

Chapter 4 Benchmarking for the Formulation of Recommendations

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Prior to the formulation of recommendations to MOIT on human resource development policies and programs, the scheme, programs and organizations of HRD for the manufacturing industry in several countries are reviewed as benchmark. Then recommendations on HRD of Indonesia previously published in related study reports are summarized as reference.

4.1 Industrial Education by Governments of Various Countries

4.1.1 JAPAN

(1) Industrial Education

The education system of Japan is classified as follows:

Basic education:	primary and secondary education
Higher education:	university and graduate school
Skill training:	vocational school
Industrial education:	education and training by the government and the private sector aimed at support for SMEs corporate activities and promotion of employment

Table 4-1 Jurisdiction of Education in Japan

	Basic Educaiton	Higher Education	Special Education	Vocational Training	Industrial Education	Schooling for Qualifications
	Primary and secondary schools	University and graduate school	Special schools	Training of technicians and unemployed for employment promotion /qualification	Training of buiness people and buiness advisors	For acquisition of qualifacation of consultants
Ministry of Economy, Trade and Industry (METI)						
Ministry of Health, Labour and Welfare						
Ministry of Education, Culture, Sports, Science and Technology						
Local Governments						
Private Sectors						

Source: JICA Study Team

The contents of the industrial education consist of management technology, production technology and skills, and they come under jurisdiction of the following relevant ministries:

Ministry of Economy, Trade and Industry	:	management technology
Ministry of Health, Labor and Welfare	:	skills for production and management
Ministry of Education, Culture, Sports, Science and Technology	:	production technology

1) Ministry of Economy, Trade and Industry

The Ministry of Economy, Trade and Industry (METI) is a principal government agency holding jurisdiction over the industrial education. “Japan Small and Medium Enterprise Corporation (JASMEC)” is an integrated agency, established under the ministry, to support small- and medium-sized enterprises in Japan. The corporation carries out the industrial education being centralized in an educational institute, “Institute for Small Business Management and Technology”. The institute, having nine (9) schools across the country, has over forty (40) years of experience in the industrial education for the small- and medium-sized enterprises. Though the institute has engaged itself mainly in 1) direct training of the business people and 2) training and education of the business advisors from local governments and various private organizations, and recently 3) support for entrepreneurs as another main activity of the institute. The institute provides a comprehensive education in contents and plays a leading role in the human resource development for small- and medium-sized businesses in Japan. Regarding the curriculums, the institute concentrates its efforts on management and administration technologies rather than production technology.

In addition, “Small- and Medium-Sized Enterprises Management Consultant”, a national qualification for business diagnosis and management consultation, belongs in the competence of the Ministry of Economy, Trade and Industry. The programs by the institute are also intended for the applicants of the qualification exams.

2) Ministry of Health, Labor and Welfare

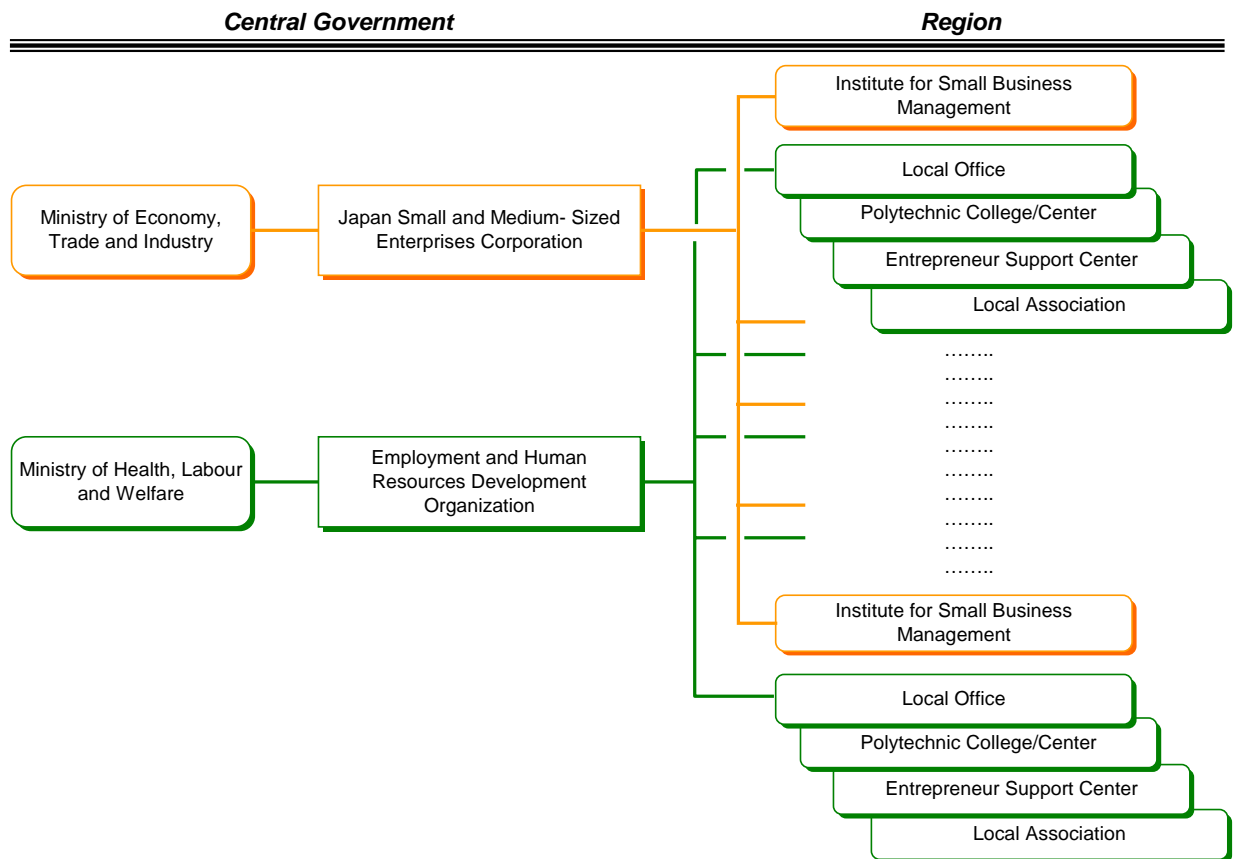
The Ministry of Health, Labor and Welfare takes charge of training of various skills for production and management. The object of activities is vocational training for promotion of employment, and it is not limited to the technicians of the small- and medium-sized enterprises but covers technicians of enterprises of any scale. Moreover, vocational training to the elderly and the unemployed is an important part of activities. The ministry operates numbers of specially designated public corporations nationwide for the vocational training such as Polytechnic Colleges, Vocational Ability Development Centers and other support

centers. A new organization, “Employment and Human Resources Development Organization of Japan” was established in 1999 to consolidate those existing corporations as well as its forty-seven (47) local centers in the whole country, aiming for the realization of more coherent provision of services.

The ministry continues to operate “Official Examination System of Technical Skill”, which has a history of 40 years.

As shown in Fig. 4-1, the variety of human resource development programs by Ministry of Economy, Trade and Industry, and the Ministry of Health, Labor and Welfare are planned and executed by a consolidated body under the promotion policy-making section of each ministry.

Fig. 4-1 Industrial Education by the Central Government of Japan



Source: JICA Study Team

3) Ministry of Education, Culture, Sports, Science and Technology

The Ministry of Education, Culture, Sports, Science and Technology exercises jurisdiction over compulsory education, higher education and various special schools. Amid growing

calls for importance of the educational-industrial complex, cooperation between the higher education circles and the industrial circles also has become more active. The postgraduate education for the MBA acquisition is also categorical in the industrial education.

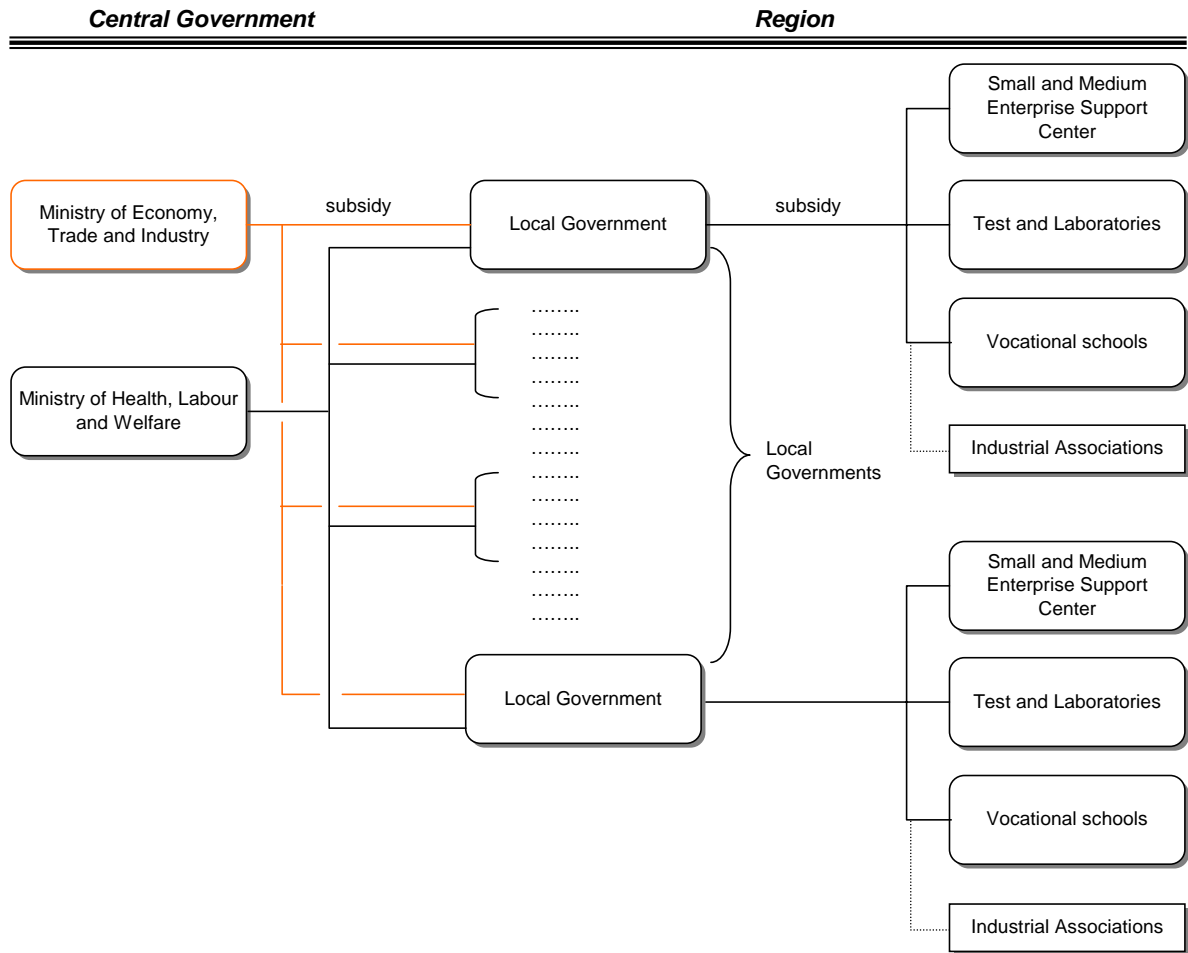
“Consulting Engineer” is the authoritative national qualification in the technological fields in Japan to be certified by the Ministry of Education, Culture, Sports, Science and Technology. Thus, the ministry has played an important role in promoting the production technologies, which rank above vocational skills.

4) Local Governments

Each local government of Japan owns various affiliated organizations as part of the regional development and local industry promotion policy in a municipality, such as publicly-run test and research laboratories designed to develop, promote and disseminate production technologies; vocational training centers for skill training and SMEs support centers. Such support centers maintain a network of management service advisors and technology instructors, aiming at supporting the small- and medium-sized enterprises in every way covering management, technology, financing, etc. The support for human resource development including the training of new business entrepreneurs is part of the services provided by the support centers.

The activities of the local governments are partly funded by the subsidies from the Ministry of Economy, Trade and Industry, and the Ministry of Health, Labor and Welfare as shown in the Figure 4-2.

Fig. 4-2 Industrial Education by Local Governments of Japan



Source: JICA Study Team

5) Private Sector

Various industry associations have their own educational programs and conduct dispatch of instructors and other educational activities besides holding of training courses. There are many such enterprises as to make the qualification acquisition courses for “Small- and Medium-Sized Enterprises Management Consultant”, “Consulting Engineer”, etc. into a business. Moreover, there are some associations that issue qualifications for management consulting guidance on their own terms.

Table 4-2 enumerates the industrial education activities being conducted in Japan currently by various organizations, depending on target, and main field. The Institutes for Small Business Management and Technology under JASMEC and the local municipal governments play the principal roles in the human resource development for the small- and medium-sized enterprises in Japan, aside from the skills training for promotion of employment. The Institutes for Small Business Management and Technology, focusing on

the management technology, carry out an extensive range of HRD programs for both business people and advisors for them. The local governments are offering more detailed and careful support and HRD programs to the local enterprises in management and production technologies, bearing closely on their specific needs.

