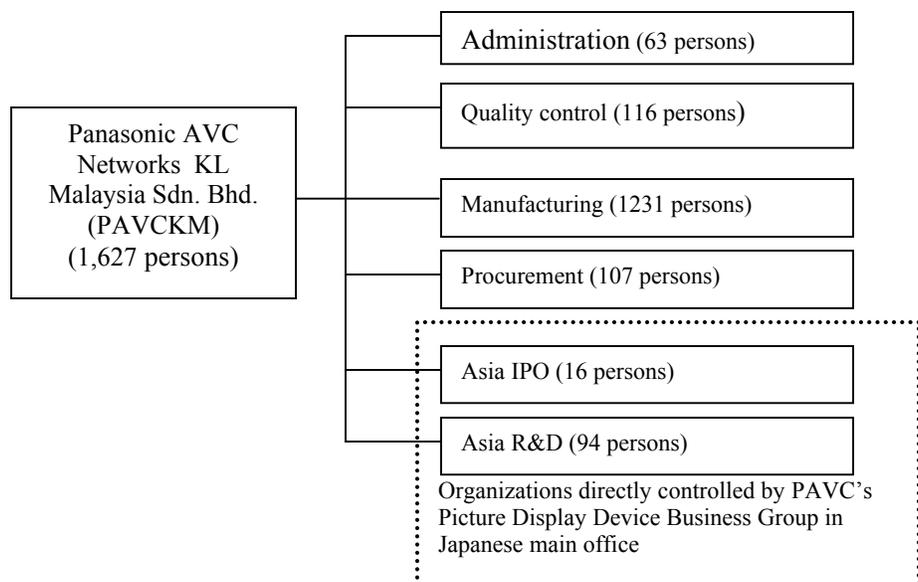
At the summit meeting between Malaysia and Japan, it has been decided to establish the Japan-Malaysia International University of Engineering. JICA and JBIC are preparing the concrete phases for the realization of the project. Although no official plan has been

drafted with respect to campus location or funding, **it is expected that the university will have a provisional opening in June 2004. (WHAT HAPPENED BY NOW?)** The necessary work for official opening is planned to be conducted in the subsequent three years. Japanese companies want the university to have an organization and curriculum that will inculcate the *monozukuri* (manufacturing products) spirit to students, which has been the source of competitiveness of these companies. The plan calls for the formation of a consortium of 17 Japanese universities to support the new university. It is assumed that instructors from Japanese universities will teach in Japanese. Some are concerned that the use of Japanese as the teaching language will be an impediment to recruiting good students from home and abroad.

Enhancement of R&D capability and related human resources

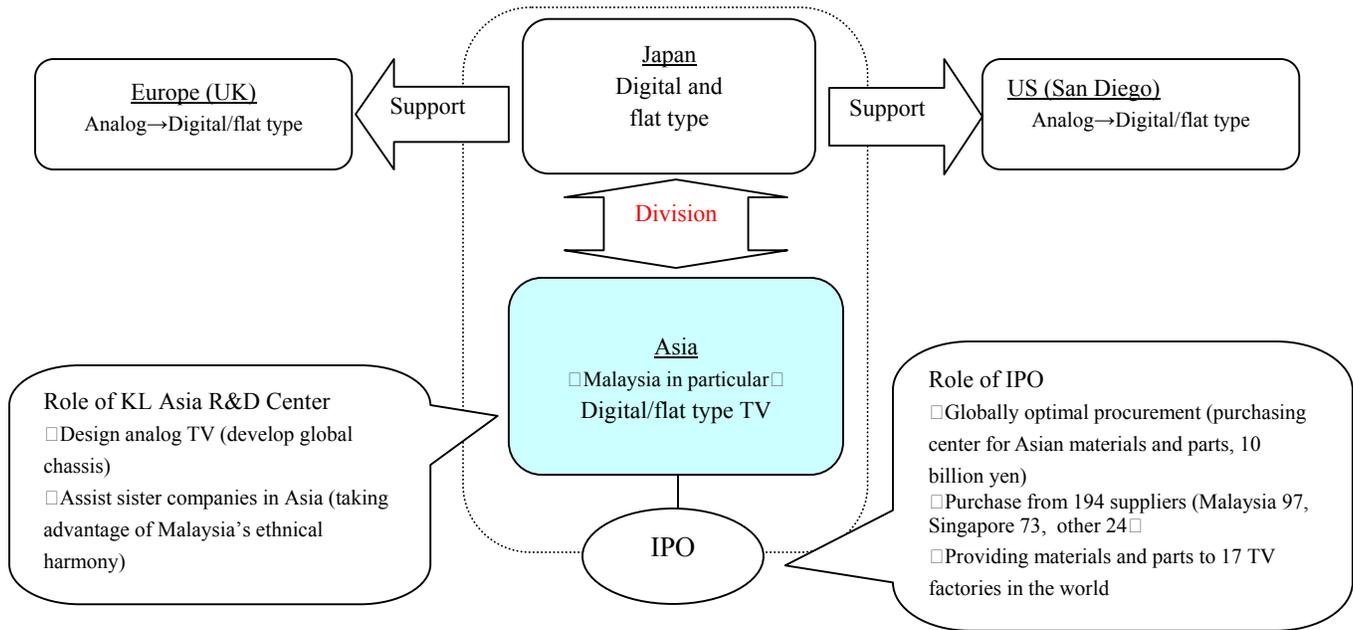
With extensive parts procurement from the rest of the ASEAN region (imported parts account for more than 90 percent) and the shortage of technical engineers in analog technology in Japan as the country is switching rapidly to digital technology, Japanese assemblers in Malaysia, including Matsushita Electric Industrial Co., Ltd. and Sony Corp., are promoting the localization of design capability of analog equipment, such as TV sets using CRT, to strengthen the competitiveness of Malaysia vis-à-vis China. Major companies have established R&D centers with several hundred local staff members, making Malaysia a global center for analog technology development. They will not hesitate to dispatch Japanese engineers in the short term to Malaysia to increase the efficiency of R&D work.

