

**FOREIGN DIRECT INVESTMENT  
AND  
HUMAN RESOURCE DEVELOPMENT  
IN MANUFACTURING INDUSTRIES  
THE CASE OF JAPAN**

**February, 1994**

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## Foreword

The economic development in the Pacific Region, especially the ASEAN countries as well as the East Asian countries, has attained rapid growth throughout the 1970s and 1980s. These countries, with no doubt, will give a big push to the world economy in the coming century. To date, the priority of Japan's Official Development Assistance (ODA) has been directed to these countries for their socio-economic development. The Japan International Cooperation Agency (JICA) has been implementing technical cooperation projects in developing countries, placing human resource development as its central concern. On the other hand, coupled with the political stability and availability of vast human resources, cooperation by the private sector in the form of foreign direct investment can be regarded as Japan's most important contribution to accelerating the economic development in this region.

This study intends to reveal the reality of technology transfer and human resource development undertaken by the private sector through foreign direct investment. To be more specific, the performance of Japanese affiliated companies in this region, as to how technology transfer and human resource development are managed in their operation and how they consider localization of posts, materials and capital in their own context, are to be reviewed and analyzed by means of questionnaires and interviews for these companies.

I would like to take this opportunity to express my deepest gratitude to the staff of the interviewed companies both in Japan and abroad, the Japanese Chamber of Commerce in each country, The Japan External Trade Organization (JETRO), and the Association for Overseas Technical Scholarship (AOTS), who provided the study team with invaluable information. In addition, I want to make special note of appreciation for the cooperation and advice of Mr. Shinsuke Hirai, the acting chairman of the Subcommittee on Human Resource Development Task Force of the Japan National Committee for Pacific Economic Cooperation (JANCPEC) and Mr. Dennis S. Tachiki of the Sakura Institute of Research.

I sincerely hope that this report will meet the urgent needs to realize more effective and efficient human resource development in this region.

January 1994

Kazutoshi Iwanami  
Managing Director  
Institute for International Cooperation  
Japan International Cooperation Agency





# **INTRODUCTION**

## **1. Background and Objectives**

As foreign direct investment has increased in the Pacific Region in recent years, large labor migration has occurred. However, no sufficient studies have been carried out as to relationship in transnational corporations (TNCs) between foreign direct investment (FDI) on the one hand, and state of employment of high level manpower (HLM) and other local staff, and efforts for Human Resource Development (HRD). The countries belonging to the Pacific Economic Cooperation Conference (PECC) have sometime ago shown great interest in this aspect. Hence, the HRD Task Force of the PECC has decided to study this theme. The present study succeeds the study on the "Current Status of FDI and HRD" implemented by the PECC in Fiscal 1992.

## **2. Contents of the Study**

This report has its general reference to the situation of HRD, technology transfer and localization of HLM in Japan affiliated companies, in relation to the growth of FDI in recent years.

## **3. Targets of the Study**

The Japanese study team has selected China, Mexico, Malaysia, and Indonesia as target countries for case study. The case study was carried out by means of questionnaires and interviews concerning education, training, and personnel management in about ten Japan affiliated companies for each target countries. At the same time, the team has reviewed related document and conducted a survey at parent companies in Japan.

### **3-1. Criteria for Selection**

- a) The study team has selected a maximum of four different industries with a relatively large number of cases of FDI for each target country. Some of the affiliated companies interviewed are under the same parent company, which allowed the team to observe the trends from a cross-country viewpoint.

- b) In order to minimize time for the study, cities where target enterprises are situated have been limited to three at maximum in number.
- c) In general, three companies have been selected for each of three different industries.
- d) Others
  - (1) Enterprises which possess sufficient number of employees and expatriates
  - (2) Enterprises which have operation record over a sufficient period of time.
  - (3) Enterprises which have channelled sufficient amount of fund as investment.

### **3-2. Industries Selected**

- a) Machine industry
- b) Electric manufacturing industry
- c) Automotive-related industry (including components)
- d) Textile industry

## **4. Overseas Study (study of Japan affiliated companies)**

The study team conducted a field survey for about two weeks in Malaysia, China, Mexico and Indonesia. It focused on local management about the motivation of overseas operations, management performance, degrees of attaining goals of technology transfer and localization, and the concrete contents of training programs and their effects.

## **5. Study in Japan**

### **5-1. Survey of Parent Companies by Interview**

In Japan, the study team visited and interviewed a total of fourteen parent companies of targeted affiliates overseas prior to their studies in the four countries.

## **5-2. Document Survey**

The study team reviewed relevant surveys conducted by JETRO, the Nikkei Research Institute of Industry and Market, etc., on overseas investment and technology transfers by Japanese enterprises.

## **6. Persons in Charge**

1. Supervisor: Masaaki Hanai, Development Specialist, JICA
2. Mexico: Yoshio Koyama, Development Specialist, JICA
3. Indonesia: Toshihiro Tanaka, Associate Specialist, JICA
4. China: Satoshi Sasaki, Associate Specialist, JICA
5. Malaysia and compilation: Yoichi Suzuki, Development Specialist, JICA
6. Domestic parent company survey: Toshihiro Tanaka and Satoshi Sasaki, Associate Specialists, JICA



## **EXECUTIVE SUMMARY**

### **1. Human Resource Development (HRD)**

The principal issue of the HRD related to industrialization is how to meet industrial needs for human resources in both quantity and quality.

There have been observed two kinds of factors which cause the quantitative and qualitative imbalance between supply and demand for industrial labor force. One is fixed and another is variable. The principal fixed factor is the scale of the labor force which is largely determined by the size of population. While the population growth can vary, to some extent, with the governmental policies, its effects on the supply of labor force requires a rather longer time span to appear. The variables on the demand side are the pace of industrialization and structural change of labor engaged in each sector. The variables on the supply side are the pace and scale of domestic migration (urbanization), women's labor force participation, and educational extension and elevation of the academic career.

The problem of unemployment and/or the lack of qualified labor force occurs by the gap of the change between such variables on the demand side and those on the supply side in a specific period or phase of national development. When this gap is large, the number of expatriates working in foreign-affiliated companies tends to increase in order to fill such a gap. In case that labor force with high academic career failed to find sufficient number of suitable job opportunities, they tend to put themselves in a position of voluntary unemployment at the first stage. Then, either "inflation of educational background" in which university graduates start to get the jobs of lower categories or the decline in willingness, and thus the ratio, of students who go on to get tertiary education seems to follow.

### **2. Foreign Direct Investment (FDI)**

The factors that influence the inflow of FDI are; the costs and quantity and quality of labor available, the scale of domestic market, governmental development policies related to the FDI (deregulations, tax incentives and etc.), availability of raw materials and parts, industrial infrastructure, and the international economic environment (exchange rate, price of primary products,

trade policies and etc.).

In general, the FDI which had been promoted in the 1960-70's was based on the import-substitution industrialization policy so that the primary target of foreign investors were the domestic market rather than the international one during that period. However, since the debt crisis during the first half of 1980's, the industrialization policy of the most of all developing countries have been shifted from import-substitution to export-oriented one, and this process have been triggered by the Plaza Accord which accepted the depreciation of the U.S. dollar in 1985.

Regarding Japan's FDI (informed basis to Ministry of Finance), its volume reached its peak in 1989 with the total amount of US \$67.5 billion, however, since then it continued to decrease down to US \$37.4 billion in 1992 mostly due to the international and domestic recession of economy. During 1990-92, the share of the developed countries in the total amount of Japan's FDI declined from 80% to 70% while that of the Asian region expanded from 12.4 to 18.8%. Manufacturing is the leading industry receiving almost half of total Japan's FDI in this region. For example, in 1992, Indonesia was the second largest recipient country of the Japan's FDI in manufacturing industry following the United States, China the 3rd, Malaysia 5th, and Thailand 9th.

### **3. Technology Transfer in Japan Affiliated Companies**

#### **(1) Advance in levels of Technology Transfer**

Technology transfer goes through several stages, ranging from basic production and operation technology necessary for daily production, technological know-how to enhance productivity, technology to develop new technology, facilities and products, leading up to management technology.

Generally, at the initial stage of operation, technology for production such as operation, maintenance and inspection of production lines which is rather prototype is targeted in technology transfer, in association with that for total quality control.

In the 1960s and 1970s, international division of labor between production processes proceeded between parent companies and their affiliates abroad. After mid-1980s, the high appreciation of the Yen has been pushing out production and export base from Japan to developing countries. Accordingly, in

Japan affiliated companies, technology transfer is required to be holistic, from basic production technology to management technology and even sales know-how. Because of this, the necessity of training for technicians/engineers and middle managers has been increasingly emphasized by affiliated companies.

## (2) Modalities and Subjects of Training

In recruitment, personality fit is regarded as an important factor in general, and affiliated companies stress that technology should be obtained by employees through training and education in and outside the companies after entering. On the other hand, job experience tends to be the major factor for hiring HLM. In order to acquire skills and to deepen experience, job rotation is adopted upon necessity, which is at the same time geared to meet changes in the levels of production and quality of business.

OJT is the main modality for training and education, which is complemented by Off-JT and self-improvement. Training is set up in Japan in case that neither in-house training nor training done by local institutes meets the needs at the affiliated companies. Technicians and skilled workers have been the major target for training in Japan, while middle managers are also joining recently. Total quality control and professional development are the main subjects of training programs in general. For managers, business philosophy, business administration, and industrial relations are also included.

In general, affiliated companies are responsible for preparing and implementing training programs and providing necessary costs.

## (3) Issues

The principal constraint to training at affiliated companies is the heavy workload, followed by such factors as lack of motivation, difficulty in developing training materials, budget constraints, shortage of instructors and language difficulties.

Higher technologies such as those for product development and management are closely linked with various factors of Japanese industries as well as those at parent companies. It, therefore, becomes imperative for affiliated companies to internalize such technological settings as a whole while frameworking such technologies. In this regard, a system of "Management by Objectives" is suggestive, under which responsibility of implementation is delegated to local HLM for creating self-reliance, once agreement is reached re-

garding objectives.

Development of local supporting industries is indispensable to strengthening linkages between the local economy and direct investment from abroad, which, eventually, will lead to an expansion of the latter. Among the most needed are assistance in quality improvement, improvement of delivery practices, and strengthening of price competitiveness.

Frequent job hopping is hindering motivation and efforts for long-term human resource development of affiliated companies. Among counter-measures taken by affiliates in Asian countries are employment guarantee, training for multi-functional skill development, application of certain wage and promotion system both based upon seniority. In general, in a society where job hopping is widely viewed as an important means of career development, affiliated companies are inclined to rather positively regard their loss incurred from job hopping as a contribution to the society.

Manuals are now widely used among affiliated companies, in such a way as to sustain levels of technologies transferred. Manuals are taken as complementary to OJT, most common among all types of training. However, manuals are still less used when compared with other companies of western origin. One of the reasons could be a traditional view that technologies can be mastered mainly through actual work experience.

#### **4. HLM Development and Localization of Positions**

From the standpoint of localization, HLM positions are divided into three groups. Among the first group are top management and overall plant management positions which are the slowest in localization. The second group, most advanced in localization, includes positions related to general affairs, personnel management. The third group concerns technological areas to be further explored, encompassing positions related to R&D, engineering, designing, marketing, and so forth.