Table 4-2 Industrial Education by Execution Body in Japan

	Jurisdiction	Target											Main Field			No. of Installations	
		Executive Managers of SMEs			Employees of SMEs				SMEs Supporters		Applicants for Management Consultants	Applicants for Technology Consultants	Vocational Skills Trainers	Management Technology	Production Technology		Skills
		Executive Managers	Successors	Entrepreneurs	Managers	Engineers	Employees of in-direct Division	Technicians	Local Government	Private Sectors							
Institute for Small Business Management	Ministry of Economy, Trade and Industry Japan Small and Medium Enterprise Corporation																9
Polytechnic Colleges	Ministry of Health, Labor and Welfare Employment and Human Resources Development Organization																28
Entrepreneur Support Center	Ministry of Health, Labor and Welfare Employment and Human Resources Development Organization																2
Polytechnic Centers	Ministry of Health, Labor and Welfare Employment and Human Resources Development Organization																64
Local Offices	Ministry of Health, Labor and Welfare Employment and Human Resources Development Organization																47
Central and Local Employment and Human Resources Development Associations	Ministry of Health, Labor and Welfare Employment and Human Resources Development Organization																
Special Schools, Universities, Graduate Schools	Ministry of Education, Culture, Sports, Science and Technology																
Public run test and laboratories	Local Governments																nearly 200
Small and Medium Enterprise Support Centers	Local Governments																47
Vocational schools	Local Governments																
Private Sectors																	

Source: JICA Study Team

(2) Development of Industrial Education in Japan

1) Development of Industrial Education in Japan

Japan has considered the making-things and the manufacturing industry as a key industry of the country, and worked toward promoting their development with a unified effort by the country. Moreover, because most employment has been secured by the small and medium enterprises in Japan, the importance of the small and medium enterprises has long been recognized. Therefore, the support and the human resource development for the small- and medium-sized enterprises have been tackled early on and a detailed system to support such enterprises has been developed.

So far, the Government of Japan has played a significant role in promotion, diffusion and education of the production skills and technologies. However, in the midst of the recent rapid progression of technological sophistication and diversification, the role of the government is shifting to concentrate on the promotion of basic and essential technologies common to all the manufacturing sectors and human resource development, leaving the high technologies to the private sectors.

A so-called soft technology such as management technology has been originally developed in the industrial education bearing closely on the production sites of enterprises. As for the public qualification system for management service advisors, it was introduced preceding the qualification system for production technologies. Since the production technology of Japan was coming up to a certain level, the concern and acknowledgement over the soft technology have risen, and the education and training for the soft technologies have come to be conducted by private-sector institutions or industry groups with their own programs. The support for new business entrepreneurs is considered a relatively new field adopted in the industrial education.

2) Integration of Support for Small- and Medium-Sized Enterprises and Institutions for Human Resource Development

The industrial education in Japan has been intended for small- and medium-sized enterprises from the very beginning. It is true that policies and schemes for the industrial education have not necessarily developed with an agreed plan from the start on the organizational adjustment within a relevant ministry or the demarcation between the relevant ministries. However, after the restructuring of the government ministries and agencies, the industrial education is managed effectively at present under the two integrated organizations, namely the “Institutes for Small Business Management and Technology” of the Ministry of Economy, Trade and Industry and “Employment and Human Resources

Development Organization of Japan” of the Ministry of Health, Labor and Welfare. Moreover, the jurisdiction over the industrial education among the Ministry of Economy, Trade and Industry; the Ministry of Health, Labor and Welfare; and the Ministry of Education, Culture, Sports, Science and Technology is also made clear. For all that, it will be necessary to alter the concepts and schemes of the industrial education promptly in accordance with the advancement of technologies and the changes in industrial structures in the future.

3) Synergy of Qualification System

Along with the development of the industrial education, public support qualification systems, such as “Small and Medium Enterprise Management Consultant” and “Consulting Engineer”, have been introduced. The education toward qualification acquisition is now recognized as a part of the industrial education, on the other hand, the qualified persons with the relevant national license are acknowledged as instruments or instructors of the industrial education. They are active in the front lines of the industrial education. Small- and medium-sized enterprises support centers under the local governments offer many financing programs to SMEs in the region and make it a financing condition for borrowers to obtain the diagnosis and guidance by the qualified persons. This mechanism generates a synergistic effect between the financing and the qualification system.

4) Operational Cost

The specially designated public institutions such as the “Institutes for Small Business Management and Technology” of the Ministry of Economy, Trade and Industry; and the institutes and centers under the “Employment and Human Resources Development Organization of Japan” of the Ministry of Health, Labor and Welfare, were established by the government budget, and about 80 % of their subsequent operational expenses is being covered by the budgets of competent ministries.

Greater part of the initial construction cost and operational expenses for the publicly run test and research laboratories under the local governments depend on the local budgets, which receives state subsidies. Inspection commission and facility rental fees of the laboratories are devoted to pay for a part of their operational expenses. As for the support centers under the local governments that are co-founded by the local government and the private sector, a larger part of their operational expenses depends on the private contributions.

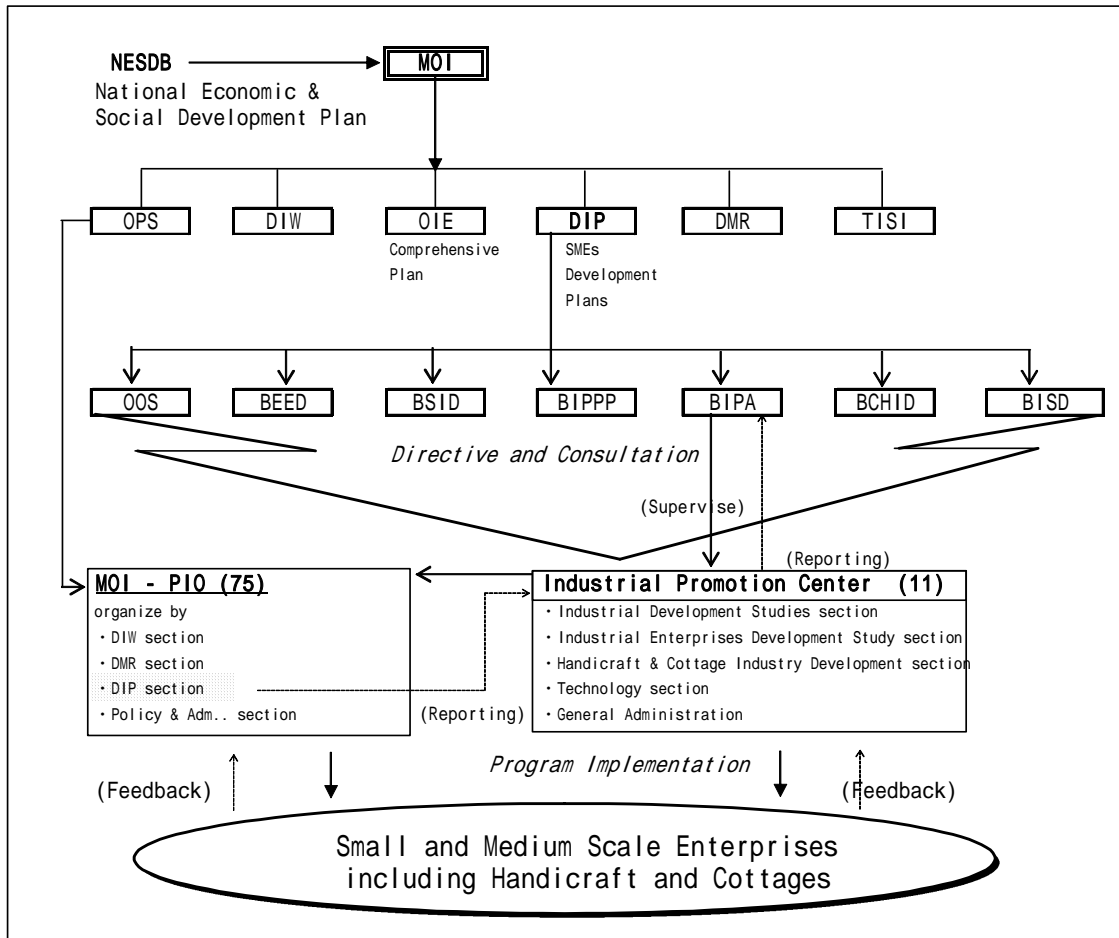
Almost every publicly run support organization sets up a target of increasing operating revenue in order to pay for operational expenses as sizable a percentage as possible of.

However, even in compliance with the current administrative reform based on market mechanisms, a measure of industrial development services provided by the public support agencies will remain necessary. The expenditure of public money on the operational costs is expected to continue. The quality as well as the output of the support and human resource development programs for SMEs by the public-run organizations will be asked more severely for the future.

4.1.2 Thailand

Industrial education by the Thai Government is an active example. Fig. 4-3 shows the organization of Ministry of Industry of Thailand.

Fig. 4-3 Organization Chart of Ministry of Industry of Thailand



Remarks;

NESDB :National Economic and Social Development Board

MOI : Ministry of Industry

OPS : Office of the Permanent Secretary

DMR : Department of Mineral Resources

DIW : Department of Industrial Works

OIE : Office of Industrial Economics

DIP : Department of Industrial Promotion

TISI : Thai Industrial Standard Institute

BIPPP : Bureau of Industrial Promotion Policy and Planning

OOS : Office of the Secretary

BIPA : Bureau of Industrial Promotion Administration

BEED : Bureau of Entrepreneur and Enterprise Development

BSID : Bureau of Supporting Industries Development

BISD : Bureau of Industrial Sectors Development

BCHID : Bureau of Cottage and Handicraft Industries Development

Source: JICA Study Team

(1) BEED

The Bureau of Entrepreneur and Enterprise Development (BEED) under DIP (Department of Industrial Promotion), which is responsible for the SME promotion policy, started the training program, Entrepreneurship Development Program (EDP), for managers and

entrepreneurs of SMI sector in 1980. The program is carried out nationwide and covers Personnel Management, Marketing Management, Production Management, Financial Management, Factory Visits, Feasibility Study, and Business Establishment. Classes are done in a hotel where the trainees stay for a month. Instructors have practical experience from the private and government sector. Trainees benefit not only from the classes. The network among them established during the program helps their business thereafter. Trainees bear only a part of the cost. The total number of trainees reached 3,006 at the end of 2002.

Whereas EDP is addressed to existing entrepreneurs, in 2001, BEED started the New Entrepreneur Creation Program (NECP) targeting new entrepreneurs whose age's average 30.

(2) OSMEP

Office of SME Promotion (OSMEP) was opened in 2001 outside of DIP. According to the prospectus, the mission is to coordinate the activities and budget allocation for all the government and public SMEs promotion agencies. But the demarcation between OSMEP and DIP is yet to be well defined.

(3) ISMED

Institute for Small and Medium Enterprises (ISMED) was established in 1999 following the scheme of "Institute for Small Business Management and Technology" of Japan. ISMED is extra-departmental body funded by government budget aiming at self-finance in the future. ISMED, without own facilities, is operated by a network with exiting ten (10) universities. The mission of ISMED is to work as a service provider to SMEs, focusing on training and consultation. There are about 300 free training courses. Most of them are for two days.

(4) TPA

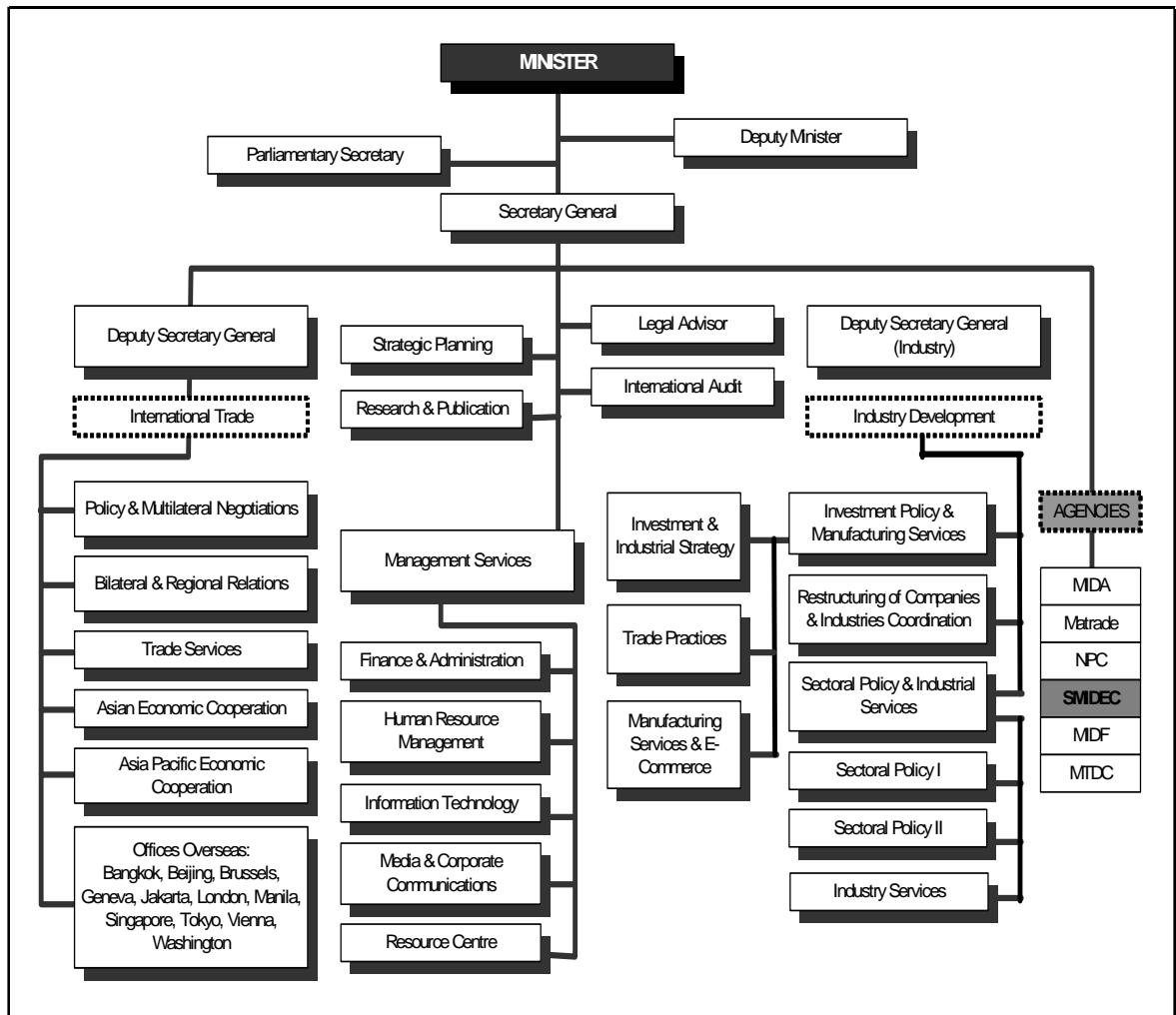
Technology Promotion Association (TPA) is another extra-departmental body supported by the Japanese government. The programs are dealing with the production control technologies for the manufacturing sector.