Figure 8. R& D Center of Matsushita Electric Industry (PAVCKM)



Source: Matsushita Electric Industry.

**Figure 9. Global Division of Labor for TV Development:
The Case of Matsushita Electric Industry**



Source: Matsushita Electric Industry.

III. Indonesia

1. Industrial policy

In the early days of the Suharto government and especially in the first half of the 1970s, the inflow of foreign capital increased in the form of joint venture and technical cooperation in order to capture the domestic market under Indonesia's import-substitution policy. During the latter half of the 1980s, the government switched to export-oriented industrialization policy in order to emulate vigorous industrial growth backed by a large absorption of FDI which was taking place in the forerunner ASEAN countries. Indonesia implemented a number of concrete measures to promote exports including the creation of EPZs and EPTES and easing of restrictions on foreign capital, such as allowing wholly foreign-owned companies. This resulted in the upsurge of investments by export-oriented foreign companies, especially foreign assemblers and Japanese parts manufacturers.

However, Japanese electric and electronics investment in Indonesia came to a sudden halt in the aftermath of the economic crisis in 1997, the riots in 1998 and the emergence of China in the late 1990s. Although Japanese companies initially regarded Indonesia highly as an investment destination to be linked with the rest of the regional production network centered in Malaysia and elsewhere, they are reconsidering this strategy due to the deterioration of the investment climate in Indonesia. Impediments to investment include

political instability, the lack of supporting industries, the absence of tax holidays and other incentives, and the non-transparency of the tax system and customs clearance procedure. At present, Indonesia still has export competitiveness in terms of the exchange rate level, labor and other fixed costs, as well as a potentially large market. The key to bringing foreign investments back lies in the improvement of investment climate.

While Japanese investment is stagnant, Korean investment is picking up. Large Korean conglomerates, including the LG Group, have overcome an economic crisis of their own and are now actively constructing AV production factories in Indonesia. This move is also attracting small and medium-sized Korean manufacturing companies to Indonesia.

Development of Batam Island by Singapore

Since the 1990s, a large number of Japanese electric and electronics firms and their affiliated parts makers have started operation in Batam Island, a bonded area which belongs to the Indonesian territory and lies approximately 20 km offshore to the southeast of Singapore. Many Japanese manufacturers are located in the Batamind Industrial Park (BIP) which began operation in 1991 as part of the economic cooperation agreement between Indonesia and Singapore to develop the Province of Riau.

As Japanese final assemblers built production facilities in the ASEAN region from the late 1980s to the early 1990s, many Japanese parts-makers which had business relations with them in Japan started to arrive in Batam Island to supply parts to the assembly plants in ASEAN. There are also cases in which factories operating in Singapore moved to Batam Island to take advantage of its abundant and inexpensive labor, as Singapore's surging wage and labor shortage made it unsuitable for manufacturing. In either case, all imports and exports are handled through Singapore.

Besides the low labor cost, the benefit of manufacturing in Batam Island includes the fact that the aptitude of workers is just right for the type of relatively simple production conducted there. Furthermore, as Singapore is the hub of merchandise distribution in the ASEAN region and boasts the international purchasing offices (IPOs) of a large number of firms, parts-makers producing in Batam Island and exporting and importing through Singapore are able to respond quickly to the changing requirements of final assemblers as they relocate their production facilities within the region.

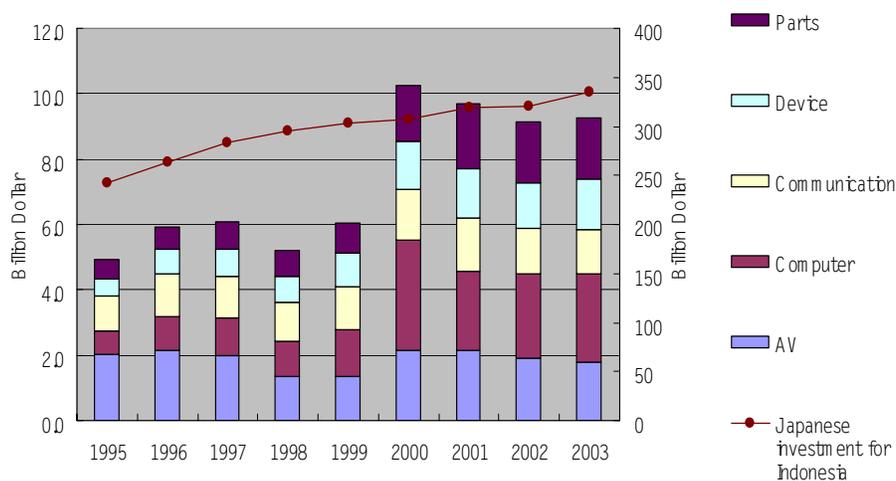
2. Industry profile

Many Japanese companies operating in the electric and electronics industry came to Indonesia to take advantage of its low-cost labor force as well as being attracted by Indonesia's potential as a large market. They have greatly contributed to the expansion of the country's electric and electronics industry. Japanese companies, together with companies of other nationalities, have formed clusters in industrial parks on Batam Island

and in the outskirts of Jakarta. Aiming to achieve the division of labor in production between Indonesia and Singapore or Malaysia, they have become supply centers not only for the ASEAN region but also for Europe including the former Soviet-bloc nations.