Localization of as many HLM positions is all the more desired because it helps to alleviate financial burden. Nevertheless, the actual situation is rather mixed in that using higher technologies requires more involvement of Japanese HLM. This most probably interprets into a transitional modality under which Japanese HLM hold advisory positions.



A general tendency is to judge the degree of success in localization of HLM positions, from the degree of replication of technology shown by local HLM. In transferring management technology, however, implications of cultural and social factors should be taken more into account.

Development of HLM matching with ever changing industrial needs cannot go without tripartite cooperation among government, industries and educational bodies. This requires public educational institutions to develop more practical and effective systems and curriculum. It is much desired that public training institutions establish technical training and supporting systems better tailored to industrial needs, improve and expand training facilities, and thereby help develop local talents better responsive to higher technologies. On the part of industries, more efforts are to be made so as to strengthen linkages with public training institutions.

## **1. INDONESIA**

### **1-1. Finding**

#### **1) Human Resources**

The population of Indonesia is approximately 180 million, and it is estimated that the total population will reach 204 million by the end of 1998, with 92.3 million people in the labor force. About 2.4 million people are newly entering the labor market every year, and the most important task of the government is to create employment opportunities for them. Because labor-absorbing capacity has not grown as rapidly as expected in the manufacturing and service industries, the conventional agriculture-based labor structure will remain unchanged, thus increasing unemployment. In addition, although people now tend to acquire a higher level of education than previously, the overall labor structure will continue to be dominated by workers with only primary school diploma for the time being. There has been a large flow of population from local to urban areas, and from other islands to Java Island in search of employment. Most of these people are unskilled workers who cannot meet the demands of industry, and are thus creating a serious social problem. The Ministry of Manpower intends to improve the efficiency of vocational education and formulate a comprehensive, more effective HRD program, lower the barriers between ministries, and between the industry, government, and academic institutions.

#### **2) Foreign Direct Investment (FDI)**

Due to a fall in oil prices and the deterioration of financial conditions in the latter half of the 1980's, the Indonesian government, following its structural adjustment policies, started to adopt expansionary FDI policies through deregulation, and its industrial strategy has been converted from one based on import substitution to one based on export-oriented industrialization. Since 1987, the existing foreign enterprises have gradually increased investment to expand their capacities, and new investment from Chinese Taipei, Korea, and other NIEs began to grow. Investment from the NIEs has been concentrated mainly in labor-intensive, export-oriented industries which make full use of the inexpensive labor force. Japanese investment, since 1991, has shown rather low growth due to the sluggish domestic economy. But it is expected to grow actively again as a result of the latest round of yen appreciation against the U.S. dollar. The problems of FDI which should be solved in the near future

include i) insufficient industrial infrastructure (shortage in supply of power and water), ii) FDI policies which are more restrictive than in surrounding countries, iii) underdevelopment of supporting industries such as parts and components industries, and iv) shortage of medium-level technicians and administrators, all of which rather act as factors restricting foreign enterprises from participating in the Indonesian market.

### 3) HRD by Japan Affiliated Companies

OJT and training in Japan: Generally speaking, HRD programs in Japanese companies are implemented in three stages; OJT is based on direct needs in respective operations, Off-JT is intended to upgrade all levels, and self-training is for further improvement of individual skills. In Japan affiliated companies in overseas countries, OJT maintains its key role as in the above-mentioned case, but training received in Japan plays a more substantial role in order to complement off-JT and self-training which are less available in these countries. Taking as an example the nine companies surveyed, about 200 local employees have been dispatched for training in Japan during the past year. It may well be said that these Japan affiliated companies have made a significant contribution to HRD in Indonesia and human resources exchange between the two countries. However, it is still a small proportion of the local employees who can participate in the training programs in Japan which require enormous expense. Hence, localized education and training should be further improved in the future to enhance the level of all the employees and encourage them to engage in daily self-improvement efforts.

Localization of education and training (from a linear to a regional approach): The conventional flow of technology has been nothing more than a flow between two points, a parent company and its affiliated company. In recent years, some leading enterprises have promoted a program to offer education and training within various regions in the world by establishing regional headquarters and training centers in the respective regions so that middle management and technicians of enterprises belonging their group can be trained within the region. It has also become a common practice to offer training programs at a plant with a comparatively high technological level among the affiliated companies in a region or to have technicians travel within their own regions. The move from a linear mode of technology transfer to a region-based one can be considered as regionalization of technology, and is a significant step toward the goal of localization of education and training.

Education and training contributing to society: Two (automotive and electronics companies) out of the nine companies surveyed have established a local training center. These facilities offer systematic training programs composed of functional, technical, managerial and linguistic training, and many training textbooks and manuals are available in the local language. Some training courses are open to the public, and a service training program for dealers and car mechanics is offered widely. Some companies are engaged in activities placing more importance on social contributions by setting up an education fund for offering scholarships to students and donating educational and training equipment to vocational schools. Of course, not all companies can afford to offer such activities, but it will be possible for some companies to jointly set up such training centers and engage in social activities. Another possibility is cooperation with private educational institutes to jointly develop systematic educational and training programs. Localization of education and training is a common theme both for Japan affiliated companies and for HRD in Indonesia. An effort to establish an information network on education and training among private and governmental educational institutes as well as among foreign affiliated companies will contribute substantially to removing bottlenecks hindering HRD such as lack of instructors and lack of educational materials written in the local language.

#### 4) Technology Transfer and Localization

Technology transfer has usually been conducted with the aim of securing stable production and maintaining the required level of quality mainly in manufacturing plants, but recently transfer targets have gradually been shifted to more advanced technologies and managerial techniques. This explains why middle managers and engineers are now needed in the surveyed companies. Localization is a concept which includes personnel, local procurement, capital, and the entire management process that determines their combinations. Localization will be affected by the parent companies' management strategy and the host country's human resources situation and political, economic, and social environments. The degree and speed of technology transfer will differ depending on the types of industries and enterprises involved. When viewed by type of industry, transfer of manufacturing technology in the textile industry seems to have reached a satisfactory level for the time being, but less progress has been seen in terms of management. In the automotive industry, position transfer to local staff has shown significant progress but companies

are less actively transferring some core technology such as that needed for development of new products. In the electronics industry, the regional division of labor has already been promoted and companies are active in the localization of enterprises as a whole. Cultural adaptation and contributions to the local society are also important factors for localization. As exemplified by some enterprises which have constructed mosques in plant sites for Muslim employees, provided scholarships for students with financial difficulty, or supported cultural activities, more socially and culturally sensitive localization strategies will reinforce the foundation of enterprises in the local environment.

#### 5) Coordination among Industry, Government, and Academia toward HRD

In Indonesia where labor supply exceeds demand, since many Japan affiliated companies experience a shortage of middle managers and engineers, the mismatch between industrial demand and available supply has further aggravated the problem of unemployment. Recognizing this situation, the Ministry of Manpower is planning to build a comprehensive labor market information system, and cooperation by both private enterprises and educational institutions will be indispensable for its realization. Various projects can be promoted through cooperation among industry, government, and academia such as joint research and development activities, apprenticeship programs for job seekers and students, and development of supporting industries. Every year one company surveyed has been recruiting graduates from a vocational school which was set up under Japanese aid and they have enjoyed a better reputation than college graduates for their ability and willingness to work in the plant. This is a successful example of connecting human resources development to industrial needs. While unemployment has become a problem for even persons with higher educational backgrounds, more importance has been attached to individual personality and abilities than academic career in recruiting employees. The quality of education and the level of credential hold cannot be improved in the short term, but a considerable contribution to establishing an effective HRD environment can be made by both governmental and academic institutions for smoothing the flow of information.

### **1-2. Outline of Human Resources**

#### 1) Demand and Supply of Labor

The population of Indonesia is about 180 million according to the census

taken in 1990, and about 76 million people are estimated to be in the labor force. Regarding the sector composition of the labor force, agriculture still dominates with 50% of the total labor force although this is gradually decreasing. The manufacturing industry recorded a slight increase from 9.3% to 11.4% between 1985 and 1990. The Ministry of Manpower estimated that during Repelita V (National Development Program 89-93), 11.86 million workers (or an annual average of 2.4 million) would newly enter the labor market while 11.5 million would be newly required by agriculture (35.3%), commerce and distribution (23.2%), and manufacturing (20%). Although the official unemployment rate has remained at a low level of 2 to 3% during the last ten years, the reality is that underemployed workers whose weekly working hours are less than 35 hours number about 29 million, or 38% of the total labor force.

Regarding the quality of the labor force, primary and junior high school education has become more widespread in recent years and the educational background of the labor force has been gradually upgraded, while the rate of literacy improved up to 84% in 1991.<sup>4</sup> However, governmental programs related to educational improvement have not made so much progress in terms of expansion of equipment and facilities, improvement of the quality of instructors, and modernization of vocational training. As the educational level is higher among these newly entering the labor market, unemployment among workers with higher educational level has been increasing.

Female workers occupied about 36% of the total labor force in 1990. Compared with 33% in 1971, this rate does not show any substantial change except for a slight increase.

## 2) Government HRD Policy and Future Prospects

The Ministry of Manpower estimates a total population of 204.2 million and a labor population of 92.3 million at the end of 1998, or an increased 11 million during Repelita VI (94-98). Since the employment-absorbing capacity of the manufacturing and service industries is not growing as much as expected, the agriculture-based industrial structure will remain unchanged, and unemployment will increase. Although people are gradually acquiring higher educational backgrounds, the labor structure in which people with only a primary school diploma or none occupy the majority will not change for the time being. Unemployment and underemployment will continue to be a social problem because the quality of labor force, among others, flowing from local to urban areas in search of employment, and from other islands to Java Island is quite

low and hardly meet the needs of industry. In 1994, Repelita VI will start as the first stage of the 2nd Long-term Development Program (from 1994 to 2018) which is considered to be a transition period to the "take-off" of the Indonesian economy. The Ministry of Manpower has indicated, as their guidelines, formation of a flexible national HRD program to effectively balance the labor supply with the demand for labor by building a comprehensive labor market information system; bringing up self-employed professional young laborers; the introduction of apprenticeships; cooperative and harmonious ("Pancasila") industrial linkage and labor protection; and manpower organizational development. To realize HRD which meets the needs of industry in the current Repelita V, policies have been promoted to activate and enhance the efficiency and effectiveness of HRD through private sector involvement, such as offering vocational training facilities for the use by the private sector; the introduction of the apprenticeship program for students of vocational schools and universities; joint research among public high-grade research institutions and private enterprises; and tax credits for intracompany training and research and development expenses. These trends are expected to be maintained and promoted in Repelita VI, too. Although unintegrated HRD policies have been pointed out among ministries and agencies, it is anticipated that concerted policy-making and implementation will be promoted further for more comprehensive, effective HRD.