In Thailand, the preparatory works of the introduction of SME Management Consultant Certificate started in 1999. Up to date, after classroom and practical training, the assistant certificates have been issued to the 500 participants. Training programs covering administration and management technologies for acquisition of certificate are operated by MOI, in which would-be SME government advisors, and managers and entrepreneurs of SMEs participate.

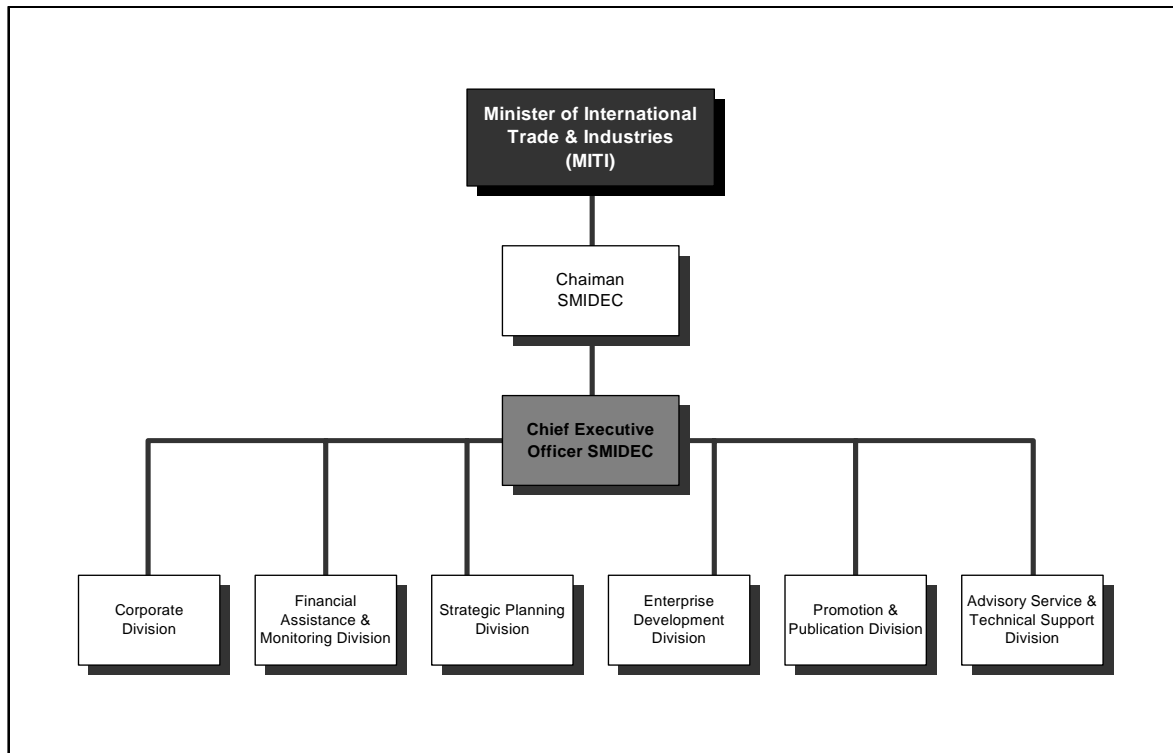
4.1.3 Malaysia

The SME promotion division of the Ministry of International Trade and Industry (MITI) was converted to Small and Medium Industries Development Corporation (SMIDEC) in 1996. Fig. 4-4 and 4-5 show the organization chart of MITI and SMIDEC.

Fig. 4-4 Organization Chart of MITI of Malaysia



Source: MITI

Fig. 4-5 Organization Chart of SMIDEC of Malaysia

Source: SMIDEC

SMIDEC is the specialized agency to promote the development of SMIs in the manufacturing sector through the provision of advisory services, fiscal and financial assistance, infrastructural facilities, market access, and other support programs. Formulation of promotion policy (SMIDP: Small and Medium Industries Development Plan) is also a part of missions of SMIDEC.

As one of the SME development programs, SMIDEC has SME Expert Advisory Panel (SEAP) to assist SMEs to upgrade their technological capability, to achieve efficiency and to increase productivity by emplacement of retired experts at the factory sites of SMEs. The activity of the SEAP, however, has not been very active so far. For upgrading of technical and managerial levels, SMIDEC appointed 19 training providers to undertake technical skills training for SMEs. A half of the training cost is granted by SMIDEC.

Regarding the industrial education, the MITI does not have HRD programs direct to SMEs. Universities, Federation of Malaysian Manufacturers, training agencies under local governments, and the productivity center implement HRD programs with subsidies from the central government.

4.1.4 Taiwan

Small and medium enterprises of Taiwan are the backbone of Taiwan's economic development and have a bigger driving power to its economy compared to other countries. With the accumulation of 30 years' experience, Taiwan has developed a unique and highly efficient structure and a number of measures in providing guidance and assistance to SMEs following the schemes of Japan and U.S.A.

The Ministry of Economic Affairs (MOEA) established the Small and Medium Enterprise Administration (SMEA) in 1981 with the purpose of fostering the sound development of SMEs. As SMEs in Taiwan are dispersed all over the island, twenty-two (22) local SME Service Centers have been established and supervised by the SEMA.

The SMEA is responsible for strengthening the development of SMEs through the formulation of SME development policies and the implementation of the SME development and assistance provisions of the "Statute for Development of Small and Medium Enterprises." According to the Statute of the SMEA, SMEA is responsible for the following tasks:

- 1) Developing plans for small and medium enterprises and the drafting of relevant laws and regulations;
- 2) Providing guidance and evaluation services to small and medium enterprise;
- 3) Conducting surveys and research addressing small and medium enterprises;
- 4) Personnel training, production technology improvement, and other relevant services provided to small and medium enterprises;
- 5) Guidance concerning financing and management improvement provided to small and medium enterprise; and
- 6) Other guidance services to assist the development of small and medium enterprises

In accordance with the nature and demand of SMEs, the SEMA has made joint efforts with related administrative agencies to set up individual guidance systems to provide assistance to SMEs in financing, operation management, information management, mutual support and cooperation, quality enhancement, production technology, research and development, industrial safety, and pollution control.

Taiwan has a SME Management Consultant Certificate system similar to that of Japan.

4.1.5 Mexico

Technical support to SMEs by the Ministry of Economy (Secretaría de Economía - SE) is limited to the advisory services by the internally certified consultants. The scheme called COMPITE was initiated by one of the big three of automotive assemblers of the U.S.A. for its own suppliers in Mexico. The internal certificates have been issued since 15 years ago. Though the certification system is established, SE does not provide training programs for the applicants. Advisory services cover both managerial and technical problems to enhance the productivity. Mediation of the recipient SMEs to the governmental financial schemes after the services is expected.

In 1996, the construction of a new network of SMEs diagnosis offices for improvement of their competitiveness called CETRO-CRECE was started at a national level. CETRO-CRECE certifies consultants by its own criteria. They support mainly new entrepreneurs and work closely with local financial agencies.

Various training programs for managers and supervisors of SMEs are held by industrial associations, universities, or independent consultants with subsidies from the SE. SE has training programs for the internal staff who works on the SMEs support programs, but does not have HRD programs direct to SMEs.

The new law of national certification system of SME management consultant will soon be put into operation. The preparatory works were done by joint work of several ministries and private organizations. New training courses by private sector for acquisition of the certificate are expected to start. They will offer the opportunity of managerial training to SMEs middle-class managers. SE plans to hold a model training course for the certificate.

4.2 Past Recommendations Relating to Human Resource Development for SMEs

From two study reports on SME promotion in Indonesia published during the past five years, recommendations relating to human resource development are summarized.

4.2.1 Follow-up Study Report on Industrial Sector Promotion and Development Plan in Indonesia (Supporting Industries) (1999)

Of the eleven approaches proposed for promotion of supporting industries, the following three approaches are relating to human resource development.

- Support for improvement of technology levels (Program 7)
- Support for improvement of management capability (Program 10)
- Reinforcement of human resource development (Program 11)

Support for improvement of technology levels (Program 7)

This classifies production-related technologies into essential technology and management technology. Essential technology corresponds to production technology and skills described in 1.2.4, and management technology is equivalent to management and production control technology in 1.2.4.

As for essential technology, extension services by public technical support organizations and a training and registration system for experts who provide the extension services are recommended. As for management technology, it is pointed out that SMEs face a shortage of skillful and practical human resources who have systematic and practical knowledge, and the reinforcement of education on management technology is strongly recommended.

Support for improvement of management capability (Program 10)

It is pointed out that, while the learning and/or improvement of management technology is essential for SMEs to grow into competitive supporting industries, the lack of such technology and the shortage of learning opportunity for knowledge and method are clearly visible among local SMEs.

To address the issue, it is recommended to improve SME promotion programs under the leadership of the then PUSBINLAT and the PPEI under the MOIT so that they can meet the actual needs of SMEs, and to upgrade and expand consulting service by retraining extension officers. For the long run, a new system to educate and train management advisors within the MOIT is proposed.

Reinforcement of human resource development (Program 11)

The shortages of skilled workers at SMEs and vocational training centers are pointed out. In particular, plastics molding, metal press, and die making are listed as technology areas that have a strong need for training but lack a formal support system.

The report proposes five action programs in its final part, one of which is the business management skill improvement program.

For SMEs to manufacture competitive products, modern business and production control techniques need to be learned, not to mention equipment modernization. The MOIT should plan to reinforce the ongoing system to provide proper support for SMEs and deploy training programs throughout the country. To this end, the following two programs are proposed in the form of action plan.

- TPP Reinforcement Program

Under the leadership of the IDKM, a master plan for strengthening the TPP as a corporate advisor for SMEs, will be prepared jointly with R&D organizations under the BPPIP and then PUSBINLAT. Then, the program will be implemented in collaboration with foreign technical support organizations.

- Reinforcement of the training program for the upgrading of SME management skills

The program implemented by the then PUSBINLAT will be reviewed to modify its content in order to improve its viability and effectiveness. It will be deployed for SMEs throughout the country, as well as retraining of the TPP.

4.2.2 Policy Recommendation for SME Promotion in Indonesia, JICA (2000)

The “Policy Recommendation” points out the shortage of human resources as one of the problems of non-financial aspects facing SMEs in Indonesia, especially the lack of management expertise. It then identifies several issues relating to human resource development. As for school education, a small percentage of people receive higher education. Then, many engineers who have received advanced education work for the government or state enterprises, rather than private enterprises in the manufacturing sector. As a result, there is a shortage of human resources on the shop floor, who have production expertise and leadership. Finally, most SMEs are not capable of providing effective on-the-job training (OJT) due to the lack of fund and skilled workers who can act as instructors.

As for management expertise, the report stresses the lack of financial and accounting knowledge. It concludes that the lack of management expertise and technology is partly due to a limited learning opportunity and partly due to inadequacy of training programs. In particular, many training programs overemphasize theories and fail to take into account the diverse needs of individual enterprises.

Among the government's SME promotion programs, the report focuses on the SME advisor systems operated by the MOIT and the MOCSME, and concludes that a training scheme for improvement of the advisor's skills does not function well.

The report then recommends the establishment of the "SME Human Resource Development Center" to increase the number of SME advisors and provide proper education for SME managers. It is pointed out that the government's leading role in establishing the center serves to show its firm commitment to human resource development for SMEs to private enterprises.

The report further proposes the introduction of the SME management consultant certification system in Indonesia by modeling after the Japanese system and recommends that the government should play a leading role. Furthermore, it envisages that, after the certification system has been introduced, the "SME Human Resource Development Center" should serve as an official facility for training persons who want to become the SME management consultant as well as follow-up training for SME management consultants.

In summary, "Policy Recommendation" proposes to promote human resource development for SMEs by expanding extension service networks for SMEs by qualified management consultants from the public or private sector, who have received proper training and certification.

4.3 Current Status of SME Advisors and Management Consultants in Indonesia

The field surveys conducted for the present Study indicate that most SME managers prefer in-factory training or guidance for workers by an outside advisor, which deals with day-to-day, shop floor problems, rather than sending workers to a training course held outside. As mentioned in 4.2, the reports previously submitted to the MOIT recommend the reinforcement of the SME advisor system and the establishment of the SME management consultant certification system.

The following sections describe the current state of the SME advisors, and the recent development relating to the progress toward the introduction of SME management consultant certification system in Indonesia.