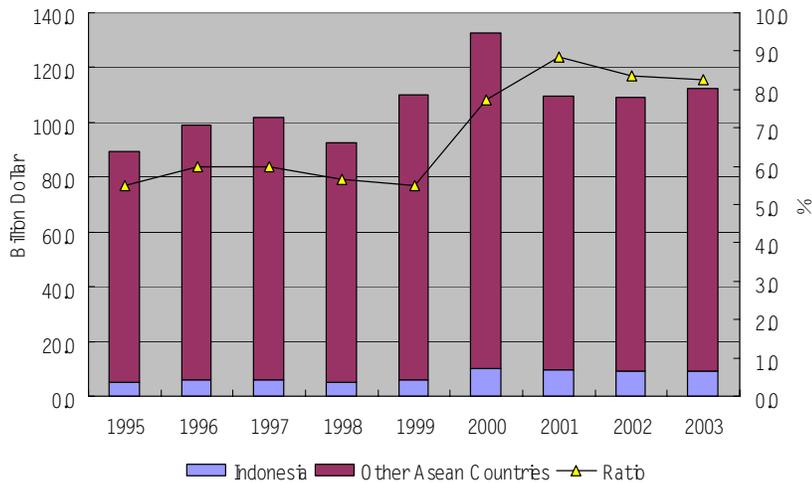
Since 2000, Japanese manufacturing investment in Indonesia has declined. Investment in the electric and electronics sector was no exception. This decline may be attributed to the domestic conditions in Indonesia such as political instability before the Megawati government came into power in 2001, opaque economic outlook, and rising labor costs. However, a more important factor is that Japanese companies which had been the engine of development of the electric and electronics industry in the ASEAN region are being forced to reduce costs due to intensifying competition in the domestic and foreign markets, sluggish worldwide demand, and the prolonged recession in Japan.

Figure 10. Production Trends of Electric and Electronics Industry in Indonesia



Sources: *The Yearbook of World Electronics Data*, Read Electronics Research; and *Ministry of Finance Statistics Monthly*, various issues.

Figure 11. Indonesia's Share in Electric and Electronics Production in ASEAN



Sources: See Figure 10.

3. Priorities for Japanese companies

Since the regional economic crisis, there has been a sharp deterioration of the investment climate in Indonesia owing to political confusion, the persistent underdevelopment of infrastructure, the implementation of the new labor law, and rising wages. Many Japanese companies hope for improvements in these areas, particularly in the problems of militant and disorderly labor unions, the unclear tax system and the low level of education. Although Sony has actually pulled out of Indonesia, many Japanese firms including Sanyo Electric Co., Ltd., Victor Co. of Japan, Toshiba Corp. and Matsushita Electric Industrial Co., Ltd. are struggling to continue operation amid the deteriorating investment climate. Far from retreating, they are even shifting the production of digital cameras and other new digital products to Indonesia.

Legal and policy framework

The government of Indonesia has not clearly spelled out the position of the electric and electronics industry in the nation's overall industrial development. At present Indonesia does not have a comprehensive master plan for this industry. In order to deal with AFTA, there is a strong need to draft a master plan to clearly announce the expected role of foreign companies, the division of labor within ASEAN, and the direction of future development. It is hoped that the government prepare a concrete master plan for the electric and electronics industry, by partly relying on ODA if necessary. In such a case, it should ask the Japanese government for technical assistance in improving foreign investment policy with related systems and institutions, human resource development and the promotion policy for supporting industries.

The backwardness of Indonesia's tax management has a very serious negative impact on the production of foreign companies. A large number of problems that require quick resolution have already been pointed out including the discriminatory corporate tax and problems related to refunds of value-added and import taxes. It is the way in which the tax system is actually implemented, rather than the system itself, that causes serious problems. To correct this, radical reforms including a major review of relevant organizations and their functions are urgently called for.

The working visa is another major problem for Japanese companies. It normally takes three weeks from visa application to issuance, which is too long. Many visa applicants enter Indonesia for technology transfer to launch new products or to support production start-up. However, the Indonesian government fails to understand the present situation of global competition, especially ever-shortening product cycles in the electric and electronics industry in recent years. Foreign companies are forced to wait for nearly a month to transfer technology due to the slow procedure in acquiring the working visa. This leads to lost opportunity.

Meanwhile, smuggling is a perennial problem in Indonesia. Since Indonesia is an island country with a multitude of large and small islands, it is easy to bring undeclared goods from anywhere. Moreover, it is alleged that customs officials often collude with smugglers. As taxes (including import duties, value-added tax, income tax, and luxury tax) are not paid on smuggled goods, their prices are lower than those of goods produced and sold legally. It is feared that the increase in smuggled products may drive domestically produced goods out of the market.

Infrastructure and labor environment

Since 2000, investment climate in Indonesia has deteriorated in such areas as labor problems, rising costs, public safety and order, and rampant smuggling. Labor unions were legalized after the collapse of the Suharto government, and the labor unions at the national level are now organizing company-level labor unions to a labor movement, which is becoming increasingly radical. Labor unions frequently launch protests to resist worker discharges and employers' instruction to "stay home" until they are called. Protests are also mounted as a means of demanding wage increases. As workers are now *de facto* free to voice any opinions, they are taking up even minor issues causing more confusion.