### **1-3. Outline of Foreign Direct Investment (FDI)**

#### **1) Current situation of FDI**

The 1985 Plaza Accord caused a rapid increase in the inflow of foreign capital into the East Asian region. In Indonesia, since 1987, existing enterprises had started to expand investment and the new investment from Chinese Taipei, Korea and other NIEs had also started to grow, as a result of the deregulation of FDI in Indonesia and rises in wages and infrastructure costs in surrounding countries. In 1990 the growth rate of FDI reached its peak with an increase of 85% over the previous year on an approval basis. However, in 1991 FDI stopped increasing and Japan has been stricken by an economic depression, slipped from the top in the FDI, superseded by Chinese Taipei. The investments from the NIEs are concentrated mainly in labor-intensive and export-oriented industries. They tend to hire a large number of employees and earn foreign currencies though the invested amount is small in each case, thereby meeting the Indonesian FDI policy.

Japan is the largest investor in Indonesia, accounting for 23.6% of the total foreign investment approved to date since 1967 when the Foreign Investment Law was enacted. According to the survey of Toyo Keizai Shinpo Co., Ltd., the number of employees hired by the 378 Japan affiliated companies in the country was 120,136 with Japanese expatriates numbering 1,399, as of October 1992. Among them, the manufacturing industry accounts for the majority: 241 companies hiring 101,307 people with 998 expatriates. The number of employees by industry is topped by 28,537 in textile industry, followed by the automotive, and electronics industries. The ratio of expatriates to total employees in the manufacturing industry is quite low, less than 1%. Among other industries, the textile industry shows a remarkably low rate of 0.68%, suggesting progress in technology transfer and the labor-intensive nature of this industry.

## 2) FDI Policies: Past and Future

The Foreign Investment Law which was enacted in 1967 aimed to promote import-substitution industrialization through the positive introduction of FDI. Although during Repelita I (69-74) it succeeded in attaining 7.7% real GDP growth on average, the disparity between rich and poor expanded so much that people hostile to foreign capital caused anti-Japanese riots and other resistance. Together with the external factor of the rapid increase in income from oil exports, the Indonesian government shifted to restrictive and protective FDI policies after a revision of the law in 1974. As oil prices fell and the state financial situation deteriorated in the latter half of the 1980's, the Indonesian government adopted more liberal and open FDI policies one after another through deregulation following structural adjustment policies, and the industrial strategy was converted from an import-substitution to an export-oriented one. The government has shown more positive policies to encourage export industries through the introduction of FDI, for example, as a result of the deregulation in 1992 and 93, the establishment of companies with 100% FDI is now allowed although on a conditional basis. The government expects FDI to play a key role to promote industrialization and obtain foreign currencies as well as in the creation of jobs and making contributions to local HRD. The constraints which should be removed to attract more FDI include i) insufficient industrial infrastructure (shortage in supply of power and water), ii) FDI policies which are more restrictive than in surrounding countries, iii) underdevelopment of supporting industries such as parts and components industries,



and iv) shortage of middle level managers and engineers.

#### **1-4. Technology Transfer in Japan Affiliated Companies**

This chapter reports on the present state of technology transfer and HRD in 9 Japan affiliated companies (3 textile, 3 automobile-related, 2 electronics and one copper cable company) based on our questionnaire surveys.

##### **1) Operations of Companies**

The average number of years of operation of the 9 companies surveyed was 21.5 years, and most of them started operations in Indonesia at the beginning of the 1970's. All the 9 companies listed development of the Indonesian domestic market as their operational objectives and many pointed at low labor costs and favorable government incentive, as their motives. In recent years, their targets have been shifted from the domestic market to exports, and the 3 textile companies have already placed their main stress on exports. All 9 companies are joint-venture enterprises with an average parent-owned rate of 69% including 2 which are 49% parent owned. The average annual sales volume of the 9 companies was R.212 billion (or approximately US\$100 million) in 1992: the largest was R.905 billion (by an automobile company) followed by over R.200 billion by two companies, over R.100 billion by one and less than R.100 billion by the remaining 5 (including the 3 textile) companies. Regarding the profitability of their operations in the most recent five years, 2 of the automotive companies responded that it "exceeded our business plan"; one nonferrous metal company said it "greatly exceeded our business plan"; 2 textile companies and one automotive company said it was "as expected"; and 2 electronics companies and one textile company said it was "slightly less than projected." Regarding local procurement, such raw materials as cotton (textile) and copper (cable) rely only on import. Although the local procurement rate differs among products such as the type of the electric appliance and the type of automobile, the average ratio is more or less 30% in these industries. Many enterprises anticipate that they will be able to procure more parts and components locally in the future, since the pressure of the high yen encourages new parts makers to enter the Indonesian market.

##### **2) Employment**

The average number of employees of the 9 companies is 1,418, ranging

from the lowest at 335 (copper cable) to the highest at 3,330 (automobile). The average ratio of expatriates to total employees is 0.88%. On average the employees are 32 years of age and have been working for 11.3 years in the company while the average turnover rate is low, 3.7%. These figures suggest that each company has adopted a guaranteed employment system like in Japan. The turnover rate is lowest, less than 1%, in the electronics companies, followed by automotive (1.3 to 4%) and textile (4.7 to 10%) companies. The textile companies which use a three-shift system in a day indicate a high turnover rate among young females. The ratio of female workers is generally low, ranging from the highest of about 25% in the two electronics companies to only 2 to 3% in the automotive companies. The textile companies have not employed so many female workers yet only because the Indonesian government requested them to give priority to male workers when they started operations in 1970. Hence, it is highly possible that female workers will increase in the future.

Regarding recruiting methods, company staff recommendation and recruitment from schools are major sources, while newspapers and introductions from friends and acquaintances are also popular. By job types, engineers/technicians are mainly recruited through schools. Almost all the enterprises responded that selection criteria are a combination of personality fit and job-relevant skills and abilities. Both automotive and electronics companies are now hiring people with at least a high school diploma for any staff including line workers. On the other hand, they now tend to hire people with a vocational diploma as engineers and technicians, rather than college graduates who are usually too proud to take line work.

### 3) Training and Education; Appraisal and Reward System

Training and Education: Many companies do not expect employees to enter the firm with much skill as they will be trained after they are hired. This concept is commonly shared with the Japanese domestic employment system. Many companies also stated that the training requirements are high for middle level managers, engineers/technicians and skilled line workers. Regarding the training systems in general, they are composed mainly of in-house training and OJT, combined with outside seminars and lectures or training in parent companies in Japan as necessity dictates. Training in Japan is often offered to engineers and technicians, while in-house training, outside lectures, and training in Japan are selectively offered to managers and administrators. Regarding training areas targeted by the 9 companies surveyed, total quality control

is implemented by all 9; professional development by 8; labor-management relations by 7; and operational management by 6 extruding the textile companies, and higher priority is given to quality control and professional development. When asking about problems or constraints encountered in education and training programs, most pointed out the inability of workers to participate due to heavy work load, followed by low motivation among employees to improve themselves, difficulty in developing training materials, budgetary constraints, difficulty in recruiting instructors, and language problems.

Tie-ups with outside institutions: Among training programs available in Japan, all 9 companies utilize AOTS (Association for Overseas Technical Scholarship) and two of them utilize the JAVADA (Japan Vocational Ability Development Association). Regarding local training institutions some use the IPPM (Institute for Management Education and Development) for improving their managerial staff's ability and others use the vocational training centers of Ministry of Manpower for retraining of their line workers. Two group companies have their own local training institutes which offer systematic training programs for all employees of their group. To support local educational or vocational institutes, four companies are undertaking activities such as joint research with a college and the donation of money and educational materials to local vocational schools and primary, junior high, and high schools. Seven companies have accepted students as interns under the governmental apprenticeship program. To help foster supporting industries, 5 (automotive and electronics) companies give instruction and training in quality control and other fields to local suppliers.

Appraisal and Reward System: In their appraisal and reward system, 7 companies attach importance to a combination of short-term job performance and the employee's long-term contribution to the company, while 2 give priority to the long-term contribution. Among the criteria for appraisal and reward, priority is given to future potential, setting of performance objectives, assessment of salary increases, and improvement of current performance. The personnel system is characterized by almost guaranteed employment and the expectation for employees to acquire multi-functional skills. The wage system is shifting from the seniority-based system like that prevailing in Japan to an ability or rank-based system. In filling vacancies, 4 companies do so by promotion from within the firm while 5 adopt a combination of internal promotions and external recruitment. All the companies surveyed are among those with longest experience in the country, and many stated that they are the target of external hiring by other companies but have no intention of hiring HLM away from

other companies. Periodic job rotation has scarcely been implemented among them, while the reassignment of employees is effected if it is needed to enhance the experience or ability of the local staff or to cope with changes in the amount or quality of work.

#### 4) Localization

When observing degrees of localization of head positions, 8 out of the 9 companies adopted local staff members as heads of personnel/HRM and general affairs and administration, which may be easier posts to localize, followed by heads of production by 6 companies and those of procurement by 5. The least localized position is the presidency which is occupied by a Japanese expatriate in 8 out of the 9. This is directly connected with the investment ratio: the Japanese side holds a majority in 7 companies, while the leading shareholder of another company is Japanese with 49%. Top positions of marketing and finance in 6 companies are held by Japanese employees. Most (except for 3 companies) stated that they had no research and development department.

Regarding local procurement rate, it is difficult for the textile companies to raise it because they fully depend on cotton imports while polyester can be locally procured. Both electronics and automotive industries indicate an average of 30% local procurement, and it is anticipated that Japanese manufacturers of parts and components will newly participate in the market in the near future and allow these industries to raise this rate. The copper cable company imports 99% of copper, but if a smelting plant is built in the country, it is expected to raise the local procurement rate up to 60%.

#### 5) Overall Evaluation of Technology Transfer

Ability of local employees is rated in descending order from line workers' ability to operate their machines (3.8 on a scale of 5), local technical staff's ability to maintain and modify machinery (3.4), and local managers' ability to supervise and manage production (3.2). As the questionnaire results indicate a strong need to train middle level managers and engineers/technicians, the target of technology transfer has already shifted from the level of operating techniques to a higher one of maintenance, modification, and production control. Local staff have already reached a level where they are able to fully cope with ordinary production activities. However, there remains dissatisfaction with the fact that they have not yet become familiarized with risk control procedure to be implemented when an accident happens and that local employees' labor

productivity is rather inferior to that in parent companies.

Degree of position-transfer from expatriate to local staff differs according to the management policies of each enterprise, but some of the electronics and automotive companies have adopted a policy of appointing local managers as heads while Japanese expatriates act only as advisers. This would be an effective step in a transition period. Many respondents replied that an average period of five to ten years is required for local managers to replace expatriate ones. However, the final decision will be affected by not only the technical level but also the political and economic environment and managerial philosophy of each enterprise. In particular, the president, financial officer, and heads of other departments closely related with Japan (such as procurement and sales) have seldom been transferred to local people with much ease. The function of research and development is mostly dominated by parent companies and many have no plan of localization of this function at the present moment.

## **2. MALAYSIA**

### **2-1. Finding**

#### **1) Production-Shifting Investment**

Japanese investment in Malaysia since the latter half of the 1980's has been largely characterized by "production-shifting investment" under which production and exporting bases are shifted to that country. Accordingly, the relationship between Japan affiliated companies and their parent companies has changed from conventional division of labor among "production processes" for a single product to division of labor among products. Recently, even production of high value-added or comparatively high technology-intensive products and parts have been shifted to the country, in addition to the conventional labor-intensive ones. As a result, Malaysia is changing into one of the leading exporting countries in the world and exports a variety of products to the Asian and other world markets.