4.3.1 SME Advisor

SMEs can receive guidance and advice on their production activities from the MOIT's extension officers specialized in technical assistance. This system originated from a professional advisor system that was created to support SMEs promotion by the then MOI twenty five years ago. It has been reorganized through the merger of ministries and other organizational reforms. MOIT disposed excess personnel to TFPP and there were some who moved out to private sectors. In 2001 when decentralization of power to provincial governments was started, the MOI had approximately 1,900 extension officers, of whom 1,700 were transferred to the DINAS, and 200 persons remain at the MOIT.

It should be noted that the capacity of extension officers vary greatly because original members (then called "TPL") were employed by the MOI from outside after examination of their qualification (knowledge, etc.), while other extension officers were transferred from other sections of the ministry as a result of organizational reform without consideration to qualification. In fact, the latter accounted for approximately 90% of 1,900 extension officers present at the start of the decentralization process.

Two hundred (200) extension officers who work within the MOIT are assigned to the IDKM and other departments. The IDKM responsible for SME promotion takes charge of personnel management, payroll, skill training and other administrative work relating to extension officers. It also partially manages and funds for training of extension officers working for provincial governments. However the IDKM does not have the updated database of extension officers covering their expertise, etc.

According to the ministerial decree, the extension officer is expected to perform a wide range of functions, including the development of field guidance programs, methods and plans, implementation and evaluation of skill guidance and training, and the monitoring and analysis of related industries. Typical tasks performed by the extension officer include a extension service for SMEs (provided by extension officers working for provincial government) and the teaching at an IDKM seminar. During the field surveys conducted under the present Study, the study team often heard enterprises to name the DEPERINDAG as an organization to provide training or send advisors. It seems to refer to the extension officer.

Nevertheless, extension officers are not highly rated because most of them have not obtained official qualification in their ability to provide SME support, and because they are getting old as new recruitment has not be done for a long period of time due to the

government's zero growth policy. The function of extension officers is not necessarily recognized even within the MOIT. Then programs to enhance the motivation of extension officers are not being implemented.

In this connection, the scheme of BDS plans to retrain extension officers as part of its plan to let them provide consulting service for SMEs as "service providers". Nevertheless, there is no long-term plan to redesign the future role and function of extension officers who operate throughout the country, although skill training is conducted from time to time.

4.3.2 SME Management Consultant Certification System

In Indonesia, there is no national professional certification in the fields of business management or other skills. According to interview surveys of trade associations led by the Indonesian Chamber of Commerce and Industry (KADIN), several trade associations certify or plan to certify various professional skills according to their own standards. Furthermore, the government agencies and trade organizations are jointly establishing an official certification system.

From 2001 to 2002, the establishment of an agency called BNSP (Badan Nasional Sertifikasi Profesi: National Agency for Professional Certification) was started under the leadership of the KADIN, joined by the MOIT, the MONE, and the MOMT, and in cooperation of AusAID of Australia and GTZ of Germany. While cooperation by Australia and Germany has been ended, preparation still progresses. Last year, the Law of Manpower No.13 of 2003 was adopted and a decree will be issued soon. The BNSP will be responsible for the establishment of competency standards and the issuance of professional certification. The primary task is to unify various professional certifications that are currently issued according to varying standards.

The BNSP will become an independent agency. The government will provide one third of staffing and the private sector the rest. PUSDIKLAT-INDAG will participate on behalf of The MOIT. The BNSP will accredit individual testing and certifying agencies, not including training institutes. Thus, an organization that provides training and administers a certificate test will be accredited only for its testing function. Accreditation will cover government organizations such as PUSDIKLAT-INDAG. At present, detailed certification requirements and methods have not been finalized.

In the first stage, the BNSP will accredit skill certification agencies. At present, agencies to certify professional skills in the fields of automotive parts, metalworking, and tourism have already been established by respective trade associations and wait for accreditation. In addition, a project to foster certifying agencies will soon be launched by the KADIN, the MONE, and the AUSAID. Note that a professional certification based on the tests on knowledge and practical skills will guarantee a certain level of competency, but not mandatory for practicing the profession. However, mandatory certification is being considered for professions relating to government. As for the management consultant, some expect that it will be incorporated into the jurisdiction of the BNSP, but no definitive move has been made. PUSDIKLAT-INDAG, which is a training institute on “soft” technology under the MOIT, intends to obtain accreditation by the BNSP of vocational training schools under it to serve as a certifying agency.

Meanwhile, the APEC, of which Indonesia is a member, plans to establish uniform professional certifications among the member countries and is implementing the APEC Small Business Counselor Program since 2000. Under the program, each member country is expected to establish an Economy Institute (EI) in its country. As the establishment of the BNSP is aligned to promotion of the APEC program, the BNSP is considered to be equivalent to the EI. According to an Indonesian representative participating in the APEC program, however, no coordination is made between the two programs although frequent discussions have been made when preparation for the establishment of the BNSP was started. Note that the MOCSME participates in the APEC program on behalf of the Indonesian government.

The KADIN is a membership organization including the INKINDO (National Association of Indonesian Consultants) that is the trade association of consulting firms. Its membership totals approximately 5,600 firms with employment ranging from 5 to 500. Membership requirements are: 1) an Indonesian company; 2) having specialization; and 3) maintaining neutrality. In addition, approximately 70 foreign consulting firms are registered as special members. A consulting firm that can participate in a government project is limited to an INKINDO member according to presidential decree No.80 of 2002. Around 70% of the member companies are consultants specialized in civil engineering and architecture. There is no personal member. Finally, consulting engineers in the fields of civil engineering and architecture are already certified by respective trade associations.

On the other hand, a trade association of management consultants was established two years ago. The Association of Indonesian Management Consultants (AIMC) has approximately 50 corporate members, which have been admitted in consideration of corporate

size, the area of specialization, and business record. It also has special members who are individual consultants. According to the AIMC, there are a few thousand management consultants in Indonesia. As they are not officially certified, they have to rely on their educational background and business record to find clients, whereas clients have difficulty in finding a competent consultant qualified to meet their needs. Most clients are large corporations and most SMEs cannot hire a management consultant due to high costs.

Against this backdrop, the AIMC plans to certify consulting firms and individual consultants (as an organization) according to their own criteria. Generally, the AIMC members are also members of the INKINDO and the KADIN, but no coordination is made between the AIMC and the BNSP in their plans. As for educational programs for managers, the AIMC conducts short (a few days) courses only a few times a year. The courses primarily cover the development of motivation or leadership and are closer to general management courses intended for large corporations. There is no plan to establish a training program for individual management consultants.

As seen above, the need for qualified management consultants is recognized among related parties. While there is a definitive move to establish an official certification system, no coordination has been made among the related organizations and there is no agreement on unification of certification requirements. If the organizations proceed with their plans without coordination, several certification systems will be established and operated according to different standards and requirements, resulting in deterioration of quality of management consulting service, which would adversely affect SMEs that receive such service. Note that the results of the interview surveys indicate that many respondents think that trade associations are an appropriate certifying agency for consulting firms and government organizations for individual consultants.

Chapter 5 Problems of Human Resource Development Programs
in Indonesia

Chapter 5 Problems of Human Resource Development Programs in Indonesia

This chapter discusses the problems of human resource development programs for the manufacturing sector in Indonesia identified through demand/supply surveys. Note that the demand survey of the Study was focused on the supporting industry of the manufacturing sector.

5.1 Supply

5.1.1 Ministry of Industry and Trade (MOIT)

Based on the national development plan by BAPENAS, MOIT issued the “Master Plan of Small and Medium Industry Development 2002-2004”. The plan emphasizes the importance of human resource development and lists the prioritized curriculums. The training programs by training agencies of MOIT listed in Chapter 2 are in accordance with the curriculums.

Table 2-1 of Chapter 2 is the list of the training programs implemented by departments or agencies under MOIT inclusive of regional offices. Table 5-1 summaries the number of the programs listed on Table 2-1 by content. Those programs, however, only for government staffs, state-owned companies, large enterprises, or instructors/advisors are excluded.

Table 5-1 No. of Training Programs of MOIT by Content

		Secretary General	IDKM	IDKM	IDKM	BPPIP	NAFED	Total
		PUSDIKLAT-INDAG		DINAS	MIDC	Balai Besar	IETC	
		BDI (2) *1	2003	2002	2003	BARISTAND (8) *2	2003	
1	General Management			17				17
2	Business Promotion/Entrepreneurship	4		15				19
3	Business Contract	2						2
4	International Trade Transactions						75	75
5	Exhibition Management						1	1
6	Motivation Training			13				13
7	Finance and Accounting	1		1				2
8	Intellectual Property Right			4				4
9	Audit							0
10	Security							0
11	Environment	1		1		7		9
12	Standardization			1		2		3
13	Inspection and Quality Control			1		6	13	20
14	HACCP	2				1		3
15	Business Language						5	5
16	Other		3	2	2		2	9
17	Metalworking			3	3	6		12
18	Plastics					1		1
19	Calibration					6		6
20	R/D							0
21	Oil and Lubricant			7		2		9
22	Cleaner Production		1	3				4
23	Food	4		33		22		59
24	Textile/Garment	3	1	29		41		74
25	Leather	1		1		10		12
26	Furniture/Handicraft	1	1	17		27		46
27	Wood			3		1		4
28	Fertilizer			5				5
29	Packaging	2		6				8
30	IT			3				3
31	Other	4	2	25		33		64
Total		25	8	190	5	165	96	489

*1 Data of six (6) BDIs are yet to be received.

*2 Data of five (5) BARISTANDs are yet to be received.

Source: JICA Study Team

5.1.2 Summary of the Activities of HRD Supply Agencies

Fig.5-1 is the summary of the activities of the public and private training agencies of Indonesia.

Fig. 5-1 Supply Map of HRD

Training Agency \ Training Contents/ Target	MOIT - IDKM	MOIT -IDKM - MIDC	MOIT - PUSDIKLAT-INDAG	MOIT - BPPIP	MOIT - IETC	MOIT - CEVEST (BEKASI, BANDUNG)	MOIT - Vocational schools (ie.BLKs*)	MONE - Polytechnics	MONE - Management schools/institutes	MOCSE	Provincial Governments - DINAS	BPTLDGAM & LUK SIDOARJO - UPT	LPSM**	ASTRA (except AMD)
Management Technology - Basics								1						
Management Technology - General management skills for MFRs														
Management Technology - Business tactics development														
Basic Production Control														
Applied Production Management														
Production Technology - Metal - Vocational Skills														
Production Technology - Metal - Engineering/Design														
Production Technology - Metal - Research and Development (R/D)														
Production Technology - Plastics - Vocational Skills														
Production Technology - Plastics - Engineering/Design														
Production Technology - Plastics - R/D														
Production Technology - Die/Mold - Vocational Skills														
Production Technology - Die/Mold - Engineering/Design														
Production Technology - Die/Mold - R/D														
Production Technology - Final Treatment/Sub assembling - Vocational Skills														
Production Technology - Final Treatment/Sub assembling - Engineering/Design														
Production Technology - Final Treatment/Sub assembling - R/D														
Production Technology - Local Industries - Vocational Skills														
Production Technology - Local Industries - Engineering/Design														
Production Technology - Local Industries - R/D														
Vocational training for Job-seekers														

Remarks: : Regular program, : Available upon request, 1: Available only for their DIII course students as a part of entrepreneurship training
 BLKs*: Balai Lathan Kerja (Training Institutes under Ministry of Manpower)
 LPSM**: Human Resources Development Institute under Matsushita Gobel Education Foundation

Source: JICA Study Team

5.2 Demand for Training by Area

Questionnaire survey was carried out to 263 supporting SMEs in Jakarta, Surabaya, Semarang, and Bandung area. The results of the survey are reported in the Chapter 3.

The 52.5% of the respondents have sent their employees to Off-JT since 2001. Table 5-2 summarizes the total number of programs of Off-JT to which respondents sent their employees since 2001. Table 5-3 shows the total man-hours of Off-JT programs the participants of respondents spent since 2001. In Chapter 3, SMEs of the supporting industry were classified into four (4) groups by the stage of business development based on the contract situation with the OEM buyers. It is observed that SMEs of lower stages are more interested in the training of production technology.

Table 5-2 No. of Training Programs Attended since 2001

	Management Technology					Production Technology				
	Management	Production Control	Market/Sales	Human Resources	Finance	R/D	Dies/Molds Jigs/Tools	Material Processing	Final Treatment	Assembly
Managers	57	33	18	21	11	0	14	22	4	1
Engineers/Supervisors	2	20	5	2	4	2	11	26	7	10
Technicians/Operators	1	3	0	1	0	3	23	24	9	14
Total	60	56	23	24	15	5	48	72	20	25
Order	2	3	7	6	9	10	4	1	8	5

Source: JICA Study Team

Table 5-3 Total Man-Hours Spent for Off-JT since 2001

	Management Technology					Production Technology				
	Management	Production Control	Market/Sales	Human Resources	Finance	R/D	Dies/Molds Jigs/Tools	Material Processing	Final Treatment	Assembly
Managers	2,862	1,281	936	566	126	0	682	1,032	47	216
Engineers/Supervisors	136	3,339	87	44	31	190	431	2,185	352	604
Technicians/Operators	160	75	0	160	0	83	1,254	1,069	334	1,185
Total	3,158	4,695	1,023	770	157	273	2,367	4,285	732	2,004
Order	3	1	6	7	10	9	4	2	8	5

Source: JICA Study Team

Regarding the participation in Off-JT in the future, as much as 85.2% of the respondents wish to send their employees to outside training. In the questionnaire, they were requested to indicate five (5) training areas by priority order. With priority points, 5 to 1, the priority training areas are summarized in the Table 5-4 by stage of business development. Respondents of all stages give the top three (3) priorities to “Production Control”, “Market/Sales”, and “Management”.