The cost of doing business in Indonesia has risen since 2000 due to the increases in the mandatory minimum wages and publicly regulated charges. Although the mandatory minimum wages had been kept at relatively low levels during and immediately after the economic crisis, the system was changed in 2000 from the one in which the central government sets the mandatory minimum wages for each province to the one in which provincial governors and mayors have the power to set minimum wages provided that

they are above the mandatory minimum wages set by the central government. As a result, increases in minimum wages have accelerated to nearly 40 percent in 2002, though they were held down to just under seven percent in 2003. In addition, as the fiscal policy stance of the central government was tightened partly due to mounting debt repayments, the government has cut subsidies for petroleum fuels and raised electricity tariffs in line with the price of crude oil.

The lack of supporting industries

Indonesia depends heavily on imported parts and materials for assembly in the electric and electronics industry. It also lacks the capacity to supply metal molds. Recently, however, some parts and materials in plastics and press work have become available thanks to the entry of Korean companies. It now appears that one company (financed jointly by Koreans and Singaporeans) has begun to produce metal molds for the casing of 14-inch TV sets. Generally speaking, however, the electric and electronics industry in Indonesia still requires more time and investment before it can procure metal molds domestically on a consistent and broad basis.

Human resource development

In operating a company producing electric and electronics goods in Indonesia, the low level of education of employees is a major problem. The educational system from low grades to upper grades is generally not well developed. Only the affluent have the access to education, especially higher education. Consequently, workers are often lack the will to improve themselves, capacity for self-management or industriousness. Although Japanese companies teach new recruits the “Five S’s” (*Seiri*—putting things in order; *Seiton*—efficient arrangement; *Seiketsu*—cleanliness; *Seiso*—cleaning the work place; and *Shitsuke*—discipline) that are essential in the electric and electronics production, few workers are equipped with the basic knowledge to understand them. This problem must be dealt with when children are in low grades. It is deeply embedded in the national educational system which is beyond the capacity of an individual company.

Indonesia has few organizations and centers that can provide workers with practical training in the Five S’s, production control, quality control, design development or metal mold making. Japanese companies usually rely on on-the-job training (OJT) for these functions, but this puts an increasingly heavy financial burden on them. In particular, the decrease in manufacturing experts at Japanese parent companies makes it difficult to use solely internal resources to train Indonesian workers. For this purpose, human resource development centers run by non-profit foundations supported by private enterprises, such as Matsushita Gobel Education Foundation, are receiving higher marks than vocational training centers run by the central government with ODA support.

A national qualification certification system is one of the key instruments for human

resource development. It currently receives support from JICA under its technical cooperation scheme, but it has yet to be developed further. National qualifications are important because they can provide useful information when Japanese companies hire employees and reinforce motivation for technicians and engineers to improve their technical expertise. If the skills and knowledge of employees acquired through OJT or in external training programs can be evaluated in the national qualification certification system, it would contribute greatly to linking such evaluation to actual working conditions at manufacturing companies as well as building a system of career development for the employees.

Matsushita Gobel Education Foundation (example)

Matsushita Gobel Education Foundation (MGEF) was founded in 1979 as a training center within the Matsushita Electric Industrial Co. group. In 2000, it became a non-profit foundation open to the business community in Indonesia at large. Today, it is managed independently (with the annual budget of 40 million yen) on revenues raised primarily from the fees charged on the trainees. It has trained approximately 54,000 persons, and about 1,500 persons were trained in 2003 alone.

Its status as a non-profit foundation has enabled it to receive official support from JICA (through its Silver Volunteers Program), JODC (through dispatching experts), AOTS and OVTA. Official technical cooperation is often provided in the form of visiting Japanese experts. MGEF has also strengthened its relations with these organizations through hosting AOTS or OVTA seminars in Indonesia.

MGEF has six full-time staff members: the director, three managers and two instructors, all of whom have MBAs from domestic or foreign universities. They have studied various instruction methods used by Matsushita Electric Industrial Co. or AOTS and are eager to teach. In addition, there are 43 part-time instructors who are current or former technicians or engineers at Matsushita.

The curriculum of MGEF is diverse, ranging from production management to quality control and JIT. The instruction consists of classroom work (40 percent) and practical training (60 percent) as it emphasizes the development of the ability to adapt and apply knowledge to various situations. It is using various training methods, such as the game, group discussion and brain-storming, which were imported from AOTS.

IV. Philippines

1. Industrial policy

Since the second half of the 1980s, the government of the Philippines has implemented

the policy to attract foreign direct investment (FDI) to meet the nation's top-priority, namely job creation. In the mid 1990s, there was a sharp increase in FDI in the electric and electronics sector thanks to the establishment of new organizations to promote FDI such as the Board of Investments (BOI) and the Philippines Economic Zone Authority (PEZA), the creation of a large number of industrial parks and the development of infrastructure such as electric power and communications. The official policy does not aim to develop the electric and electronics industry in particular. However, since the mid 1990s, policy measures have promoted the shift away from import-substitution such as labor-intensive assembly in semi-conductor or household appliances to creating clusters of producers of HDDs and other peripheral PC equipment and related parts. More recently, the clusters for the production of electronic parts, modules and IT products are emerging.

The aggressive entry of foreign companies into the Philippines since the beginning of the 1990s can be attributed to reduced country risk and the country's aggressive effort to develop and make available the former U.S. military bases as new industrial parks. Another very important factor is favorable investment conditions such as people's proficiency in English and the availability of a large number of college-graduate engineers. The very generous FDI promotion policy for small and medium-sized foreign companies is another important factor in the increase of FDI.

From the second half of the 1980s to the early 1990s, there was an opportunity to attract Japanese companies due to the yen's appreciation, but the Philippines was not successful in taking advantage of this because of political and social instability and underdeveloped infrastructure. As a result, the country has failed to develop industrial clusters with mutual interdependence among diverse assemblers and part producers as seen in Malaysia. The active entry of large companies producing peripheral computer devices and related parts-makers since the mid 1990s at the time of the global IT boom has resulted in a lopsided industrial structure, lacking in supporting industries to supply various parts domestically. At the same time, since the household appliances industry has remained at the import-substitution level, it has lost price competitiveness entirely vis-à-vis imports. Japanese companies, the major players in this sector, are being forced to pull out of the country.