#### **2) More Comprehensive Technology Transfer**

Labor shortages due to increased investment cause further introduction of modern machines and facilities. However, they alone can neither enhance productivity and quality nor reduce costs: the quality of the labor force also needs to be improved to keep up with these modern facilities and technology to be applied. An overall shift of the production and export bases, thus, now goes hand in hand with the dispatch of HLM from Japan, through which a new page is turned from conventional transfer of production technology to that of a diversity of functions covering both production and management. Accordingly, concern over localization of technology, management, and capital has grown.

In this regard, there are some important points to take note of. One is the role played by Japan affiliated companies established in Malaysia between the end of the 1960's and the beginning of the 1970's. They have since accumulated management know-how, while having completed an initial stage of technology transfer including operating techniques, maintenance and inspection, and control of production processes. The point is that those enterprises have acted as an agent to which production and export bases shifted from Japan and also have facilitated a shift of related subcontractors and other companies, since the latter half of the 1980's. The other point is the fact that technology (including management technology) is closely linked with a diversity of func-

tions of parent companies and, if viewed more widely, with Japanese industries. In other words, full technology transfer and localization imply Malaysia's internalization of such a whole technological settings ranging from its initial stage to subsequent higher stages within Malaysia's own framework.

### 3) Direction of HRD

In order to attain this goal, both government and private sector should devote themselves to qualitative and quantitative development of human resources required for future industrialization. On the education side, it is necessary to continuously improve and modify the present system into a more practical one, including improved managerial training. On the vocational training side, public institutions should be able to foster people with higher aptitudes to advanced in-house training by better identifying ever-changing industrial needs, elaborating technical training and support systems to meet more specific needs of enterprises, and improving training facilities. While the comparative advantage in labor costs is dwindling, the Japan affiliated companies need to adopt a priority policy in technology transfer in a manner to facilitate Malaysia's establishment of a more self-reliant technological base and enhancing technological abilities, which will eventually lead to a steady accumulation of more advanced technology in the country.

## 2-2. Outline of Human Resources

The small population of Malaysia (17 million as of 1991) results in a relatively small labor force (7.05 million, including 6.62 million employed). The annual increase in the labor force up to the year 2000 is estimated to be no more than 0.21 million. Since the latter half of the 1980's, due to the large amount of investment including foreign investment, almost all industrial sectors have run short of labor, and have increasingly experienced a mismatch in categories of labor needed and supplied. For example demand for 150,000 new engineers (including assistant engineers) between 1991 and the year 2000, both labor supply, public and private, are expected to total about 120,000, at the maximum. As small and medium-scale enterprises, among others, tend to hire experienced, skilled workers who can quickly contribute to higher profitability, the labor market for fresh graduates is not so pressing. Although certain expectations are held for the female labor force in the future, a majority of female workers are unskilled or semi-skilled due to limited training opportunities, and are currently engaged in labor-intensive jobs with lower wages. Con-

ventionally, hiring of foreigners as HLM has been allowed under certain restrictions for professional and managerial positions. Due to the prevailing labor shortage, however, foreign workers have also been admitted for simple jobs since the end of 1991.

This labor market situation has been aggravated by the fact that education and training systems cannot produce human resources in full response to the high pace of industrialization with a shift toward higher technology and also by the fact that human resources with advanced skills have been much absorbed by public agencies. Recognizing that school education has been biased toward general education, the 6th Malaysian Plan has substantially increased the budgets for skill formation and training. The Plan aims to improve subjects related to practical techniques and acquire better instructors, to support research and development programs at universities, and to promote tie-ups with the private sector. The role played by private institutions has gained more importance in advanced education and training for such fields as accounting, law, business management, engineering, computer science, and so forth. To reinforce the roles of the private sector in technical training, the government has also introduced, in 1992, a human resources development fund. The fund, coupled with tax incentives, helps the manufacturing industry, among others, to promote in-house training.

### **2-3. Outline of Foreign Direct Investment (FDI)**

FDI, as a utilizer of human resources, has seen four major periods, more or less under the "Bumiputra" policy starting from the stage for import substitution. Especially following the enactment of the Investment Promotion Act in October 1986, a large amount of foreign capital has been invested, contributing to employment creation, and exports rapidly expanded mainly in free trade zones (FTZ). After 1991, however, the number and amount of new investments have been decreased, and it has been sometimes pointed out that foreign investment has reached a stage of maturity. In 1992, although some European and North American countries became leading investing economies by effecting large-scale investment in basic metals, oil, and coal, Japan and Asian NIEs still remained leaders in investment in manufacturing sector. While the majority is still of 100% foreign capital holdings, Malaysian majority participation has outnumbered in joint-ventures during 1991. In recent years, diversification of FDI in target industries and geographical spread has been increasingly observed. Further deregulation has been effected regarding 100% foreign invest-



ment and hiring practices toward foreigners, with a view to improving production efficiency and promoting exports. Another major thrust was seen when, at the end of 1991, tax credits were adopted in favor of capital-intensive, technology-intensive industries, thus starting a new era in which FDI types were to be selected.

Investment by Japan affiliated companies recorded substantial increases, especially after 1987, as they began shifting production and export bases more to Malaysia. Types of industries have been diversified ranging from electric and electronics sectors to mechanical, chemical, and metal-processing ones. Likewise, small and medium-scale industries have increasingly joined in FDI as supporting industries. The rapid appreciation of the Japanese yen has also generally induced affiliates, in response to requests from their parent companies to further expand production in Malaysia. Most of the affiliates are coping with or intend to cope with such requests by expanding existing plant facilities and increasing rates of operation despite the prevailing shortage of manpower. None of the affiliates interviewed replied that their operating profit ratios are lower than anticipated for the time being, suggesting that they are making great efforts in production and management. The primary reasons the parent companies established their affiliates in Malaysia are the availability of a comparatively inexpensive, high quality labor force and favorable government incentives backed by political stability. The affiliates export almost all of their products to the global market including the Asian one, while the capital ratio shows a Japanese majority in most cases. These characteristics are generally in line with the Malaysian government's strategy regarding FDI to enhance production efficiency and promote exports.

## **2-4. Technology Transfer in Japan Affiliated Companies**

### **1) Localization of Positions**

Current staffing: Staffing of HLM positions can be roughly divided into three categories depending on the degree of localization. The first is those positions which are mostly occupied by Japanese. These are "president" and "head of plant," in other words, positions of top management and for controlling the whole plant. The second category is those positions mostly transferred to local people, or positions related to operations and general affairs: "head of general affairs/administration," "head of personnel/HRM," "head of procurement," and "controller/financial officer." The third category is an intermediate group which

is further divided into two subcategories: one is a hybrid of both of the above two major categories and includes positions such as "head of production" which are rather evenly occupied by both nationalities, indicating an on-going transition; the other covers areas to be further developed in the future and is still dominated by Japanese people or positions that have not been set up yet. This covers positions such as "head of R&D," "head of technology," "head of marketing," and "head of sales." The interview revealed a suggestive case where all HLM positions are held by locals while Japanese HLM act as advisers.

Transition period: The interview indicates that time required for local staff to take over HLM positions currently held by expatriates evenly ranges from 5 to 10 years to 10 years or more. Hence, early replacement or localization is not anticipated. There seems to be two reasons for this. One is that a technological gap will still remain between two countries even in the future. The other is that, because the technology has been established and developed under an overall framework of parent companies and is actually existent in close tie-ups with them, the Malaysian side cannot develop the technology in an independent and self-contained manner, even if HLM positions are transferred to it. This view is especially stressed when it comes to advanced stages of technology transfer such as engineering, R&D, design, management, etc. Japanese managers remain in their positions from 2.5 to 5 years, depending upon the managerial or personnel policies of each enterprise (or, especially, those of each parent company's). Besides, as Malaysian FDI policy allows a certain number of Japanese HLM, permanent or temporary, for each company, the period that Japanese managers serve does not directly indicate their degree of progress in technology transfer. On the other hand, before starting production of new products, Japan affiliated companies dispatch local engineers, technicians and/or skilled workers to Japan so that they may acquire new skills and techniques for production, operation, and maintenance. Likewise, for the installation and trial run of facilities and starting operations, the Japanese side dispatches, to affiliates, engineers for short-term technical training. In general, parent companies intend to transfer as many important positions as possible to local staff to alleviate their burdens, especially financial ones, but many of their affiliates view that more Japanese personnel should be dispatched to promote higher level technology transfer.

Communication: Communication between Japanese HLM and local people staff often flows through local staff at higher positions to those at lower positions. As a result, frequencies of the managers' face-to-face communications with lo-

cal managers, supervisors, and line workers lower in that descending order. This flow of communication may, however, be viewed as most efficient at present, if language factors are taken into account (e.g. the Malay language is essential in direct communication with line workers). In addition, almost all the enterprises give importance to peculiarity of local cultures and practices (for example, by providing time for prayer).

## 2) Training

The Japan affiliated companies in Malaysia tend to encourage local employees to acquire necessary skills and develop capability through OJT and other types of training, not expecting them to have technical levels high enough when entering the firm. The necessity of training is rated higher for engineers, technicians, and managers/administrators, while lower among unskilled workers. Internal promotion and external hiring are utilized at almost the same rate in filling vacancies. Another general trend is that young female workers are hired more in production sections while male workers in administrative sections.

Training styles: Training styles vary with enterprises and types of industries, and diverse training methods (such as in-house training, OJT, training at parent company, etc.) are adopted. In addition, seminars and lectures are provided for managers and engineers, while job rotation is more frequently applied to skilled and unskilled workers. Generally, types of training for unskilled workers are rather limited in scope. As technical levels become higher, OJT is increasingly supplemented or replaced by other types of training. It seems that training at parent companies is more often provided at higher stages of technology transfer such as engineering, design, product development, etc. When comparing training among managers, the training needs of upper managers are often met outside the company (in country and abroad) while middle managers often receive in-house training. Staff with some years of experience with the company are often utilized as instructors for those newly employed. There are increasing cases where local staff of affiliated companies are sent to their parent companies for OJT in Japan. Since training programs are established by the affiliated companies on their own or through their consultants, training is mostly tailored to their own needs. A few companies also require their high managerial staff to act as instructors in training to share knowledge and technologies. The companies bear most or all of the training expenses. In order to prevent the fruits of training from draining out, some

companies have adopted a bond system under which trained staff are required to remain with the company for a certain period of time. Most companies hold the view that training is contributing to improvement in work performance and practices. There are even cases where training is provided on a regional basis, such as the Asian region, among the affiliates of the same company. This type of training will become more useful as networks are formed between affiliates as production centers and their supply sources.