Table 5-4 Priority Area for Training by Stage

	Management Technology						Production Technology					
	Management	Production Control	Market/Sales	Human Resources	Finance		R/D	Dies/Molds	Material Processing	Final Treatment	Assembly	
Stage I	Managers	185	138	254	67	119		3	114	104	69	66
	Engineers/Supervisors	13	58	36	35	32		6	7	22	9	25
	Technicians/Operators		21						27	21	19	47
	Total	198	217	290	102	151		9	148	147	97	138
	Order	3	2	1	8	4		10	5	6	9	7
Stage II	Managers	173	79	114	73	43		2	23	16	9	26
	Engineers/Supervisors	19	128	38	46	9		4	14	16	2	22
	Technicians/Operators		8						43	31	27	40
	Total	192	215	152	119	52		6	80	63	38	88
	Order	2	1	3	4	8		10	6	7	9	5
Stage III	Managers	64	30	63	35	20			16	14	3	11
	Engineers/Supervisors	9	41	11	15	4		11	15	11	5	22
	Technicians/Operators		7						23	21	19	11
	Total	73	78	74	50	24		11	54	46	27	44
	Order	3	1	2	5	9		10	4	6	8	7
Stage IV	Managers	37	45	61	20	21		7	10	16	4	1
	Engineers/Supervisors	4	30	2	19			7	12	12		26
	Technicians/Operators		2						4	7	7	13
	Total	41	77	63	39	21		14	26	35	11	40
	Order	3	1	2	5	8		9	7	6	10	4

Source: JICA Study Team

Table 5-5 projects the demand for Off-JT at a national level by stage multiplying the ratio of the number of the supporting industry companies estimated in the Chapter 3 by stage to the number of respondents. The order of the demand level by all stages is as follows.

- Priority 1 Management Technology - Market/Sales
- Priority 2 Management Technology - Production Control
- Priority 3 Management Technology - Administration
- Priority 4 Production Technology - Dies/Molds
- Priority 5 Management Technology - Finance
- Priority 6 Production Technology – Material Processing
- Priority 7 Production Technology - Assembly
- Priority 8 Management Technology - Human Resource Development
- Priority 9 Production Technology - Final Treatment
- Priority 10 Production Technology - Research and Development

Table 5-5 Demand for Training at a National Level by Stage

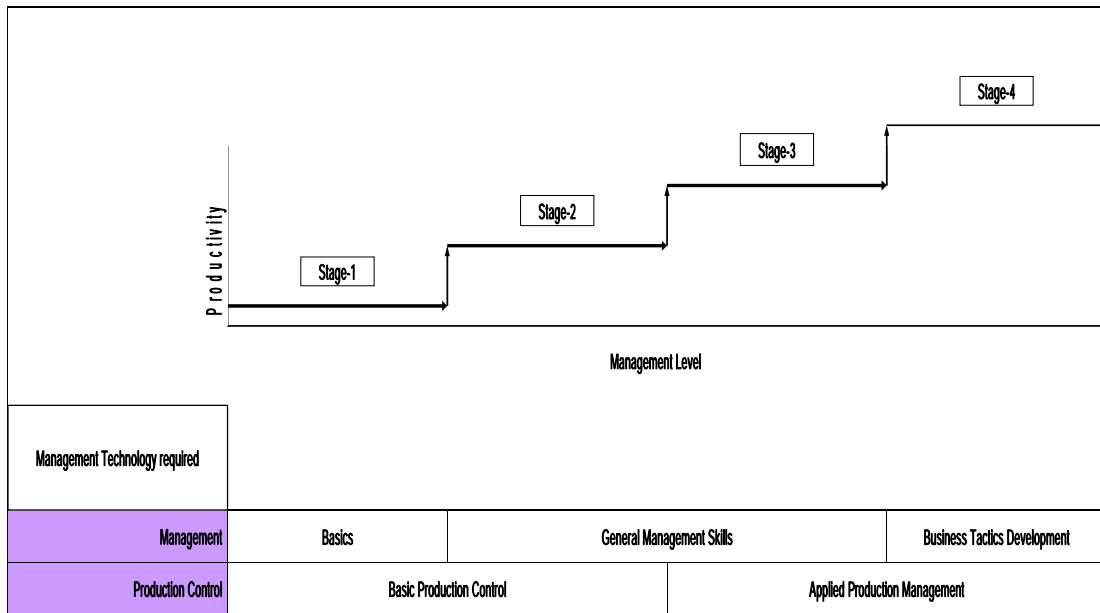
		Management Technology					Production Technology				
		Management	Production Control	Market/Sales	Human Resources	Finance	R/D	Dies/Molds	Material Processing	Final Treatment	Assembly
Stage I	Managers	165,000	123,081	226,541	59,757	106,135	2,676	101,676	92,757	61,541	58,865
	Engineers/Supervisors	11,595	51,730	32,108	31,216	28,541	5,351	6,243	19,622	8,027	22,297
	Technicians/Operators	0	18,730	0	0	0	0	24,081	18,730	16,946	41,919
	Total	176,595	193,541	258,649	90,973	134,676	8,027	132,000	131,108	86,514	123,081
	Order	3	2	1	8	4	10	5	6	9	7
Stage II	Managers	23,609	10,781	15,558	9,962	5,868	273	3,139	2,184	1,228	3,548
	Engineers/Supervisors	2,593	17,468	5,186	6,278	1,228	546	1,911	2,184	273	3,002
	Technicians/Operators	0	1,092	0	0	0	0	5,868	4,231	3,685	5,459
	Total	26,202	29,341	20,744	16,240	7,096	819	10,918	8,598	5,186	12,009
	Order	2	1	3	4	8	10	6	7	9	5
Stage III	Managers	3,705	1,737	3,647	2,026	1,158	0	926	811	174	637
	Engineers/Supervisors	521	2,374	637	868	232	637	868	637	289	1,274
	Technicians/Operators	0	405	0	0	0	0	1,332	1,216	1,100	637
	Total	4,226	4,516	4,284	2,895	1,389	637	3,126	2,663	1,563	2,547
	Order	3	1	2	5	9	10	4	6	8	7
Stage IV	Managers	1,388	1,688	2,288	750	788	263	375	600	150	38
	Engineers/Supervisors	150	1,125	75	713	0	263	450	450	0	975
	Technicians/Operators	0	75	0	0	0	0	150	263	263	488
	Total	1,538	2,888	2,363	1,463	788	525	975	1,313	413	1,500
	Order	3	1	2	5	8	9	7	6	10	4
	Order	3	2	1	8	5	10,008	147,019	143,681	93,675	139,138

Source: JICA Study Team

The high demand for the training of so-called soft technology is notable. However, it is often the case with SMEs, especially those for the aftermarket, that managers do not realize their own level of production technology, and have tendency to hanker for the advanced management tools.

In the Annex-1, three (3) categories of management technology and two (2) categories of production control technology were proposed. Assuming the required technology level varies according to the stage of the business development of the company as shown in the Fig.5-2, Table 5-5 is converted to Table 5-6 with reclassification of the management technology. The demand at a national level after reclassification of Table 5-6 is illustrated in Fig.5-3.

Fig. 5-2 Required Management Technology Level by Stage



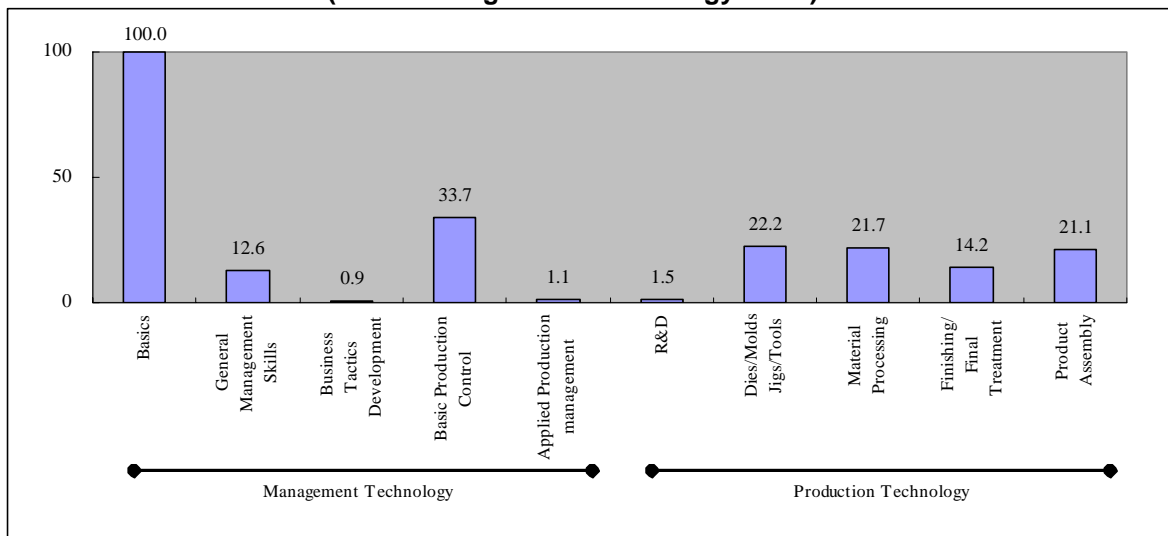
Source: JICA Study Team

Table 5-6 Demand for Training at a National Level

	Management Technology					Production Technology				
	Basics	General Management Skills	Business Tactics Development	Basic Production Control	Applied Production Management	R&D	Dies/Molds Jigs/Tools	Material Processing	Finishing/ Final Treatment	Product Assembly
Manager	557,432	65,534	5,213	133,862	3,424	3,211	106,116	96,351	63,092	63,087
Engineering Staff/ Supervisor	103,459	17,543	938	69,198	3,499	6,797	9,472	22,892	8,589	27,548
Technicians/ Operators	0	0	0	19,821	480	0	31,431	24,439	21,993	48,502
Total	660,891	83,077	6,151	222,881	7,403	10,008	147,019	143,682	93,674	139,137
Order	1	7	10	2	9	8	3	4	6	5

Source: JICA Study Team

Fig. 5-3 Demand for Training at a National Level (Basic Management Technology = 100)



Source: JICA Study Team

Due to the numerous companies of stage-1 who require the basic level of the management technology, the demand for the training of basics of management technology and basic production control technology stands out. As for the production technology, the relatively high demand for the training of dies/molds and material processing technologies is observed.

The high demand for the acquisition of management technology is also recognized through the visit survey of the Study Team. The managers of the companies visited confirmed that they prioritize the management technology for Off-JT as follows.

Table 5-7 Priority Area for Training

	Management Technology	Production Technology
Stage II – III	56%	44%
Stage IV	54%	46%

Source: JICA Study Team

From the results of the survey and through discussions with company managers, it is inferred that, as a company gains in maturity, its needs in terms of human resource development advance as described below. Production is the central activity of the manufacturing companies. They focus on the human resource development of the employees in the production workplace.

Stage 1: Operators master workplace technology by means of on-the-job training.

- Stage 2:** Companies are trying to have leaders take initiative in order to boost the morale of all of the operators, so that they can put their skills to full use in their work and produce a higher production volume. However, most of leaders lack leadership capabilities, so the expected results are not achieved. Many companies are calling for training that will boost leadership levels and help employees master motivation techniques.
- Stage 3:** Production control techniques relating to production and quality are being introduced in order to eliminate uneven productivity and quality caused by disparities in people and work methods, and to assure maximum efficiency and yield.
- Stage 4:** Advanced management technology is being introduced not only in production, but on a comprehensive basis, to gain the strong confidence of customers by better performance of production in quality, cost, delivery, development and management. As for the production technology, the need for training of R/D increases.

When a company develops from one stage to the next, it does not stop training of the previous stage, but rather continues it in parallel with that at the new stage.

5.3 Current State of Human Resource Development Programs for Manufacturing SMEs and Major Issues

Based on the results of the supply and demand surveys as well as observations obtained by the Study Team, findings about the current state of the existing human resource programs for SMEs in the manufacturing sector and major issues facing them are summarized below. The findings are roughly classified into several areas of interest that respondents address, i.e., program content, an organization and a system of program implementation organizations, a program implementation method, and general conditions (current state) of ongoing human resource development programs. Note that some of them are included in more than one item.

5.3.1 Content of human resource development programs

- SMEs in all the stages show substantial demand for training programs on management and production control technologies.
- In consideration of SMEs in Stage 2 with hope to join in supporting industries and a large number of SMEs in Stage 1, which serve the local market and attempt to improve productivity, the training need for basic management and production control technologies

is expected to be very high. These management technologies are required for not only supporting industries but also other manufacturing industries including the traditional sectors.

- SMEs lacking the investment fund have to use old production equipment continuously. Among production control technologies, maintenance technology should be prioritized.
- Skill training for SME workers is highly demanded as much as management and production control technologies.
- As for production technology, there is strong training demand for die/mold and material processing technologies.
- Among material processing technologies, there seems to be a large supply-demand gap in the areas of metal press with dies and plastics molding with molds, which are key technologies for supporting industries.
- Most of dies and molds are provided by the buyers. And technical support for manufacturing of die/mold may be expected from them. But for their maintenance, technology needs to be accumulated by people in the workplace. A training center for die/mold maintenance is urgently needed.
- As for type of enterprise, smaller enterprises and enterprises in a lower stage are more interested in learning management and production control technologies, skills, and die/mold technology, while large enterprises and those in a higher stage show strong interest in learning advanced management and production control technologies and skills, as well as knowledge and technology relating to more profitable operations, such as assembly.
- Human resource development programs conducted by MOIT are largely related to general management principles and theories targeted at all industrial sectors, or production technologies for local manufacturing sectors. They do not cover management and production control technologies that are most needed by manufacturing industries that aim to supply OEM level products that are competitive in the international marketplace.
- Training programs offered by the PUSDIKLAT-INDAG, a major human resource development organization, are centered on large state-owned companies, while there are few programs for manufacturing SMEs.
- The training institutes established by assembly manufacturers have a committee to make a curriculum that takes into account requests and comments from member companies. In contrast, MOIT rarely makes needs assessment before deciding on a main theme of a training program.