Policy for developing the IT industry

While the Philippines' capacity in hardware production is questioned due to competition with China, the country's potential for the "soft service" industry, such as software development and call centers, is regarded highly in light of the people's English proficiency and the ample supply of engineers and other human resources. The Filipino government, with job creation as its top agenda, has emphasized the IT industry as the nation's priority industry since the mid 1990s and has been making efforts to strengthen this sector. There are nearly 100,000 programmers who can develop software, and call

centers are being established at a rate faster than even in India. While India, which is far ahead of the Philippines in the IT industry, has been seeking higher value-added, the Philippines has successfully begun to engage in lower-end IT work that it can perform well in cooperation with the American IT industry.

The government has launched “IT21,” the national IT policy for ten years starting in 1998. The BOI, an arm of the Department of Trade and Industry (DTI), has begun to implement incentive measures centering on tax incentives while paying attention to the developments in India and Ireland which are ahead of the Philippines in this sector. It is focusing on securing talented human resources, developing communications and electric power infrastructure, and supplying low-cost office space and round-the-clock work environment. Incentives for foreign companies are the same as those for export-oriented manufacturing companies operating in the PEZA: income tax exemption for at least four years, import duty exemption on capital goods, allowing 50 percent of the expenditure for employee training to be counted as expenses and freedom to employ foreigners. However, the government is considering the possibility of further extending the incentive system in order to compete with neighboring countries, including the extension of income tax holidays to 12 years and permitting companies to locate outside of IT parks.

Universities in the Philippines graduate 40,000 engineering students every year. These universities are encouraging their students to acquire useful knowledge through the web so they can contribute to business operation immediately after graduation. By taking advantage of their English proficiency, students can acquire latest IT information without a language barrier. The average compensation for programmers in the Philippines is 20 percent of that in the United States and 50 percent of that in Malaysia. Even if other cost factors are taken into account, there can be a cost-saving of approximately 40-50 percent if software is produced in the Philippines. Furthermore, as the country’s business culture and organizations have been modeled after the U.S. and Europe, IT engineers can easily develop software that meets the needs of Western companies. Thus, the Filipinos are thought to have an advantage in the area of IT-related human resources.

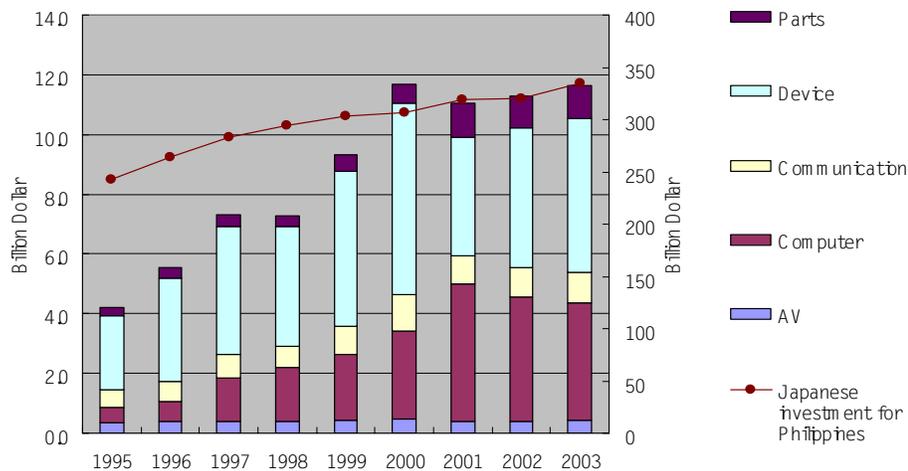
An IT training center is likely to open in July 2004 with the support of Japanese ODA. {HAS IT OPENED?} The most important factors in the IT industry are product quality, delivery time and communications. Japanese companies target the Japanese market when they come to the Philippines for software development. Since all development processes from business consulting to concept design and specifications are performed in the Japanese language, it is essential that the Filipino programmers master Japanese in addition to having the programming skills that can meet the high standards of Japanese users. At present, there are only several thousands of Filipino IT engineers working with Japanese companies. However, there is a great deal of expectation that the Philippines become an outsourcing destination for Japanese software.

2. Industry profile

At the end of 2000, there were 589 electric and electronics companies registered with export processing zones operated by PEZA/BOI. The number of Japanese companies was the largest (30 percent) followed by indigenous Filipino companies (28 percent), Korean companies (10 percent), U.S. (9 percent), European (7 percent) and Taiwanese (4 percent). The total number of employees stood at 315,000. The amount of investment by Japanese firms was as big as that of the United States, making the Japanese companies an important part of the Filipino economy.