Priority in training: Among subjects of training, higher priority is given to quality control and specific technologies, followed by operational management and labor-management relations. This order of priority clearly reflects the current position of the Japan affiliated companies and their technological needs. More importance is seemingly attached to improvement of production while training on wider managerial aspects is given from a longer-term viewpoint. Affiliates have endeavored to prepare and utilize manuals in recent years, and some even allocate training in Japan to the preparation of manuals by trainees themselves. Small group activities for quality control and other matters are actively carried out in most affiliated companies, including a presentation contest within those companies, and sometimes among affiliates. On the other hand, those affiliates under heavy daily production load are faced with difficulties in implementing such small group activities. Some companies, instead, occasionally receive missions from their parent companies for specific purposes such as productivity improvement or quality control, by getting active participation from local production staff. As for the local staff's abilities, line workers' operational abilities and local managers' abilities to supervise production are rated relatively high. On the other hand, evaluations of engineers' abilities to maintain and/or modify production machinery vary with enterprises. Lower evaluations are mostly geared with cases where training given in Japan is rather limited. However, this seems to be related to a general delay in coping with the rapid advancement of production technology and computerized facilities.

Problems/constraints: Principal problems and constraints to training are heavy work load, budgetary constraints, or poor motivation, followed by lack of top management support, difficulty in recruiting lecturers, and developing training materials. Language problems were also pointed out in the case of technical training in Japan, especially that held in factories in remote areas. However, personnel managers interviewed also referred to the necessity for trainees to more actively learn Japanese.

Outside training programs: Training programs offered by local and overseas institutions are utilized considerably as outside training programs. All the enterprises that utilize overseas institutions have dispatched employees to AOTS. On the other hand, however, training services offered by such institutions as PREX and JITCO are hardly known to the affiliates interviewed. About 40% of the affiliates which utilize domestic training institutions have ever donated fund or dispatched experts to them, while similar rate is seen in adopting an internship program and providing local suppliers with experts, machines and so forth. Although local procurement rates differ substantially among the companies, one company records a rate exceeding 70%. As the production bases have been shifted to Malaysia, the tendency is to reinforce linkage with the local economy by further raising the local procurement rate. Since raw materials and components are not fully available for export products at required standards, more support and cooperation are being given to local suppliers in an attempt to help them improve in technology, delivery periods, quality, prices, etc.

### 3) Appraisal and Reward System

A general trend in appraising employees is to see almost equal importance as criteria between short-term job performance and long-term contributions to the company. Individual items actually appraised in the former case include assessment for salary increases, review of past performance, assessment of future potential, and determining of performance objectives. On the other hand, such items as assessment of training needs, improvement of current performance, and career planning decisions are given relatively low importance.

Most enterprises enhance their retention rate by guaranteeing employment, expect employees to acquire multi-functional skills, and apply a seniority-based wage system to a certain extent while many of them have not yet had a detailed job classification system. This seems to reflect the Japanese management system considerably. In this connection, more than half the enterprises interviewed periodically rotate employees. Job rotation within sections or production lines is often carried out if the necessity arises, mainly to cope with changes in the amount or quality of work and to enhance experience or abilities of the staff. About half the companies replied that employees' productivity is almost as high as in their parent companies, but the remaining companies rated it lower. Although this evaluation depends on how productivity is de-

fined, these replies seem convincing if looking at quality required for products that are accepted in the global market. The turnover rate is generally higher among employees with shorter tenure, and this suggests that the investment boom in recent years has made job hopping more frequent. On the other hand, those employees who have been in the company over a longer period show a relatively low turnover rate, indicating that they may have stronger solidarity with their enterprise.

### **3. CHINA**

#### **3-1. Finding**

##### **1) Human Resources**

A typical problem in the Chinese labor market lies in the fact that most enterprises find it difficult to secure the necessary human resources in spite of an excess supply of labor. Industrial and academic circles should cooperate in the search for more effective methods by which to cultivate human resources capable of coping with drastically changing industries and economies. Though China is making efforts to improve the quality of its export products on the premise that it will rejoin GATT, middle managers and middle-level engineers who should be responsible for improving operational systems and innovating technologies in the enterprises are in short supply. This is because the abilities which are needed by these people cannot be acquired only through school education. Institutions of higher education have aimed at quantitative expansion, but a shift to qualitative improvement will also be required. Therefore, though improvement of vocational education at upper-secondary level is expected to make up the shortage in HLM, acquisition of technical expertise will be more important within enterprises in addition to educational institutions.

Free migration of human resources tends to allow efficient utilization of such resources and induces diffusion of the effects of technology transfer. Although the working locations where a person may work are currently restricted in China by limited migration into urban areas through the family registration system, this restriction is in actuality being relaxed mainly for HLM.

##### **2) Foreign Direct Investment (FDI)**

FDI clearly plays the role of "driving power" for China to promote a market economy through procurement of funds, capital formation, and acquisition of foreign currencies. Moreover, it exercises substantial influences upon China's economy by creating employment, updating technologies, encouraging regional activities, and increasing tax income.

The problem for China to deal with is how to utilize FDI for expanding its industrial foundation while maintaining balanced development. Actually, such problems have been revealed as, for example, the shortage of infrastructure and lessening control of the central government due to the decentralization of power to local ones. As the coastal regions have been actively devel-

oped, regional discrepancies have widened between the coastal and inland rural regions.

### 3) Technology Transfer

Generally speaking, most companies affiliated with Japan regard it sufficient for ordinary employees to acquire the skills they need after entering the firm. However, managers' abilities tend to be assessed differently among the companies. This indicates that whether or not competent local managers can be hired depends upon the conditions under which each particular affiliated company operates and that Japanese employees have found it difficult to transfer technology at the manager level.

Regarding labor productivity, 5 out of a total of 8 companies surveyed rated it as high as or higher than that in their parent companies. It is anticipated that technology will gradually be transferred at the production level and that more local staff will take over the positions currently held by Japanese, as business operations make progress. However, many affiliates have replied that it will take 5 to 10 years or more for local managers to replace expatriate managers in HLM positions, and as far as management is concerned, progress in business operations will not always be connected with localization of human resources.

### 4) FDI in its Infancy

There aren't sufficient incentives to foster necessary personnel under a long-term program. Foreign enterprises in China are confronted with the risk of their employees' job hopping though production is rapidly expanding despite the relatively short time since the company's foundation. They have implemented the in-house training necessary for production, however, a comprehensive training structure has not yet been developed.

### 5) Differences among Regions

It is difficult to generalize about the Chinese capacity to supply manpower because it differs greatly among regions. Taking as an example the Shenzhen Special Economic Zone, this is an artificial city developed in a rural area. It has no indigenous stock of human resources, so it has to depend on the inflow of human resources from outside. Since population migration is currently restricted through the family registration system, most workers stay there with a temporary resident permit. On the other hand, Shanghai has a



population of 12 million and many educational institutions. Since industries there have a long history of continual development, human resources are comparatively plentiful among enterprises, and national enterprises hold an excessively large labor force. In Shanghai, the situations differ between the central area and the surrounding areas. Workers prefer the central area because of the better transportation conditions and infrastructure, and enterprises operating in the surrounding areas often find it difficult to secure suitable employees, especially, managers and engineers. Moreover, very many companies are being established in these areas, thereby further increasing the separation rates of workers.

#### 6) Difference in Recognition of Transfer of Management Technology

All the affiliates commonly agree that more importance should be attached to the managerial and operational efficiency of a corporation. However, no more effective methods of transferring management technology have been found than transferring management know-how through daily face-to-face communications with local people. Off-JT is rated relatively low, and many Japanese managers feel it unlikely that employees can acquire practical abilities only through lectures in a classroom.

Many Japanese managers think of technologies as replicable, and they believe that the probability of localizing human resources should be judged by to what degree local staff have come to reproduce Japanese technology accurately. On the other hand, most Chinese employees are of the opinion that the adoption of Japanese methods as they are is not appropriate, because business operations often reflect social and cultural differences, though operation of machines, formation of production systems, and other technologies related to production operation are less affected.

#### 7) Roles of Japanese Employees in Transferring Management Technology

Some of the surveyed affiliates have dealt consciously with the matter of the transfer of management technology and are promoting MBO (Management by Objectives). MBO is one management procedure in which power to implement a goal-attaining method is entirely assigned to employees, once agreement is made between management and each of the employees. Hence, the role of Japanese employees becomes that of adviser rather than direct promoter of business operations, while Chinese managers tend to seek the most appropriate methods for their work sites at their own discretion. Although Japanese

managers said they have to do more than what an adviser should be doing due to the pressure of business, MBO is likely to be an appropriate method to allow Japanese management technology to take root in China in an ideal shape. In this sense, it may be said to be formation of technology rather than transfer of technology.

### **3-2. Outline of Human Resource Development**

An excess supply of labor will continue to exist in China for the time being. The population was 1,158.23 million in 1991 and it is anticipated to grow 15 to 17 million a year, meaning that new jobs must be created for 10 million people each year.

The population migrates from inland to the coastal regions, as represented by the inflow of population to urban areas called "blind flow" in Chinese. In the city of Shenzhen, which forms a special economic zone, people whose family registration is recorded in the city itself occupied no more than 37.85% of the total population (in 1990).

Primary education is solid, and 80% of the graduates enter lower-secondary educational. In upper-secondary schools, more importance is given to vocational education, and the rate of students working in vocational curriculums is to be raised to 50% by 1995. The number of graduates from tertiary-level schools and universities doubled in the last ten years. On the other hand, it is pointed out that qualitative differences have occurred among universities. As an increasing number of excellent students study abroad, there are more and more cases of their outflow to overseas countries.

The young population structure has made the matter of employment more difficult. Among the newly increased urban labor force, one out of three people have not been able to find a job since 1989, and university graduates have found it more difficult to find a job. It is estimated that the excess labor force within national enterprises has reached 15% to 20% of the total number of employees.

On the other hand, demand for professional engineers is expected to be 50 million by the year 2000: among them 12 million university graduates are needed. Especially, 9 times the number of experts in law, finance, and foreign trade are needed than those needed in 1983.

### **3-3. Outline of Foreign Affiliated Companies**

#### **1) Changes in Government Policies toward Foreign Investment**

Since the foreign investment liberalization policy was adopted in 1978, China has actively introduced foreign investment. In terms of regions, five "special economic zones" were established from 1979 to 1988. In 1984, 14 "coastal port cities" were designated as liberalized areas for foreign economic relations in all the coastal provinces. From 1985 to 1988, five "coastal economic zones" were designated. In these zones, "economic development zones" were constructed to promote the improvement of infrastructure. Such economic zones are now expanding into 36 inland cities, which is expected to lead to overall economic liberalization.

When reviewing regulations, no joint ventures were permitted in the distribution and financial industries till 1983. From 1985 to 86, priority was given to manufacturing industries, while the service industry was regulated. Especially in 1986, special measures were taken to favorably treat advanced technology and product-exporting industries. In 1989, the FDI guideline was clarified. In 1992, deregulation made further progress, and investment was promoted in real estate, finance, and commerce where foreign participation in the Chinese market had been rather difficult.

Regarding laws and ordinances related to foreign investment, tax incentives, including tax holidays and tax reduction for exports, were implemented in the special economic zones, etc., where investment was invited. It is anticipated that these incentives will be gradually abolished to secure a balance with domestic enterprises. Hence future changes will attract attention. As to measures taken for improving foreign relations, China has endeavored to improve the Patent Law and Trademark Law connected with the protection of intellectual property and joined international conventions. In the domestic administration, more power was delegated to local governments, which in turn to promote higher efficiency in approving investment.