5.3.2 Organization and system of program implementation organizations

- Within MOIT, the PUSDIKLAT-INDAG seems to be responsible for management technology and the BPPIP for production technology. In reality, however, different departments and training organizations implement their own programs without little coordination. As a result, different organizations conduct training programs on the same theme. More important, neither of them has training programs that meet the needs of SMES in the manufacturing sector.
- Training programs offered by the PUSDIKLAT-INDAG, a major human resource development organization, are centered on large state-owned enterprises, while there are few programs for manufacturing SMEs.
- The MOIT's training programs, excepting ones conducted by the PUSDIKLAT-INDAG, do not appear to be conducted on the basis of a long-term plan.
- The MOIT does not have experts who can serve as instructors for management and production control technologies for manufacturers.
- Training should preferably be conducted continuously under a long-term plan, rather than a one-time theme.
- A long-term training program should be announced well in advance so that SMEs can take into account participation of their employees in their production/manpower mobilization plans. Preferably 2-3 months before the program, with a detailed description on the program content.
- Some point out that training instructors often lack field experience and expertise.
- The MOIT has established a higher reputation as a training organization than others, with more programs and participants.

5.3.3 Program implementation method

- Knowledge and technology that are directly linked to the actual needs on the shop floor should be taught, rather than theory and general information.
- A training program that combines lecture and practical training attracts more participants than the one that consists of lecture only.
- Programs should be more worked-out for variety, e.g. combination of management and production technologies, practical training at production site, seminar of business people, visit to assemblers, etc.
- Programs for specific sectors are preferred, which helps partnership and exchange of market information among participants.

- Training should preferably be conducted continuously under a long-term plan, rather than a one-time theme.
- A long-term training program should be announced well in advance so that SMEs can take into account participation of their employees in their production/manpower mobilization plans. Preferably 2-3 months before the program, with a detailed description on the program content.
- The training institutes established by assembly manufacturers have a committee to make a curriculum that takes into account requests and comments from member companies. In contrast, MOIT rarely makes needs assessment before deciding on a main theme of a training program.
- In the questionnaire survey, many respondents cited 300,000 – 500,000 Rupiah per person as the maximum amount that they could pay for training. Nevertheless, the content of a training program, rather than the cost, is more important when they decide if they participate or not. It is not merely a face value, but cost effectiveness that many SMEs consider as a determinant factor.
- While there is strong training demand for basic management and production control technologies, investment on human resource development constitutes heavy burdens for most SMEs, impeding program participation.
- SMEs, which cannot afford to participate in training programs conducted by private institutions due to a high cost, show high expectation for less expensive ones offered by the government.
- The duration of a training program should be limited to 3-4 days in the case of management and production control technologies and a maximum 5 days in the case of production technology and skills. As SMEs send a manager or an engineer who is key personnel at their factory, he cannot leave the shop floor for a long period of time.
- The level of satisfaction and demand is higher for in-house training and guidance provided by an outside advisor than a training program outside the company. This appears to reflect partly the fact that it is not easy to transfer knowledge and skills learned by employees in the training program to others within the same company, or that some employees who have participated in a training program leave the company later.

5.3.4 General conditions (current state) of human resource development programs

- SMEs fully recognize the importance of and the need for human resource development and have a strong desire.

- Several organizations established under the leadership of assembly manufacturers conduct training programs focusing on practical knowledge and skills and are highly rated. Originally established to foster suppliers for a particular assembler, these organizations now offer programs to all that charge a fee that would cover the program cost. They provide high quality, practical training, but they cannot meet demand from SMEs throughout the country due to a relatively high fee and their locations that are concentrated in certain areas.
- Management education and training is provided by universities (under the supervision of the MONE), open management courses of graduate schools, and private institutes that provide graduate-level management education. However, they appear to focus on latest management theories and are not likely to meet the current needs of local SMEs.
- Several trade organizations and business associations provide management education at their own facilities by hiring instructors.
- In the questionnaire survey asking the preferred subject of education and training, many respondents cited “market.” This should be interpreted that they want market (buyer) information, rather than the learning of market-related theories.
- Unlike large enterprises, small enterprises do not have a clear division of functions, such as executive managers, middle managers, and engineers. Past experience indicates that small enterprises send personnel in charge of a field corresponding to the specific subject of a training program, but his position varies (e.g., a manager, an engineer).
- For Japanese buyers operating in Indonesia, having a Japanese advisor or trainer is one of the important conditions in selection of parts suppliers to them. Government is requested to start the scheme of extension services by Japanese retirees.

5.4 Supply and Demand Gap in the Ongoing Human Resource Development Programs

The human resource development demand surveys of manufacturing SMEs, mainly those in supporting industries, revealed two key findings as follows:

- 1) Extensive demand for training of basic and practical management technologies for manufacturing industry; and
- 2) Strong needs for training and technical support relating to material processing and die/mold technologies.

5.4.1 Management Technology

Most of training programs on soft technology currently offered by PUSDIKLAT-INDAG of MOIT specialized in human resource development is intended for government staffs, and employees of large state-owned companies. Few of them are planned and implemented for SMEs. Programs participated by SME employees deal with general management knowledge only and do not cover production control technology required by manufacturing industries.

The study team reviewed several textbooks and some course materials used by PUSDIKLAT-INDAG. Generally, most of them cover general management knowledge, not focusing on specific industrial sectors, while some have been developed jointly with universities and contain the advanced and modern management theories, which are comparable to those taught in MBA courses.

The similar situation is observed at DINAS, which is specialized in training of local SMEs. Its programs on soft technology are chiefly designed to disseminate management knowledge that is commonly used by all sectors, including the training to raise employee motivation.

In addition to universities and other educational institutes that offer management courses for students, several private training institutes offer programs on business and production management techniques for the manufacturing sector. They are operated by major assembly manufacturers and have been started as training organizations for their suppliers. Their programs are also open to the public and are widely recognized for their content that addresses the practical needs on the shop floor. Unfortunately, however, they cannot meet huge demand from manufacturing SMEs throughout the country. Programs of private training institutes are limited in terms of location and require high costs that create heavy financial burdens for many SMEs.

Other public organizations under MOMT or MONE offer courses on production control technology on a periodical basis, although they are very basic in content. These courses are generally considered as supplemental and are limited in number. Moreover, they do not contain the curriculum most demanded by the private sector, i.e., production control techniques that are readily applicable to an actual production line.

While the present Study focuses on the fostering of supporting industries for assembly manufacturers, production control technology, knowledge and techniques, is highly useful also

for local industries, such as food processing, textile and furniture. In fact, they are indispensable for promotion of these industries.

Despite of the fact that there is strong demand among many SMEs for training programs that teach practical techniques and skills readily applicable to the shop floor at an affordable cost, few institutes and programs are meeting such demand. Clearly there is a large gap between supply and demand.

Finally, it is noteworthy that production control techniques to be taught by programs should include preventive maintenance, for most SMEs have financial difficulty and own old machinery and equipment, which maintenance is a critical issue to be dealt with immediately.

5.4.2 Production technology

The manufacturing sector in the country, except for capital intensive industries such as petrochemical, is roughly divided into: (1) local industries including food processing, textile, furniture and woodworking products; and (2) supporting industries that form the supplier base for assembly manufacturers in a hierarchical structure. As mentioned in Chapter 2 and Table 5-1, technical support in the area of production technology by the MOIT's organizations, except for MIDC and some Balai Besars, is primarily intended for local industries. Thus, the MOIT is expected to improve its support in the area of engineering technology demanded by supporting industries.

The demand and supply survey has revealed that there is strong demand for teaching and technical support for material processing and die/mold making techniques. In particular, machining involves a variety of production techniques, and as discussed below, plastics molding and metal pressing techniques suffer the largest supply and demand gap in terms of human resource development.

The current supply and demand situation is generally described as follows.

(1) Market

Assembly industries in Indonesia are led by automobile and electrical/electronics equipment industries, which are concentrated in the capital region, JABOTABEK, including Jakarta. Most of supporting industries serving the assembly industries are also operating in the region.

The development history of assembly industries in the country is closely related to Japanese companies, which have been driving the automobile and electrical/electronics industries since their birth in the country. As a result, the ability of supporting industries to establish and maintain good relationships with Japanese assemblers holds the key to their success in the domestic market for parts supply.

(2) Assembly industries and parts supply

There are a large number of local manufacturers that make a variety of parts and components used by assembly industries, including casting, die cast and press working products used for automobile production, classified as the shaped materials industry. It should be noted, however, that many of them do not supply their products directly to assembly manufactures and rather sell them to the aftermarket.

Looking at component parts of passenger cars, metalworking products account for slightly over 70% of the total in terms of value. (See Table 5-8.) The table shows data obtained from sampling surveys in Japan, but it also represents the situation in Indonesian accurately because there is little difference in component parts among countries. On the other hand, the breakdown in terms of engineering technology is casting + die cast 20%, forging 7% and press working 32%. Thus press working technology holds the highest share. In particular, for all motor vehicles including motorcycles and large vehicles (such as buses and trucks), press working parts account for 21% of the total. (See Table 5-9.) As passenger cars are composed of 20,000 – 30,000 parts each, press working parts alone amount to thousands in number and are made using as much dies or molds.

Table 5-8 Automotive Parts Market (Value of Shipment)

Final product: Automobiles			
Market size		Ave.	Share
Machine parts market		8,881,298	100%
Iron and steel	Casting	1,002,552	11%
	Forging	614,521	7%
	Press working	2,752,759	31%
	Printing	1,190,965	13%
	Others	121	0%
	Total for steel and iron	5,560,918	a: 63%
Non-ferrous metal	Casting/die cast	813,800	9%
	Press working	88,100	1%
	Cut	26,312	0%
	Others	5,716	0%
	Total for non-ferrous metal	933,928	b: 11%
Non-metal	Plastics	1,623,372	18%
	Ceramics	159,238	2%
	Others	603,842	7%
	Total for non-metal	2,386,452	27%

Note: Figures in "Ave." column are indicated in 100 million yen.

Source: "Current State of and Future Outlook for the Shaped Materials Industry in the Period of Structural Change," June 1994, Shaped Materials Center

Table 5-9 Composition of Mechanical and Electrical Parts in Motor Vehicles and Electrical/Electronic Equipment (Value of Shipment)

Share of total parts	Unit: (%)								
	Passenger cars	Trucks, buses and other vehicles	Motorcycles	Motor vehicles in total (average)	Industrial machinery	Consumer electrical equipment	Electronic equipment	Other electrical machinery	Overall average
Press working parts	32.0	25.7	6.0	21.3	15.3	8.7	33.4	9.1	18.6
Plastics parts	18.3	17.4	19.1	18.2	5.0	30.9	11.9	31.5	19.2
Others	49.7	56.9	74.8	60.5	79.7	60.4	54.7	59.4	62.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: "Current State of and Future Outlook for the Shaped Materials Industry in the Period of Structural Change," June 1994, Shaped Materials Center

On the other hand, plastics parts account for slightly over 18% of all parts used for production of passenger cars, following metal and non-ferrous metal parts. For household

appliances (consumer electrical equipment), share of plastics parts reaches 31%. Note that “Others” in Table 5-9 include, as seen in Table 5-8, casting, forged, print and cut parts.

1) Position of plastics parts in the assembly industries

In the manufacture of parts and components for household appliances and motor vehicles that are sold globally, precision plastics molding and mold making technologies are essential.

According to the Indonesia Olefin & Plastic Industry Association, there are approximately 6,000 plastics-related companies in the country, of which 90% (5,400 companies) are said to be small enterprises. Manufacturers of plastics parts for automobiles, electrical and electronics equipment, and industrial machinery are estimated to range between 500 and 700, including those serving the aftermarket. (The figures are estimated from the results of interviews to trade associations and other industry sources, for there are no detailed statistics on the number of establishments by product item.) These manufacturers are required to establish and maintain middle-level and advanced mold maintenance and production technologies. In addition, more than 4,000 companies manufacture plastics parts and products that do not require a high level of precision, for a variety of markets including containers for medicines and beverages, and kitchen goods.

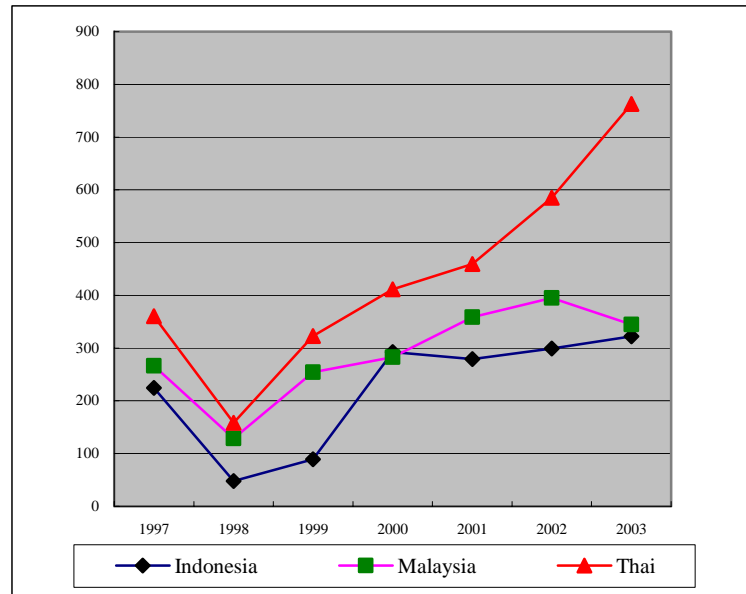
During the past five years, an increasing number of companies have gained the ability to make molds for plastics parts and components used by assembly manufacturers. They are mostly located in JABOTABEK and Bandung. Yet, as plastics parts demanded by assembly manufacturers require a significant high level of technology in comparison to ordinary plastics products, the supply and demand balance in this field is substantially on the shortage side.