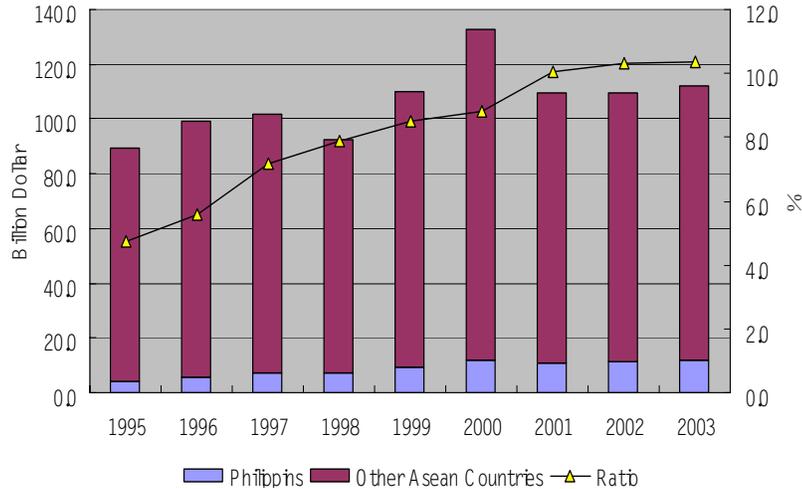
Since most of the products assembled in the Philippines compete directly with the products of China and Thailand, there is a serious concern that the production base may shift to these countries. However, partly due to the impact of SARS epidemic, some companies (for example, NEC) have shifted its FDD business from China to the Philippines. Intel and Texas Instruments, which assemble semi-conductors, continue to regard the Philippines as a strategically important production location. More recently, Japanese companies began to use the Philippines as a production center for various parts and modules for cameras, liquid crystal and power amplifiers which are mounted on fast-growing digital devices. The development of production that takes advantage of abundant low-cost labor merits attention.

Figure 12. Production Trends of Electric and Electronics Industry in the Philippines



Sources: *The Yearbook of World Electronics Data*, Read Electronics Research; and *Ministry of Finance Statistics Monthly*, various issues

Figure 13. Philippines' Share in Electric and Electronics Production in ASEAN



Sources: See Figure 12.

While the investment climate in the Philippines needs to be improved further in the areas of infrastructure (electric power, roads, etc.) and labor relations, the wage level in the Philippines is no longer low compared with those in Indonesia, Vietnam and China. Therefore, the Philippines can hardly be competitive in simple labor-intensive processes. The country currently produces special parts for exports only with little production of multi-purpose parts. On the other hand, the advantages of the Philippines are that (i) communication in English is possible; (ii) it is relatively easy to secure human resources for managerial positions in a country where technical universities and vocational schools graduate approximately 100,000 engineers every year; and (iii) geographically it is located at the mid-point between Japan and ASEAN and is, therefore, suitable for building a regional production network.

3. Priorities for Japanese companies

Though the Philippines does not have a clear master plan for the electric and electronics industry, Japanese companies came to produce HDDs and circuit modules, relying on the fact that they can use relatively inexpensive, English-speaking workers. More recently, as attention shifted to using IT-related human resources, software development companies have begun to enter the country in growing numbers. However, the Philippines is no longer as cost-competitive as in the past due to the emergence of China. Many Japanese companies in the Philippines are operating in an increasingly harsh business environment which fails to improve rapidly. They have to cope with the country risk that is peculiar to the Philippines, stringent labor movement, and the underdevelopment of infrastructure including electric power and roads.

While some emphasize the Chinese threat, it is likely that the labor cost in the Philippines in terms of the dollar will remain at the present level in the long run and that the country will remain cost-competitive vis-à-vis other countries. There are no signs that Texas Instruments, Intel and other big American names are leaving the country. Similarly, Toshiba Corp., which assembles computers and chalks up the largest sales among Japanese firms in the Philippines, is unlikely to pull out of the country completely and shift their operations to China. Therefore, there is a strong likelihood that FDI will return to the Philippines when its time comes. For this reason also, it is essential that the country continue to develop and improve its investment climate.

Legal and policy framework

On paper, investment incentives for foreign firms operating in the Philippines are among the most favorable in ASEAN. However, they are not always actually implemented. There are other serious concerns: procedures take too much time and expenses, and there are problems regarding structural corruption, labor management, and peace and order. Even when measures and policies that improve the investment climate are proposed, they are often contested in the court and struck down by the Supreme Court's ruling that they are unconstitutional. As a result, discussion is now underway for a constitutional amendment to prevent excessive intervention of the judicial branch in economic matters.

Because of the difficulties in collecting direct taxes, the government relies heavily on indirect taxes, including the value-added tax (VAT), which are easy to levy on foreign companies. Foreign companies can hardly deal with frequent changes in the tax policy, short preparation periods before their enforcement, and a lack of concrete details of changes in the procedure. Moreover, there is a wide perception gap between the government and foreign companies regarding legitimate business expenditures which determine the amount of special taxes. Electric and electronics makers with large investments and a large number of workers, such as Fujitsu, must bear a very heavy tax burden which seriously affects profitability. The refunds of VAT to the Japanese companies registered with the BOI or PEZA suffer from long delays which also negatively impact their business.

Infrastructure and labor environment

The unreliability of electric power supply compels large Japanese companies to install in-house power generators which is more costly than purchased power. Small and medium-sized companies which are too small to introduce in-house power generation are often beset with the problems of production losses and cost increases resulting from the interruptions of production lines caused by frequent power outage. Power outage and unstable power supply (such as reduction in voltage) also damage electronic circuits in home appliances used by households. Japanese companies want a stable power supply system that will not require in-house power generation.

Many Japanese companies are afraid of becoming targets of acrimonious disputes by labor unions. Labor disputes have always been a problem, but they are escalating into radicalism in recent years. The existence of relationship between the labor unions and the Communist guerillas further complicates the problem.

The traffic condition is another headache as highway and road networks connecting industrial parks have not been built to satisfactory levels. The underdevelopment of land transportation has encouraged truck-jacks and other crimes. Truck-jacks are being overcome by the efforts of police and other concerned officials, but the general problems of personal security of expatriate workers and employees, traffic congestion and poor road condition remain to be solved.