#### **2) Actual situation of FDI**

Since 1979 when the foreign investment liberalization policy was implemented, the most prevailing pattern was to utilize inexpensive labor to make products for export, but in recent years investment which anticipates potential markets in China has been increasing. By the middle of the 1980's, capital was invested mainly in service industry, such as hotels and restaurants from which

foreign currencies are easily obtained. In the latter half of the 1980's, capital was invested in manufacturing industries in accordance with the governmental policy to encourage investment, which was backed by the wage hike in South-east Asian nations, and 90% of the total investment was connected with manufacturing industries. Since 1992, a new trend has been observed in which investment has increased in the real estate, service, and distribution industries. Among manufacturing industries, a growing amount of investment is seen in textiles, electric apparatuses, electric instruments, chemicals, and machinery. Investment by large companies involved in high technology is also increasing.

In 1991, total investment reached US\$12 billion (contract base), with China becoming the largest host country for investment in East Asia. When reviewing investment in China from 1983 to 1992 (implementation base) by country of origin, Macao and Hong Kong accounted for 63.8% or \$22 billion, followed by Japan, 11.3% and \$3.8 billion and the U.S.A., 9.3% and \$3.1 billion. In and after 1991, investment from Chinese Taipei exceeded that from Japan.

Production by foreign affiliated companies in 1991 was 137 billion yuan, occupying 4.8% of total industrial production. Exports by foreign affiliated companies in 1992 were \$17.66 billion, or 20.4% of the total. Regarding employment, the total number of employees in foreign affiliated companies was 3 million in 1991, equivalent to 4.6% of the total number of employees in China.

### 3) Trends of Japanese FDI

Japanese FDI began in 1979, but it started to grow rapidly in and after 1983 when the Chinese government published positive foreign investment incentives by improving the joint venture law and establishing several priority development zones. In the latter half of the 1980's, the manufacturing industry accounted for the most of the investment, mainly small and medium-sized enterprises starting up operations and in search of inexpensive labor. This was stimulated by the appreciation of the yen due to the Plaza Accord in 1985 which encouraged Japanese enterprises to alter their production strategy. In the 1990's, active operations have been seen in the textiles, service, electric, foods, iron, nonferrous metal, and commercial industries. A new trend in and after 1992 is the participation of large-scale retailers, banks, and trading companies in the Chinese market. Some medium-scale enterprises also establish bases in inland regions where labor costs are less expensive.

### **3-4. Technology Transfer in Japan Affiliated Companies**

The number of affiliated companies surveyed totaled 8; 3 textiles (Shanghai), one automotive (Shanghai), 2 electric and electronic apparatus (Beijing and Shenzhen), and 2 precision machinery (Shenzhen).

#### **1) Operation of the Companies**

Almost all the Japan affiliated companies started operation in the latter half of the 1980's. The primary reasons they were established were to take advantage of low labor costs and favorable government incentives. Four out of the 8 companies had experience with production entrustment or exports of plant prior to their establishment in China, and the fact that many companies started investment after setting up relations with a Chinese partner in terms of technology is one of the common characteristics.

The number of employees ranges widely from 350 to 3550, all adopting labor-intensive production systems. Even a small-scale business can develop in this market.

Investment ratios show that the companies are either wholly owned or 50% owned by the Japanese side. The wholly owned affiliates are concentrated in Shenzhen, and the prevailing pattern is that an enterprise whose sales base is in Hong Kong has a production base for processing exports in Shenzhen.

The local procurement rate of raw materials and parts is generally low, indicating that the establishment of supporting industries in China will require more time to catch up with that of foreign enterprises.

#### **2) Employment**

Being labor-intensive industries, the Japan affiliated companies hire many young workers whose average age is under 25. The ratio of female workers exceeds 80% in many companies, especially in precision machinery and textiles.

The number of expatriate employees ranges from 2 to 45. Investment by those enterprises which had first entrusted production work and offered technology before establishing their affiliates often indicates an attempt to strengthen management and production control, and the number of Japanese employees tends to be restricted from the very beginning. This tendency does not vary by types of industries and scales of enterprises. Those companies which have 10 or more expatriate employees are all in Shenzhen, and most of

them are from Hong Kong. They act as intermediaries between Japan and China, making full use of their experience in Japan affiliated companies in Hong Kong. However, their importance in technology transfer has been reduced in those enterprises where the principal positions have been transferred to local staff, and they act merely as transporters freely shuttling between Hong Kong and China.

The separation rate has two extremes; at about 3% and about 25%. Although generalization is difficult because of the shortage of available data, it seems that affiliated companies with a higher separation rate utilize public employment agencies when hiring employees, while those with a lower one tend to utilize newspaper advertisements.

### 3) Hiring

The affiliated companies tend to hire employees based not on a long-term prospective, but on short-term needs to support currently growing production. As to hiring decisions, 3 companies replied that they stress a combination of personality fit and job-relevant skills; 4, more job-relevant skills than personality fit; and only one, more personality fit. Since many companies attach importance to teamwork, they not only check the cooperativeness of candidates at a hiring interview, but also check practical experience for HLM and potential to learn jobs at the line worker level.

Hiring in joint ventures is often either through dispatch from a business partner or hiring through the partner. Wholly owned affiliates utilize newspapers. In the case of hiring engineers and technicians, all but one company utilize newspapers and often go through schools. Unskilled workers who constitute the largest number of hirings are mainly hired through public employment agencies and companies' employment pamphlets or notices. All the three companies in Shenzhen utilize employment notices in and outside their plants. It is presumed that word-of-mouth information is frequently exchanged in the zone and that the necessary level of human resources can easily migrate there.

Regarding the average educational level of each category of employees, managers and administrators are usually university graduates, but some enterprises replied that academic background does not matter if abilities are satisfactory. Some professional and middle managers are required to have a qualification in accounting or export control depending on job types, and such qualification is more important than educational levels in practical business.

Line workers are graduates from between primary and upper-secondary schools. At this level, results of entrance examination indicate that people with a higher educational level do not always show high performance. It seems that differences in educational levels matter little in that no special technical abilities are needed. Jobs requiring dexterity depend more on innate abilities.

Many companies judge the abilities of employees at the time of hiring as potential human resources. Skills necessary for performing jobs at all levels are generally insufficient when employees join a company, but companies assume that they will gain the skills they need through the company's training. This means that each company puts priority on adding practical skills appropriate for its own needs to the basic abilities of individual employees.

#### 4) Education and Training

When rating training needs on a scale of five (from 1 as not needed to 5 as highly needed), the average of the 8 companies is 4.125 for top management, 4.37 for middle managers, and 3.375 for line workers. That for professional and engineering staff was low 3.25 at both. Since all levels exceed the mean value, it is found that training is necessary for all levels, but it is especially important to reinforce the management level.

Each affiliated company sets up training methods for each category of workers, mainly composed of OJT, but there were no companies which had built a comprehensive training structure for human resources. The number of companies which utilize Japanese public training programs was only one for management level.

It is found that daily meetings and other problem-solving processes in routine business operations form practical opportunities for transferring management skills to local managers. It is almost every day that expatriates have face-to-face communication with local managers and supervisors. Although 5 affiliates conducted short-term training at their parent companies in Japan, most affiliates aim to have local managers and supervisors broaden their outlook by actually observing what their parent company is and how the Japanese product market operates during their business trip to Japan. It is often seen that middle managers take part in seminars held by the Chinese government to obtain qualifications necessary for their business.

Five companies hold in-house training for engineers and technicians in addition to routine OJT. The training is composed mainly of machine opera-

tions to be given by Japanese engineers dispatched from their parent company prior to introducing a new machine or starting new product lines.

Generally, line workers receive OJT to learn their jobs when entering their company. Operating procedures of new machines are often shown by engineers dispatched from Japan through local engineers. Since the contents are specific, they can be easily mastered. The 3 companies in Shanghai periodically give a group of 20 to 30 people 6 months of training at parent companies in Japan. It has been pointed out as a merit of this type of training that the bigger benefit is found in improving working attitudes rather than in the acquisition of techniques themselves, since attitudes are hard to learn through in-house OJT. Training in Japan is one of the selling points for recruiting workers, but as it benefits the parent company by making up for the labor shortage, the training expenses are usually borne by the parent.

Some companies employ a training process in which a team of workers to be engaged in production is dispatched to Japan and is put to actual operation of the production line to be exported to China, prior to starting operation at a local affiliate. This so-to-speak "rehearsal method" has been adopted in transferring technology in connection with plant exports and having the team members experience simulated production for three to six consecutive months in advance. The merit of this training system is that both production technology and production systems are transferred at the same time since skills are acquired not so much by individuals but by the team as a whole as a result of the simultaneous learning of the respective roles of the team.

It is known that training in production fields is essential to every company, since both total quality control and professional development form the main part of training. However, QC is properly adopted only by one company, and others regard it as a future theme, because they are too pressed by the heavy work load. Though operational management is taught in 5 companies, it has less priority than production-related training. It is pointed out that the effects of training are easily visible in production fields, but not so clear in management fields.

Regarding problems and constraints encountered in training, the heavy work load and low motivation are pointed out by 3 companies, but no particular tendency that can be generalized was observed. It is rather seen that each company takes its attitude toward the training of human resources according to how it secures employees and what is the management's philosophy.



## 5) Appraisal and Reward System and Career Planning

When appraising employees, priority tends to be given to their short-term job performance rather than to their long-term contribution to the company, because the latter is rated highly only by a single company. Each company stated that they have a seniority-based wage system, but in actuality wages are increased mainly depending on wage rates based on monthly performance and a degree of promotion. Any vacancies are basically filled by internal promotion, and if no appropriate persons are available internally, they are hired from their Chinese parent company or externally.

Employment is based on annually to triennially renewed contracts or an almost life-time guarantee system. Although companies intend to renew the contract-based employment, some employees from rural areas cannot do so, because their urban residence periods are legally restricted. Job contents are clearly explained to each individual, but the companies request employees to understand both their own jobs and surrounding ones.

Periodic job rotation is effected by only 3 companies where human resources tend to be utilized in a fixed manner. Two reasons were pointed out: one is that there are not enough employees for fluid rotation, and the other is a cultural attitudes where job rotation is not willingly accepted by employees because they often suppose that one's job is rotated due to inabilities of individual employees to perform that job.

## 6) Localization of Personnel

In 6 out of the 8 companies surveyed, Japanese occupied the top management position, followed by one with a Chinese and one with a Chinese from Hong Kong. Only one company adopted a local plant manager. Half of the heads of technology are local. Heads of personnel/HRM and general affairs/administration are all local. It is presumed that Chinese have necessarily been hired in these sections where heads must be well acquainted with local conditions.

A guideline for judging how localization in terms of human resources has been proceeding in the Japan affiliated companies seems to be whether or not the head of technology is localized. Local engineers have been hired in 4 companies, 2 fully owned and the other 2 joint ventures. These figures do not tell which is likely to localize employees earlier. The general tendency is, however, that fully owned companies tend to gradually localize while joint

ventures often allocated some positions to local personnel at the time of foundation.