2) Position of metalworking and press working parts

As discussed in the previous section, the automobile industry is a leading sector of the country’s economy and is said to be founded upon metalworking technology in the light of a dominant share of metal parts used in each vehicle; more than 80% of automotive components and parts are processed using one or more metalworking technologies. The same thing can be said about the motorcycle industry that has been rapidly expanding with growth of the domestic market.

As seen in the chart below, automobile production in Indonesia has overcome the Asian currency crisis in the late 1990s and has been steadily growing to establish its leadership in the manufacturing sector.

Fig. 5-4 Yearly Change of Automobile Production in Indonesia and Neighboring Countries



Source: JICA Study Team

It should be noted that production in Thailand has been growing faster than that in Indonesia, with an increasing margin year after year, while production in Malaysia follows a similar pattern to Indonesia.

Steady growth of the Indonesia auto industry has been bolstered by healthy growth of the domestic market and high import tariff imposed on automobiles and automotive parts. Now that the AFTA is launched, the ASEAN region is expected to undergo an accelerated rate of globalization. Under these circumstances, unless Indonesia's supply capability of automotive parts is upgraded to rank high in the ASEAN market, the local parts industry will be further lagged behind its competitors. In fact, a whole range of automotive parts (from tires to engines) will be liberated by 2005 as products under the CEPT (Common Effective Preferential Tariff) list. To establish competitiveness in the ASEAN market, it is imperative to raise the levels of production technology for metal parts that account for 70% - 80% of automotive component parts. At present, such efforts are being seen in the area of foundry technology as a trade association is in place and MIDC and other technical support organizations conduct R&D activities and provide technical assistance. As for

press working technology, as well as plastics molding, visible initiatives have yet to be undertaken in the country.

Chapter 6 Recommendations for Improvement of MOIT's
Human Resource Development Program

Chapter 6 Recommendations for Improvement of MOIT's Human Resource Development Program

This chapter discusses and presents the recommendation for improvement of human resource development program by MOIT. Recommendations are for manufacturing sector.

6.1 Assumptions for Recommendations

6.1.1 Industrialization and the Role of the Manufacturing Industry

In any country, growth of the manufacturing industry stimulates that of the upstream sector (e.g., raw materials and services) and the downstream one (e.g., packaging and transportation). The manufacturing industry is thus the kingpin of industry and the industrialization process. As industrialization progresses, the manufacturing industry gains its share of GDP. Although the share generally peaks out at 20-23% due to faster growth of the service sector that thrives on expansion and diversification of the national economy and market, the manufacturing sector continues to serve as a primary sector to drive the country's economic development in terms of job creation, the rise in personal income, and the earning of foreign currency reserves.

At present, the IT industry is widely touted as a leading industry in the next generation, but the fact is that it is founded upon a myriad of technologies to manufacture information and communication equipment and systems, as well as production management techniques. While IT is highly revered as an emerging economic engine, it is not IT itself that creates employment opportunities, earns foreign currency and increases personal income, but the presence and operation of manufacturing and related industries that promote, leverage or exploit evolution of IT. As economic development is one of the most important issues facing any countries, industrialization is the most practical and feasible way to achieve it and must be driven by the manufacturing industry.

For manufacturing industries of less industrialized countries, which strive to participate in the international market dominated by those of industrialized countries, it is important to recognize a formidable advantage that they inherently have over competitors, i.e., the fact that they are latecomers. Being a latecomer means that they can use a wealth of technology and knowledge that has been developed, and, more importantly, proven to be commercially feasible, saving the enormous time and cost which otherwise might be required for

development of new products or technologies. This is exactly the situation that Japan took advantage of in her industrialization process. A key success factor here is to introduce, disseminate and upgrade, in an efficient and effective manner, technologies and systems that are available in industrialized countries. Needless to say, it is a complex and time-consuming process, starting from imports of advanced products, to introduction and accumulation of technology, the startup of local production to substitute for imports, and exports of own products to the world market. To manage the process properly requires a strong government leadership and well-coordinated industrial policy. In fact, the role of government is indispensable for less industrialized countries to take full advantage of their latecomer position. And many governments, including Japan, South Korea, and Taiwan, have successfully exerted their leadership in the industrialization process.

In this conjunction, SMEs occupy an important position. In newly industrialized countries as well as industrialized ones, SMEs are playing a critical role in national economy, as evidenced by the fact that they account for a dominant share (sometimes 98-99%) in the total number of enterprises or employees in many countries. In Indonesia, SMEs led a recovery from the economic crisis in 1997 and their promotion now receives a renewed attention as a key policy agenda. Also, government policy to promote decentralization of power to rural regions, as initiated by a presidential decree in 1991, helps shed the spotlight on SMEs as a core element of local industries.

Government intervention in SME promotion is generally justified in the belief that public programs are designed to provide a level playing field for SMEs to compete fairly with larger enterprises by improving the conditions otherwise unfavorable to SMEs, which cannot be solved through the working of a market mechanism, such as financial access, the shortage of management resources (technology and market), and difficulty in entering a new business.

It should be noted, however, that the environment surrounding less industrialized countries today is different from that facing Japan, Korea and Taiwan, where they were able to promote industrialization under rather audacious government policies and programs. Today, industrialization has to proceed under a more competitive environment created by the wave of globalization that entails the force to demand market opening. As a result, SME promotion policy as part of industrial policy is fairly limited and should therefore be more focused. For instance, assembly manufacturers of products intended for the OEM market are currently practicing “global sourcing” – to purchase components and parts that meet specific QCD (quality, cost and delivery schedule) requirements regardless of location of their plant. Also,

technology innovation in the private sector progresses at a dazzling speed. Under these circumstances, a government is in a difficult position to adopt traditional measures to promote “supporting industries” competitive over products from other countries in an attempt to foster them by giving artificial advantages that would go against the global trend demanding market liberalization, such as market intervention and financial incentive.

Under these circumstances, human resource development for bottom-up upgrading of production and management technology levels of SMEs in the supporting and local industries of the manufacturing sector should constitute a key element of government SME promotion policy and is as important as school education. It helps adopt and accumulate advanced technology from industrialized countries, develop its own product development capability, and improve the competitiveness of the products.

6.1.2 Integrated Planning and Implementation

MOIT has, under the jurisdiction of the Secretary General, an organization specializing in human resource development, PUSDIKLAT-INDAG. In actuality, however, several agencies and sections other than PUSDIKLAT-INDAG are implementing human resource development programs on their own. An official notice has been issued by the vice-minister, urging the betterment of mutual coordination to provide human resource development for private sectors. But it is hard to say that the aim is being implemented as intended. There continues not to be enough contact and coordination among them, and programs are continuing to be implemented without integrated long-term policies in place.

6.1.3 Existing Human Resources

There are instructors in PUSDIKLAT-INDAG under MOIT, and there are many extension officers at the MOIT headquarters and provincial governments. New roads could be opened up by having these instructors undergo re-training and then participate in the new training schemes. The possibility of making the most of existing resources should be studied.

6.1.4 Programs Tailored to Needs of Private Sectors

At present, there are many state-owned companies in Indonesia. The improvement of their management is urgent task of the Government. There is reason in many training programs of PUSDIKLAT-INDAG and other agencies of MOIT being implemented for their staff for the moment. But the privatization of the state-owned companies is being expedited. Training

agencies will need to reform their constitutions reflecting the mission of the government toward private sectors.

6.1.5 Provincial Government

Provincial governments must take it on themselves to provide detailed and careful support for SMEs in their localities. In Japan, the leading role in human resource development for SMEs is played by nine (9) SMEs institutes nationwide, and by regional governments. The regional governments are building networks of certified management consultants and engineers, and are sending the advisors to the production workplaces of companies in response to a call from SMEs.

IDKM of MOIT used to have regional offices, which now belong to provincial governments. Nevertheless, more than a half of its promotion budget of SMEs is distributed to DINAS of provincial offices. An approach is necessary in which MOIT would put into practice a model for human resource development tailored to the needs of the industry, and gradually transfer the model to provincial governments.

6.2 Recommendations for Improvement of MOIT's Human Resource Development Programs

Based on 1) the results of the supply and demand survey conducted under the present Study and 2) current state and major issues of human resource development programs summarized in 5.3, the following are proposed for the improvement of the MOIT's human resource development programs. Proposals are roughly divided into two; the improvement of program content and the reinforcement of the program implementation organization.

A. Recommendations relating to the improvement of program content

A.1 Start of a training program for basic management and production control technologies suitable for manufacturing SMEs

Most of the manufacturing SMEs wish to acquire knowledge and techniques of the basic management and production control. Nevertheless they keep operation without opportunity to learn them. MOIT, of which the promotion of SMEs is one of the missions, should plan and implement the training program of them for SMEs in order to help dissemination of the technology and human resource development.

A.2 Reinforcement of a support system for upgrading of plastics molding, metal press and die/mold technologies

Among various essential technologies required for the supporting industry, the technical support system of plastic molding, metal press and die/mold technologies is much less developed compared to others. It is necessary to reinforce the system as a joint effort of public and private organizations under the leadership of MOIT.

B. Recommendations relating to the program implementation organization

They are designed to reinforce the program implementation organization in order to ensure coordination among human resource development programs conducted by various agencies and departments, and to promote development and implementation of the MOIT's long-term human resource development plans. Organizations proposed will spearhead the implementation of training programs proposed in A.

B.1 Establishment of a department in charge of human resource development for SMEs within the IDKM

The human resource development is a part of the SME promotion policy. IDKM which is responsible for the formulation of the SMEs promotion policy needs to establish a new section which will work as a core of the human resource development by MOIT.

B.2 Establishment of a department specialized in training for manufacturing SMEs within the PUSDIKLAT-INDAG

The main activities of the PUSDIKLART-INDAG are training of state-owned companies, government officials, and academic education. The training programs for SMEs are in the complementary position. PUSDIKLART-INDAG should newly establish a section exclusively for the training of SMEs for effective and consistent planning and execution of the training programs for them on soft technology.

B.3 Establishment of a human resource development committee led by the IDKM's new department (above) and consisting of representatives of the MIDC and the PUSDIKLAT-INDAG's department in charge of training for manufacturing SMEs (above)

Setting up of "MOIT HRD Committee" with participation of 1) IDKM new HRD section 2) MIDC which is expected to play a central role of the support of the production technology for SMEs 3) a new section of the training for SMEs of PUSDIKLART-INDAG which is expected to play a leading role of the support of the soft technology for SMEs is proposed. The committee will work as a nucleus for the establishment of "National HRD Center for SME".

6.3 Rationale for Recommendations

A.1 Start of a training program for basic management and production control technologies suitable for manufacturing SMEs

In the demand survey conducted under the present Study, "market" was cited by the largest percentage of respondents as a main theme of human resource development programs wanted by SMEs. As already pointed out, however, the market means market information, particularly information on buyers, rather than market-related management technology. Then, management and production control technologies came second as the subject of training. In fact, the results generally agree with those of similar surveys conducted by the study team in other countries.

The reasons for the above responses can be summarized as follows.

- The manufacturing industry in less industrialized countries generally originates in the form of assembly operation using imported parts. It gradually extends to surface/final treatment, manufacture of parts, design and manufacture of dies and tools, and finally the development of original products. This is an evolution that goes backward the entire production process. To promote the evolution process, many countries establish import processing zones to attract assembly plants of foreign manufacturers by offering incentives and encourage growth of supporting industries as the foreign manufactures gradually transfer part of the assembly process to local suppliers.

- Human resource development for manufacturing SMEs, when conducted as part of industrial policy, should primarily focus on support for introduction, pervasiveness and upgrading of imported technology. In this case, it should be assumed that technology can only be learned in several stages. Government policy should not be founded upon the hope that the technology learning process can be dramatically shortened by IT or local manufacturers can develop innovative technology quickly. Rather, business opportunities in new industrializing countries can be created by using “soft” technology, i.e., a wise combination of management resources and technologies to create a competitive advantage (each resource or technology may be obsolete or non-competitive). This “latecomer’s advantage” can be leveraged by: 1) proper industrial policy; 2) business management capabilities of individual enterprises; and 3) workers’ skills. The manufacturing sector in less industrialized countries is dominated by assembly operations, followed by material processing. Many machine shops use dies, molds and tools supplied by buyers (manufacturers). Under these circumstances, a key success factor for assemblers and material processing manufacturers is their production management capabilities, which should be supported by workers’ skills. In fact, this is a main reason behind development of production management technology in Japan.

While government policy should focus on the establishment of human resource development plans for production management technology, production technology, and shop floor skills, as well as dissemination of such technologies and skills through actual training programs, the Indonesian government should give priority to two elements, namely production management technology and workers’ skills (the latter is under the jurisdiction of the MOMT).