Securing human resources in the IT industry

In the area of peripheral computer equipment, such as semi-conductors and HDD, the production volume or investment is unlikely to increase sharply. At present, hopes are pinned on the production of various modules which are now in great demand, but it is important for the Philippines to build a broad industrial structure that has a close linkage with the U.S. or Japanese markets as in the case of the IT industry. The leading example is software development. Japanese companies are operating in this sector in growing numbers.

As mentioned earlier, the Philippines has a high potential for the development of the “soft service” industry, including software development and call centers, that takes advantage of the people’s English proficiency and ample human resources in engineering. Although the Philippines produces IT engineers in large numbers, Japanese companies additionally call for improvements in Japanese language education for programmers and the level of programming skills. For the Philippines to capture a part of the vast Japanese software market, the language barrier between Japanese companies and Filipino IT engineers is a major headache. The solution of this problem would greatly unleash the output of IT products in the Philippines by Japanese companies. The Japanese Chamber of Commerce and Industry is also trying to create an environment in which the Japanese language can be taught along with IT expertise.

IT personnel training system of ADTX (example)

ADTX is a Japanese company operating in the Philippines that produces system development programs for IBM Japan and other companies located in Japan. Initially, the company mainly produced software installed in hardware. More recently, the weight of application software development for system integration is increasing.

ADTX needs outstanding programmers with Japanese proficiency since their clients are

in Japan. Despite this, there is no full-fledged Japanese language teaching institution in the Philippines (there are Japanese language departments at universities, but their levels are not sufficiently high). Hence, ADTX is operating an in-house training center at its own expense.

The curriculum of this center combines the state-of-the-art programming technology, Japanese language education, and education in the “Five S’s.” It annually takes forty new graduates from the computer departments of various universities, and the course runs for five months covering contents which generally would require two years to absorb. Those who have completed the course are hired by ADTX as regular employees, provided that they pass the Japanese language proficiency certification of at least level three and the information processing technology certification standards of JITSE, which is managed by Japan’s Ministry of Economy, Trade and Industry in the ASEAN region.

ADTX has completed two program cycles in the past two years and is now conducting the third year’s program. The operation of this center costs the company approximately eight million pesos per annum in compensation to Japanese-language teachers, per-diem allowances to the students, development of teaching materials and purchases of equipment. This is a major financial burden for the company.

IV Implications for Vietnam

1. FDI trends in the electric and electronics industry

Recent years have seen an increasing inflow of FDI into Vietnam. Major Japanese consumer electronics firms such as Sony Corporation, Matsushita Electric, JVC, and Toshiba formed joint ventures with Vietnamese state enterprises in the mid 1990s to enter the domestic market and are now assembling products including color TV sets. Korean firms such as Samsung Electronic and LG Electronics arrived somewhat later than their Japanese counterparts, followed by TLC, a rapidly growing Chinese firm, in the 2000s. Whereas the Korean firms achieve large production scale for exporting their products, the Japanese firms mentioned above target the Vietnamese market and produce for the purpose of import-substitution. For this reason, they have faced many difficulties arising from local content regulation, high tariffs on imported components, and export obligations right from the start, and are still struggling for profitability. In 2001, the government introduced new local content requirements and related import tariffs in order to promote domestic supporting industries, which exerted a further strain on the Japanese operations.

In Vietnam, the production of “white goods” (home appliances) such as refrigerators and washing machines is undertaken by Japanese and Korean firms including Sanyo Electric, Toshiba, LG Electronics, and Samsung Electronics. In the case of refrigerators and

washing machines, only Sanyo has developed a production system with high local contents and sizeable export. The other firms, constrained by the unexpectedly small domestic market and undeveloped supporting industries, remain at the level of knock-down production for the domestic market only using mostly imported components. It should also be noted that no big-name foreign companies produce air-conditioners, microwave ovens, vacuum cleaners, rice cookers, water heaters, or gas cookers in Vietnam yet.

Formerly, Vietnam did not have any large-scale production of information equipment other than the small-lot assembly of personal computers by state and private enterprises for domestic sale. With the start of the 2000s, however, Canon invested nearly 10 billion yen in a new ink-jet printer plant in Thang Long Industrial Park in the suburbs of Hanoi. Other major foreign firms are planning to follow Canon's lead. Although there has been much talk about FDI in China for producing computer peripherals, Canon and others want to diversify the risk of excessive concentration in China. This points to the possibility that Vietnam may become a favored FDI destination for this purpose in light of the availability of stable supply and low cost of labor.

In the field of electronic parts and components, production is dominated by Japanese and other foreign firms which came to Vietnam in the mid 1990s and thereafter. Tens of Japanese firms including Mabuchi Motor, Tokin, and Fujitsu now engage in the assembly of relatively simple components such as transformers, coils and motors as well as the processing and mounting of printed circuit boards, and export all of their products. Since Japanese component manufacturers import virtually all of their materials and parts and export all of their assembled components, they are mostly located in the export processing zones (EPZs) to take advantage of their incentive schemes. In the past, firms had to deal with unreasonable and inefficient customs clearance and other business procedures which were typical of developing countries. However, the situation has much improved with the initiation of one-stop service at the Ho Chi Minh City Export Processing Zone Authority (HEPZA) and others and the rationalization of customs clearance procedure. This is in sharp contrast to the difficulties still faced by Japanese firms producing finished consumer electronics for the domestic market.