As to the time reached for local managers to replace expatriate ones in these HLM positions, one company indicated 5 years or less; 4 companies, 5 to 10 years; and 3 companies, more than 10 years. The companies indicating more than 10 years feel that the present number of Japanese employees is the minimum and that any further localization would be difficult. They rather feel that if they expand their operations, they will have to increase that number.

Promotion is closely connected with corporate styles and business development, and it is not as simple as saying that those positions currently occupied by Japanese will be transferred to local staff when technology transfer makes further progress.

The average length of Japanese employees' tenures is about 4 years, but there was an opinion that Japanese employees should stay for a relatively longer period because they should, first of all, be well acquainted with local conditions before realizing technology transfer and adopting local people in higher positions.

## **4. MEXICO**

### **4-1. Finding**

#### **1) Human Resources**

In reviewing human resources in Mexico, excess supply is seen in the large volume of unskilled workers and graduates from colleges or higher educational institutes, while shortage is seen in the number of technicians graduated from secondary or tertiary-level schools. This tendency will be aggravated in the future when an inflow of foreign capital is expected as a result of more open economic policies. It is anticipated that the inflow of such capital will end in "educational background inflation"; workers in the lowest class will have a higher educational background than ever because secondary education has been compulsory in recent years while an excessive number of college graduates enters the labor market of middle-level engineers and technicians. In industries, competition will become more severe to secure middle-level engineers and technicians for which there is now a shortage. Since HRD by public agencies is limited both in quantity and in quality, new measures should be sought for central and state governmental agencies to support efforts for HRD at corporate and/or industrial levels.

#### **2) Foreign Direct Investment (FDI)**

FDI currently accounts for 22% of the total employment, and it will assume a greater importance in the future as the open economic policy takes root. Most of the Japan affiliated companies, which started operations during the era of protectionism, are now endeavoring to maintain their competitiveness in the face of trade liberalization. From the latter half of the 1980's to the first half of the 1990's, on the other hand, the Maquilladora bonded processing zone attracted many enterprises and substantially contributed to the creation of employment. Many of the Japan affiliated companies based in the U.S.A. participated in the Mexican market in the 1980's and were favored with the merits of low labor costs and tax exemption for imports of parts. When, however, NAFTA takes effect in the near future, the whole of Mexico becomes a "Maquilladora," and the merit of tax exemption for imported parts will disappear around the year 2000. Hence, those enterprises which depend more on imported parts will have to endeavor to increase their regional procurement rate.

### 3) Technology Transfer in Japan Affiliated Companies

Education and Training: For Japan affiliated companies, education and training have an important role in providing employees with knowledge of the managerial policies of the company as well as the required skills and to motivate them to work as integral members. At the same time, it is a way to transfer technology. Both OJT and in-house training are equally necessary for employees, and companies have to provide well-organized training programs so that the employees will be able to begin work at production lines in a short period. Regarding managers and engineers/technicians, managerial staff candidates are usually put to thorough intensive training programs at parent companies which offer them comprehensive training including management philosophy. Thus manufacturing technology and management know-how are transferred step by step and are accumulated in specific levels of personnel who are expected to stay a long time in the companies. However, labor practices in Mexico are not based on life-time employment, and when some employees leave their present company and enter others, the effect of the technology transfer is diffused to third parties.

Appraisal and Reward: Appraisal and reward systems are more characteristic of Japanese management systems when compared with Western ones. However, because of their labor practices and the presence of labor unions, they are not functioning well in Mexico. Periodic job rotation to acquire multi-functional skills, guaranteed employment, and a seniority-based wage system have not been thoroughly implemented, and the foundation to rationalize the above-mentioned systems is too weak to take the necessary measures in personnel appraisal and promotion.

Localization: The Japan affiliated companies surveyed in this study hope, more or less, to transfer principal positions to the local side as far as possible so that they may rid themselves of the burden caused by dispatching their Japanese employees overseas. In such cases, localization of principal positions and technology transfer are sometimes contradictory to each other. In other words, if technology is transferred satisfactorily, the principal positions can be easily shifted to the local side, but once they are shifted, further technology transfer will be limited. On the other hand, if technology cannot be transferred smoothly, or if transferred technology cannot be maintained as desired, the Japanese side will retain the positions of responsibility and continue endeavoring to transfer more technology. It is difficult to specify how many expatriate employees

should be dispatched to an affiliate from its parent company, because the number depends upon the scale and contents of its business operations, management conditions, etc. But many companies are found to have 5 to 9 expatriates, and in cases where a company adopts a system in which expatriates support local managers as advisers, it can be supposed that the company has mostly completed its optimum localization in terms of high-level manpower.

#### 4) Donors and Recipients of Technology

This subsection places focus on people involved in technology transfer; the donor and the recipient of technology. The donor of technology means both a parent company and a affiliated company. The former is represented by Japanese engineers under short-term dispatch, lecturers in the head office's training institutions and the all staff who provide OJT, and the latter is represented by Japanese managers and employees dispatched to an affiliate over a long period and some local staff who have worked for the company for a long period. On the other hand, recipients of technology transfer include local managers and employees (or more specifically, administrators, engineers, clerical workers, skilled workers, unskilled workers, etc.) and, more generally, employees of companies from which Japanese affiliates procure parts and materials and those of subcontractors. It is technology transfer that causes tangible and intangible technologies and know-how to be transmitted, absorbed, and expanded between these kinds of donors and recipients.

Donors should possess useful technology and know-how to be transferred backed by a firm intellectual foundation and be equipped with transmitting ability (languages), understanding of the recipients' culture, and adaptability to local life. On the other hand, recipients should possess basic knowledge and experience to understand and acquire the technology and know-how, together with a positive and cooperative nature and understanding of the donor's (namely Japanese) culture.

When reviewing actual donors, however, there are few engineers and technicians who can satisfy all the above-mentioned conditions, and the reality is that some expatriate employees come to meet the above-mentioned conditions through accumulating local practices and experience. This chronic shortage of human resources who can transfer technology is a serious problem for the companies. To cope with this kind of problem, some of the companies surveyed have successfully used ex-JOCV (Japan Overseas Cooperation Volunteers) members and have seen good results.

When reviewing recipients, it is not practical to expect that recipients have as high an educational background as Japanese and have an understanding about Japan in advance. Since, however, these affiliated companies select those people who basically agree with Japanese-style management through recruitment, education and training, and promotion over a long period, rather unusual Mexicans tend to be employed in these companies. The surveyed companies have rarely hired graduates from foreign universities. This suggests that highly qualified people tend to keep their distance from Japanese companies, and it is unknown what influence this phenomenon will have on them over the long run.

## **4-2. Outline of Human Resources**

### **1) Demand and Supply of Labor**

According to the Census of 1990, the total population of Mexico is 81.25 million, with the economically active population (from 15 to 64 years of age) being 46.73 million (57.5%). The population below 15 years old is 31 million, or 38.3%. Although the population growth rate has dropped since the 1980's, the excess supply of young labor is expected to continue for the time being. In the 1980's, the Mexican government endeavored to quantitatively improve the educational infrastructure despite its serious financial situation, and it regards the future as a period of qualitative improvement. In 1993, compulsory education was prolonged to 9 years. On the other hand, the number of students in higher-level education has tended to drop in recent years. It is recognized that both the depressed national economy and the lack of job opportunities which correspond to one with a high educational background have hampered people's will to invest in education. Regarding the distribution of workers among types of jobs, a rough correspondence is seen as university graduates become professional workers, high school graduates become technicians, and graduates of primary or secondary-level schools become line workers. Although the number of graduates from universities and postgraduate schools has exceeded 2.2 million, the number of positions for managers and professional wage earners that corresponds to their educational level is less than 800 thousand. It can be said that university graduates have been substantially oversupplied, even when adding 300 thousand independent and self-employed entrepreneurs to the above figure.

## 2) Population Migration

Population migration from 1965 to 1970 was caused by the mass inflow of the rural population of the central part of Mexico to Mexico City, or inflow of the rural population into the nearest large cities. This trend was drastically changed from 1985 to 1990: as population started to flow out of Mexico City to other cities, the City is now the largest source of population outflow. As a result of the shortage of job opportunities, the problems of population migration, such as migration toward northern boundary zones and illegal border crossing into the U.S.A., has been highlighted.

## 3) Future Perspectives and Problems

Rapid inflow of foreign capital is expected in the future as the economy has been opened and NAFTA comes into effect. It is anticipated that labor demand for secondary and high school-level technicians will increase at a rapid pace while middle-level engineers will become in short supply temporarily. As a result, college graduates who are in excessive supply at present will get jobs at technician and supervisor levels, thus enhancing the educational level of technicians. From now on, high school-level education and training should be converted into education whose priority is given to scientific courses to meet the progress of industrialization, and the basic level of science and mathematics in the primary and secondary schools should be improved. College graduates will be forced to change their current expectation of being privileged as managers or members of the white-collar class, and colleges must foster human resources who can substantially contribute to production. Since competition is expected to become more severe for securing high-level manpower, the industrial sector should expand its investment in education and training. As education and training activities are being decentralized, they should be dealt with at the state level, too. Both the Education Department and Industrial Promotion Department of state governments and the industrial sector should cooperate to review and design HRD programs to meet the real requirements of industry.

## 4-3. Outline of Foreign Direct Investment (FDI)

### 1) Current Situation of FDI

The serious condition of the Mexican economy, when revealed in 1982, depressed the FDI amount to an annual average level of US\$500 million in the

first half of the 1980's. Then, thanks of the stabilization policy and restructuring promoted by the De La Madrid administration, FDI gradually recovered and reached the level of \$2 to \$3 billion in the second half of the 1980's. The 5-year development plan adopted by the Salinas administration at its start aimed to increase FDI to an annual average level of \$5 billion by 1994 through further liberalization of the economy. Backed by economic stabilization and anticipation of NAFTA, however, this target was attained by 1991, and FDI reached the \$6 billion level in 1992. The number of employees in foreign companies has been increasing favorably in pace with the growth of employment throughout Mexico. The number of Mexican employees in foreign companies was about 1.1 million as of 1991, occupying 13% for all industries, or 22.4% of the total employees in the manufacturing industry and substantially contributing to employment creation.

As of July 1, 1993, the number of Japan affiliated companies operating in Mexico is 231. Among them, 178 are companies locally established, and 152 belong to the manufacturing sector, including agriculture, forestry, fisheries, and mining. Among these manufacturing companies, 106 possess manufacturing plants, with 58 being Maquilladora companies. As to size of industrial sectors, the largest is the electric and electronic apparatus sector, numbering 47 companies (including 32 companies possessing plants and 29 Maquilladora companies), followed by the automotive and automotive components sector, numbering 27 companies (including 24 companies possessing plants and 9 Maquilladora companies), 21 companies in the other manufacturing sector, and 16 companies producing general machinery.

## 2) Changes in Policy related to FDI

The Mexican development strategy prevailing before the first half of the 1980's was based on import substitution industrialization and control of foreign capital. After the debt crisis in 1982, quantitative control of imports was reinforced, and custom tariffs were raised. The trade and export industry lost its competitiveness and the amounts of non-oil export fell in 1985. Hence, the strategy was converted into an open economic policy aiming to lower trade barriers, positively introduce foreign capital, and reinforce export competitiveness of non-oil products. Since it joined GATT in 1986, Mexico has endeavored to quickly liberalize foreign trade and FDI and has succeeded in converting from a protectionist, domestic market-oriented economy to an open one. Backed by such success, the Salinas administration promotes the establishment of



NAFTA which comes into effect in January 1994 and positively aims to build a free trade zone in and around North America.

### 3) Future Role and Problems of FDI for Mexican Economy

After NAFTA comes into effect, the Mexican government will endeavor to improve infrastructure, implement HRD programs, and reinforce tax and other economic incentives for promoting active investment while it continues its deregulation and liberalization policies for utilizing FDI. While investment from North America (especially from the U.S.A.) is expected to increase, that from NIEs, ASEAN, and other Asian countries and the EC will also increase. Japanese investment is anticipated to increase gradually due to continuation of the high yen situation, and the plan to secure American markets. The problem is, however, that productivity in Mexico is not as high as in Asian countries (especially, ASEAN countries). Moreover, when taking differences in languages and culture into consideration, Japanese companies have to take a prudent attitude toward active participation, even though they need to secure bases for the North American market.

### 4-4. Technology Transfer in Japan Affiliated Companies

For the purpose of this study, about 15 Japan affiliated companies were selected from among comparatively large-scale manufacturing enterprises which possess manufacturing plants in Mexico. A total of 11 companies replied to the questionnaire (4 electric and electronic apparatus, 2 automotive components, 2 general machinery manufacturing, 1 precision machinery manufacturing, 1 textile, and 1 other manufacturing). Ten out of these 11 companies also cooperated with interviews (among them, 4 Maquilladora companies in Cd. Juarez, composed of 2 electric and electronic apparatus, one automotive components, and one other manufacturing). The report given below is based on the questionnaires distributed to the 11 companies and interviews with 10 companies.)

#### 1) Operation of Companies

The surveyed companies are roughly classified into two types. One is those which participated in the Mexican market early during the period from the 1960's to the 1980's and have engaged in local production to secure participation in the local market under the government's policy of import substitution and control of foreign capital. Their market is basically Mexico and they have endeavored to enhance their local procurement rate of raw materials, now

reaching a considerably high level. The other type is those which possessed production bases at first in the U.S.A. and did business in the American market: after 1980, they entered the border zone to utilize the inexpensive labor force in Mexico in accordance with the bonded processing zone contract between the U.S.A. and Mexico. Hence, they are what are called "Maquilladoras."

Regarding the number of employees, all of them are medium-scale companies with less than 1000, except for a Maquilladora with more at 4287. Regarding capital ratios of Japanese parent companies, 7 affiliates are 100% Japanese held and the remaining 4 by a Japanese majority. Two affiliates recorded more than \$100 million in annual sales; 5, from \$100 to \$50 million; 6, less than \$50 million; and 2, unknown. To the question of profitability of operations in the last five years, 2 general machinery manufacturers replied that it "exceeded our business plan"; 4, including 3 electric and electronic apparatus companies, said it was "as expected"; 3, including 2 automotive components companies said it was "less than projected"; and the remaining 2 (both Maquilladoras) said it was "much less than projected." It seems that those enterprises which began to take part in and after 1980 recorded a poor performance. Despite unfavorable performances, all the enterprises (except for one Maquilladora) replied in the affirmative as to whether they plan to upgrade manufacturing technology or products within the next five years. The local procurement rate is low among the Maquilladoras (with one showing an exceptionally high rate), and the 2 inland-based high-technology and precision machinery companies which started operation long ago indicated low rates of less than 30%. On the other hand, the remaining 5 companies have endeavored to improve the rate, regardless of their business fields, and attained rates exceeding 50%, with the exception of one company.

## 2) Employment

The average number of employees is 856, but it becomes 513 if excluding the exceptionally large Maquilladora company. The average number of Japanese expatriates per company is 10.5, and the number of employees per expatriate is 81.5 (or 18.9 if excluding the above-mentioned Maquilladora). The average age is 27.5: while that of manager level employees exceeds 30, that of production employees is a little above 20. Many of the surveyed affiliates are manufacturers whose main work process is assembling: many of the line workers and clerical workers are female. Many managers, engineers, and technicians are male, but their absolute number is small. Though few in number,

there are female managing staff members who have been promoted from the production lines. The average length of employees' tenure is about 4.1 years, but that of many Maquilladora companies is less than 2 years, indicating a strikingly low retention rate. When compared with the worker level, the retention rate is better for the management level.

Each company has its own recruiting channels. Generally, however, public means such as newspaper advertisements are utilized for managerial staff and technical staff, while employment pamphlets and notices through unions, introductions by friends or acquaintances, and other informal means are often applied for skilled and unskilled workers. The required educational level is a university degree or vocational diploma for management staff, high school or vocational diploma or university degree for technical staff, lower-secondary-level diploma or more than 8 years of education for skilled workers, and basic educational diploma from primary or secondary schools for unskilled workers. Qualifications for promotion clearly divided between the management and technical level and the worker level in Mexico, but some Japan affiliated companies have promoted excellent workers to managerial positions, ignoring that division, though this is quite exceptional. Concerning adequacy of employees' skills at the stage of hiring, the general rating was lower than 3 (mean value: adequate with some training by the company) on the scale of 5: the rating becomes lower in correspondence to lower educational background as management (2.9), technical (2.8), skilled (2.6), and unskilled (2.1). However, this rating considerably varies among types of businesses and among companies.

### 3) Education and Training

The general trend throughout the various types of businesses is that employees are not expected to have the skills necessary to perform their job, when they join their companies and that they are encouraged to gain the skills they need through training. Training is required most for unskilled workers and middle managers. Most of the companies provide training at the parent company for managerial and technical staff members. Though they assume that a longer term of training produces better results, all of them are quite careful in selecting trainees, because they feel there is a high risk that some of the trainees may leave the company after training. In addition, in-house training, outside seminars and lectures are provided. About half of them adopt OJT for training this level of employees. On the other hand, training of skilled and

unskilled workers is composed mainly of OJT and in-house training, and 5 companies depend on these alone. Training at the parent company is limited to this level of employees: only 3 companies carry it out. Few adopt job rotation as one of the training means: 3 for management level; zero for technical level; and 2 for skilled and unskilled workers. Regarding training sectors, almost all the companies cover total quality control and professional development. Top priority is given to the former by 5 companies and to the latter by 4. Though operational management is taught by 8 companies, its priority is low. Labor-management relations are taught by only 5. Regarding problems or constraints encountered in education and training programs, replies were diverse: heavy work load, no motivation, difficulty in recruiting lecturers and instructors for 5, lack of top management support for 4, and budgetary constraints and difficulty in developing training materials for 3.

Regarding external training programs, 4 companies utilize domestic institutions while 3 utilize overseas ones, indicating a low utilization rate. Among training opportunities offered by JICA and others, 2 companies utilized the AOTS, but other agencies' services were rarely known among the surveyed companies. They maintain relations with external institutions by accepting trainees (by 7 companies), dispatching experts and donating money to local educational or vocational institutes (by 1), and dispatching experts to local suppliers (by 3), thus suggesting a rather inactive attitude.

#### 4) Appraisal and Promotion

In appraising job performance, the companies stated that focus was given to employees' relatively long-term contribution to the company. In actuality, however, items to which importance is given in appraisal of employment, rated on the scale of 5, are improvement of current performance (4.2) and assessment of salary increases (4.3), followed by assessment of future potential (3.6), career planning decision (3.4) and assessment of training needs. In the course of business operations, companies expect employees to acquire multi-functional skills (3.7), but put less emphasis on both a guaranteed employment system and a detailed job classification system (2.9). When rating the productivity of employees, 2 companies said it was "about the same" as their parent companies, while the remaining companies said it was "lower."

When filling vacancies, 5 companies use a combination of internal promotion and external hiring, but generally internal promotion is utilized more often than external hiring. Regarding periodic rotation among jobs, 2 out of

the 11 companies replied in the affirmative. However, a considerable number of companies carried it out in relevant sections only when necessary: 10 in operation sections, 7 in administration sections, and 6 in design and engineering sections. Reasons for reassignment are mainly for education and training, such as "for enhancing experience or ability," followed by "for coping with changes in amount or quality of work." Regarding the general characteristic of Japanese enterprises whereby they expect employees to acquire multi-functional skills through appraisal and periodic rotation based on a long-term viewpoint, no particular progress has been realized due to labor customs, influences of labor unions, and local conditions such as tax systems, in spite of the Japanese management's positive desire to proceed with it.

#### 5) Localization

When reviewing the degree of localization of important positions, the position of "president" is occupied by a Japanese expatriate in all 11 companies. Other positions which are often occupied by an expatriate are "head of plant" (7) and "head of technology" (7). On the other hand, those transferred to local people are "head of personnel/HRM" (10), "head of general affairs/administration" (8), "head of production" (7), and "head of purchasing and procurement" (6). Positions of an intermediate nature are "controller/financial officer" which is occupied by an expatriate (2), local people (5), and not applicable (4) and "head of marketing" which is occupied by an expatriate (3), local people (4), and not applicable (3). Since these data indicate no particular trends based on type of business, years established, and business performance, it seems that the degree of localization depends on the management policies of each enterprise. Regarding time for local managers to replace expatriate managers, 2 companies said 5 years or less, 8 companies, from 5 to 10 years, and one, more than 10 years. Those companies which said "5 years or less" are 2 general machinery manufacturers.

Average length of Japanese management staff tenure is 4.3 years, ranging from 3 to 7.5 years. These differences are attributable not to type of business but to each enterprise's policies. Regarding communications with Japanese employees and local ones, the Japanese employees have face-to-face communications with local managers daily, with supervisors daily (6 companies) or weekly (5), and with line workers daily (3), weekly (4), monthly (1), and never (2). They socialize with local employees outside the office monthly (8), yearly (2) and never (1). Those companies which feel visa regulations some-

what restrictive are limited to Maquilladora companies, and that is connected with difficulty in obtaining short-term visas for professional staff from the American side.

#### 6) Overall Evaluation of Technology Transfer

The rating of ability of local employees indicates that line workers are comparatively capable of operating their machines (3.4 on the scale of 5), that local managers can supervise and manage production to a certain degree (3.2), but that local technical staff cannot maintain and modify machinery very well. When rating the productivity of employees as an overall index of these points, it is considerably inferior (2.1) to their parent companies. Although the employees are not to blame for all the causes since levels of mechanical facilities and production scales differ between parent and affiliate companies, it is certain that many enterprises feel differences between employees in Mexico and those in parent companies, except for 2 companies. Regarding time for local managers to replace expatriate managers, companies which said "5 years or less" are limited to 2 general machinery manufacturers: others said "from 5 to 10 years" (8) and "more than 10 years" (1). It is not expected that the important positions will be localized so quickly. The index of operating profit rates clearly indicate these situations. Those companies who evaluate the profitability of their operations during the last five years as having exceeded their business plans were limited only to the 2 companies which foresaw possibilities of localizing managers within "5 years or less." While 4 companies said profitability was "as expected," the remaining 5 said it was "considerably less than their business plan."