2. Suggestions for FDI attraction: lessons from other ASEAN countries

In the first half of 2004, our team visited and evaluated the investment climate of the electric and electronics industry in Thailand, Malaysia, Indonesia and the Philippines from the viewpoint of Japanese manufacturing firms. The findings have been presented above. Based on the experiences of other countries, this section summarizes key issues for consideration by the Vietnamese government in order to attract FDI, especially from Japan, for the promotion of the electric and electronics industry. Specifically, four areas are discussed for further improvement below: (i) legal and policy framework; (ii) infrastructure; (iii) human resource development; and (iv) supporting industries. A

healthy development of the electric and electronics industry in Vietnam requires a sufficient agglomeration of FDI from Japan and other countries. To realize this, Vietnam should study the changes and difficulties that foreign firms have faced in the neighboring ASEAN countries and use this information to avoid its own policy errors.

Legal and policy framework

- A master plan is essential for the promotion of a specific industry in a developing country. Although there are other factors like country risk and geographic location, it is undeniable that countries that have a concrete master plan for the electric and electronics industry like Malaysia and Thailand do much better than countries without a master plan like Indonesia and the Philippines. The difference is quite apparent in the inflow of FDI, production scale, export volume and labor absorption.
- Foreign firms which invest in developing countries generally have to struggle with inefficient administrative procedures in a variety of areas including application for investment license, customs clearance, taxes, and labor issues. Through the preparation of a master plan and participation in international frameworks such as AFTA and FTA, the government should encourage cooperation among concerned ministries and agencies for mutually coherent policy measures in FDI attraction, trade, labor, finance, and so on. In so doing, it should maintain the consistency, continuity, and transparency of all types of policy related to foreign firms.
- A master plan is a guideline for both policy makers and investors and can serve to attract domestic and foreign investors into the electric and electronics industry. To attract FDI and encourage the participation of domestic firms in the long run, the government must draft a substantive master plan that clearly states long-term development targets as well as the policy measures and corporate efforts needed to attain them, while also raising the management and technical levels of indigenous firms which show potentiality.
- An organization along the lines of EEI in Thailand is necessary for coordinated action by foreign and indigenous firms for promoting the industry. It should play a vital role in (i) identifying the requirements of the industry; (ii) promoting the exchange of foreign and domestic information; (iii) enhancing the management and technical levels of indigenous firms with the assistance of foreign firms; (iv) supporting human resource development at indigenous firms; and (v) providing services for international product inspection and safety standards. Although official aid may be required in the initial period, efforts should be made to recruit talented personnel from the private sector and achieve financial independence eventually.

Building infrastructure

- There is a big difference between Thailand and Malaysia on the one hand and Indonesia and the Philippines on the other with respect to the quality of infrastructure services, especially in the stable supply of electricity and the road transportation network. For foreign firms, power supply and land transportation are extremely important as they determine the investment climate with a crucial bearing on production and logistics cost.
- While large firms can afford to invest in an in-house power generator as a back-up, this imposes a heavy cost in maintenance, anti-pollution measures, and fuel. Small and medium-sized firms find such an investment too costly and are obliged to depend on public power supply. Power outage imposes a serious loss on these firms, particularly those engaged in plastic processing.
- As for the road network, it is essential to further improve the major domestic and international trunk roads such as those linking Hanoi and Ho Chi Minh City, Ho Chi Minh City and Bangkok, and Hanoi and Southern China.

Human resource development

- With the exception of Malaysia, the ASEAN countries reviewed above have a large population size, and recruiting workers and operators in large numbers is relatively easy. However, partly due to the problem in the education system, achieving sufficient understanding of the Five S's emphasized by Japanese firms remains difficult. In addition, the number of universities, colleges and vocational schools that produce engineers and professionals is too small, and firms therefore find it hard to recruit engineers and other professionals with expertise in areas such as accounting.
- A major improvement of education and human resource development requires a sound basic strategy by the government from a long-term perspective. If ODA is to be used for this purpose, developing countries ought to continuously and consistently state that primary, secondary and university education and vocational training are the key target areas for receiving foreign aid.
- Vietnam should learn from other countries and take all possible steps for human resource development. For instance, it should consider the possibility of programs like (i) the study-abroad program in Malaysia under its "Look East" policy; (ii) training centers managed by industrial parks or private enterprises with official support such as the Matsushita Gobel Education Foundation in Indonesia; and (iii) invitation to establish a branch campus in Vietnam of Malaysia's Multimedia (MM) University or the Japan-Malaysia International Institute of Technology.

Strengthening supporting industries

- Japanese firms operating in ASEAN countries genuinely want to increase transactions with local companies in order to lower the production cost and compete with China. Nevertheless, even in Malaysia and Thailand with substantial industrial agglomeration, supporting industries that can serve the electric and electronics industry, such as metal stamping, plastic molding and injection, die casting, plating and coating, remain extremely weak.
- As China's huge potential market becomes a reality, supporting industries in China are likely to expand greatly over the coming years. There is a good chance that they will also target the ASEAN market when an FTA between China and ASEAN are concluded. Unless the supporting industries in ASEAN are strengthened quickly, they will be overpowered by the Chinese counterparts.
- To foster competitive firms in the supporting industries, Thailand and Malaysia are trying to develop small and medium-sized firms and have inaugurated programs that cooperate with Japanese firms willing to do business with indigenous firms, including VDP in Malaysia. However, these measures have failed to produce clear results largely due to the lack of proper attitude in the management of indigenous firms.
- The task of strengthening supporting industries cannot be accomplished by Vietnam alone. The question should be addressed from a regional perspective including not only Malaysia and Thailand which boast sizeable agglomeration in assembly but lack reliable supporting industries, but also Indonesia and the Philippines where supporting industries are virtually non-existent. If ODA is to be used, the recipient country must have an effective framework for receiving technical cooperation on a continual basis, as proposed above in the case of education. The Vietnamese government should emphasize the importance of such a framework in its dialogue with donor countries.