In Indonesia, there are a fairly large number of training organizations teaching management and production control technologies, including polytechnic schools and special courses for industry people conducted by organizations engaged in support in the area of production technology. As this type of training does not require special facilities or equipment as in the case of skill training, some vocational training schools offer special courses to teach “soft” technology. However the management and production control technologies for manufacturing SMEs are taught as main courses only at private training institutes established by some assembly companies, setting aside courses offered by universities, graduate schools, and private management schools that provide education equivalent to the graduate level. The training institutes emphasize on practical knowledge and technology, and hire instructors who have ample field experience. Because of this, their training programs are highly rated. As pointed out earlier, however, they were established to

reinforce a parts supply network for a respective assembly manufacturer. Their training service is not fully available to manufacturing SMEs including local industries.

The MOIT has training programs on “soft” technology, but they are mainly general management courses such as leadership and motivation, together with the preparation for ISO certification.

In Indonesia, a large number of SMEs operate without basic management and production control technologies or knowledge, or without an opportunity to learn them. Advanced production control techniques for specific industries are the property of the private sector, and are transferred and naturally propagated through the business scene through production activities. But, in the same way as vocational training outside of academic education, the government needs to take it on itself to spread the fundamental administration and management technologies to the industry.

While the MOCSME and the MOIT plan to provide guidance service for individual companies via the BDS, most of companies to be covered by the service are not manufacturers. Also, the BDS's consultants are not familiar with manufacturing industries. Besides, as most consultants in the country are not officially certified according to specific criteria, they cannot make much contribution to technology transfer and the provision of learning opportunity for SMEs.

It is therefore recommended that the MOIT, responsible for promotion of SMEs in the manufacturing, commerce and service sectors, plan and implement the training programs for basic management and production control technologies and thereby promote propagation of appropriate technology, encourage self-education of SMEs, and support human resource development efforts.

At present the MOIT often hires instructors from outside for training programs whereas the PUSDIKLAT-INDAG has many internal instructors and the IDKM has extension officers. Through the TOT (Training of Trainers) for present instructors and extension officers of the MOIT conducted jointly by the MOIT and the Study Team, their potentiality as a instructor of the recommended training programs on “soft technology” has been confirmed. From the standpoint of maximum use of exiting resources, MOIT should repeat training programs for those who participated in the TOT and implement a new training program on “soft technology” for manufacturing SMEs on a regular basis.

A.2 Reinforcement of a support system for upgrading of plastic molding, metal press and die/mold technologies

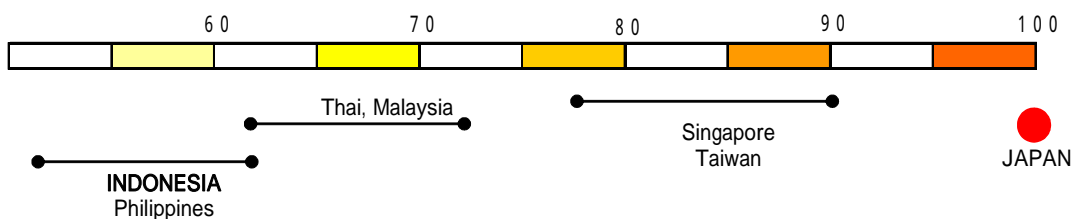
(1) General outline of the plastics molding and metal press forming industries

1) Plastics molding industry

Competitiveness

In Indonesia, key plastics parts used for production of electrical/electronics equipment (household appliances) and office equipment are mainly imported from various countries such as Singapore and Malaysia. While some of local companies are capable of making plastics parts, including dies/molds, they are lagged behind competitors in the ASEAN countries (Singapore, Malaysia and Thailand) in terms of production volume and product quality; the results of interview surveys conducted in Japan and Indonesia indicate that, when the average quality of plastics products made in Japan is rated as 100, that of the products made in Singapore 80 – 90, Thailand and Malaysia 70, and Indonesia slightly below 60. Thus, plastics manufacturers in Indonesia lack international competitiveness. The similar evaluation was made for dies/molds that are indispensable for plastics molding. It should be noted, however, that detailed data and information are not available because there is no trade association representing dies/mold manufacturers.

Fig. 6-1 Quality Rating of Plastics Products and Dies/Molds in Selected Countries

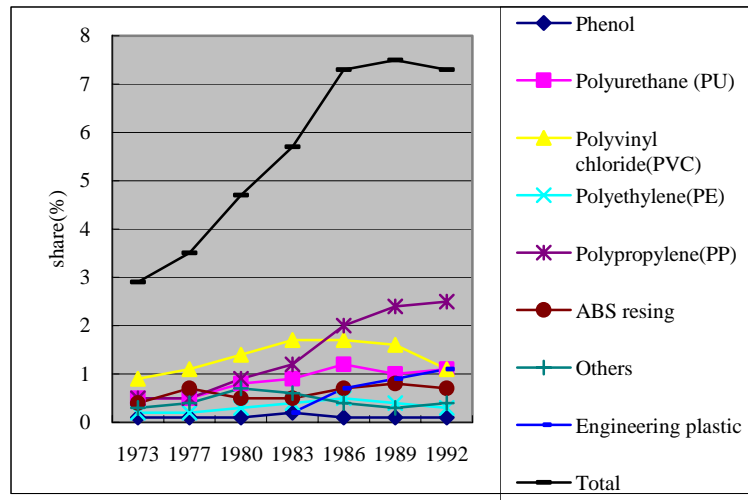


Source: Interview surveys conducted by the JICA study team

Automotive industry and plastics

Plastics parts gained importance in automobile production rapidly in and after the 1970s. Their share of automotive parts stabilized at around 7.5% from the late 1980s to 1992 (Fig.6-2) and rise again in recent years due to the improvement of strength and quality.

Fig. 6-2 Composition of Plastics and Resin in Automotive Production



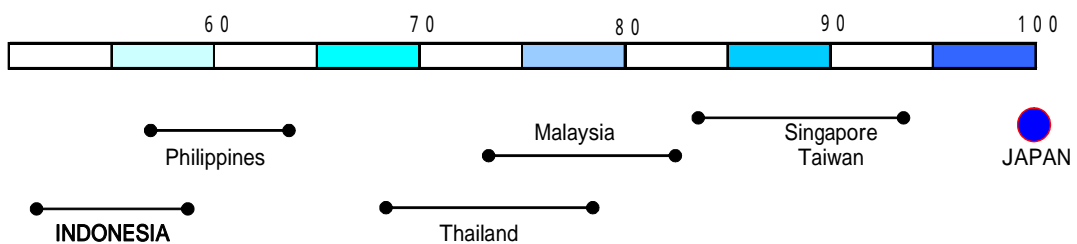
Source: Automotive Industry, Vol.26

2) Metal press working industry

Competitiveness of press dies made in Indonesia

The study team also conducted interview surveys to evaluate quality of metal press dies, and the results indicate that, when that of Japanese products was rated as 100, Singapore, Taiwan and South Korea followed with around 90, then Malaysia 80, Thailand 75, the Philippines 60, and Indonesia 55.

Fig. 6-3 Quality Rating of Press Dies in Selected Countries



Source: Interview surveys conducted by the JICA study team

(2) Improvement of plastics injection and press working technologies

In Indonesia, there have been some discussions on the need to promote the improvement of engineering technology including metal press forming. For instance, the JICA Follow-up Study on the development of supporting industries in the Republic of Indonesia in 1996 and 1997 has proposed the development of a support system for improvement of engineering technology in “Program 11: Expansion of Human Resource Development.”

Unfortunately, however, no concrete measures have been taken to put proposals into practice. The present study therefore reiterates the need for public support if engineering technology in Indonesia is to be upgraded. In particular, as plastics molding and metal press working cannot do without dies and molds, they should be fully included in the discussion.

In Japan, parts manufacturers belonged to a “keiretsu” system in which they were virtually captive suppliers to specific assembly companies. This business practice prevailed in the automotive industry and most parts manufacturers served as subcontractors of car assemblers and did not supply their products to assemblers other than their “virtual parents.” In 1999, however, the keiretsu system collapsed and disappeared in Japan.

In Indonesia, two keiretsu systems (Astra and Indo-Motor) prevails and supply of parts is still confined within each keiretsu system. As a result, technology transfer and technical assistance take place within the keiretsu system and a large number of SMEs that do not belong to neither system are left without any technical assistance.

In a sense, the shortage of public support organizations is considered to be a major factor for impeding the development of press working and plastics molding technologies. For some areas, no technical support is available. As for precision plastics molding and mold design and manufacturing techniques, only three organizations provide training, namely POLMAN ATMI (SOLO), POLMAN BANDUNG, and POLMAN ASTRA. In practice, however, they primarily teach the manufacturing of casting and press dies but that of plastics molds is not a center of attention. Compared to the actual training demand, the three organizations are not capable of meeting it as seen from their capacity. Also, they are primarily concerned with skills training for people with no work experience and the training for upgrading of workers' skills is not their main task. Similarly, training centers under the MOIT (Balai Besar Kulit, Karet Dan Plastik, and Yogyakarta) offer basic training in the area of plastics molding, but they appear not to be capable of providing training for skills improvement as judged from their equipment. Also, Yogyakarta is not located in an industrial area and is far from Jakarta, thus it is not likely to be used by private enterprises.

1) Plastics molding technology

In Indonesia, only a handful of organizations provide training for precision plastics molding and mold design/manufacturing techniques, so that there is a substantial gap between supply and demand.

Furthermore, there is no organization – regardless of private or public - to provide training for maintenance of plastics molds. The trade organization does not have the ability to provide technical support. As a result, plastics molds used by SMEs in the country are said to have a much shorter service life (around 10%) than those used by SMEs in the ASEAN countries, which produce similar plastics products. This constitutes a significant disadvantage in terms of production cost.

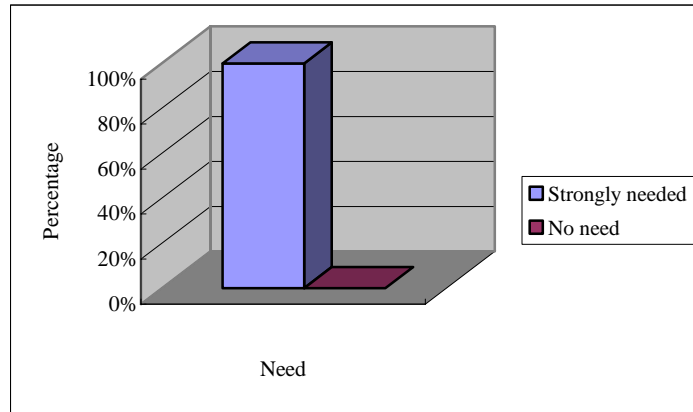
Some component manufacturers who have relocated to Indonesia with assembly companies point out that “the absence of local companies that can make precision plastics molds necessitates imports to unduly increase the mold cost and set off the labor cost advantage.” As assemblers do not expect local manufacturers to have sufficient technology levels, a technology gap between local and OEM manufacturers may widen further. Unless effective measures are taken to narrow the gap, development of the local industry cannot be hoped.

In addition to the above interview surveys, it is pointed out by the Indonesia Electronic and Electrical Appliance Industries Association (EEAI) - which is composed of companies engaged in the manufacture of plastics parts - that little training is undertaken to improve plastics injection technology in Indonesia. In this recognition, the study team conducted a questionnaire survey of companies that manufactured plastics components to identify what the industry expected from the training to improve plastics molding technology¹.

The results of the questionnaire survey are summarized in Figures 6-4, 6-5, 6-6, 6-7, and 6-8.

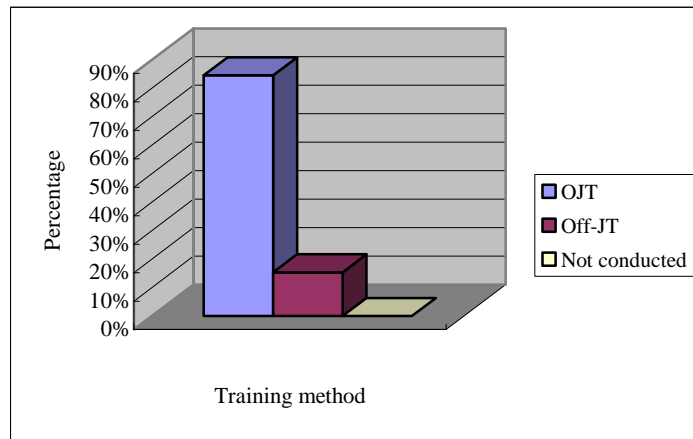
¹ 15 companies surveyed; respondents ranging between middle managers and CEO; survey methods (5 companies - direct contact and immediate response; 10 - response by facsimile); rate of response – 50%

Fig. 6-4 Need for Training for Improvement of Plastics Injection Technology



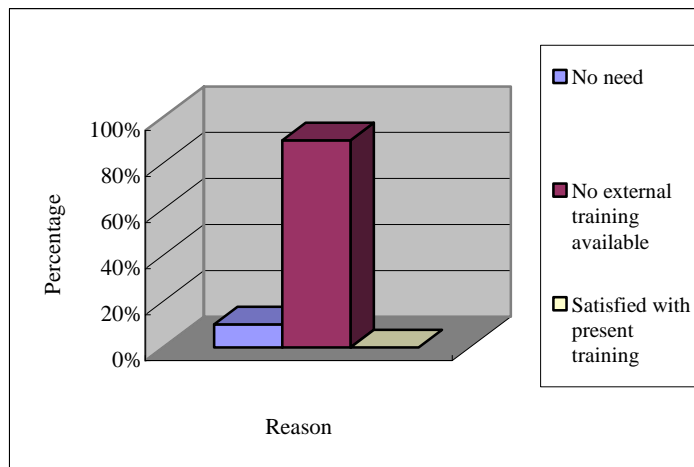
Source: JICA Study Team

Fig. 6-5 Training Method



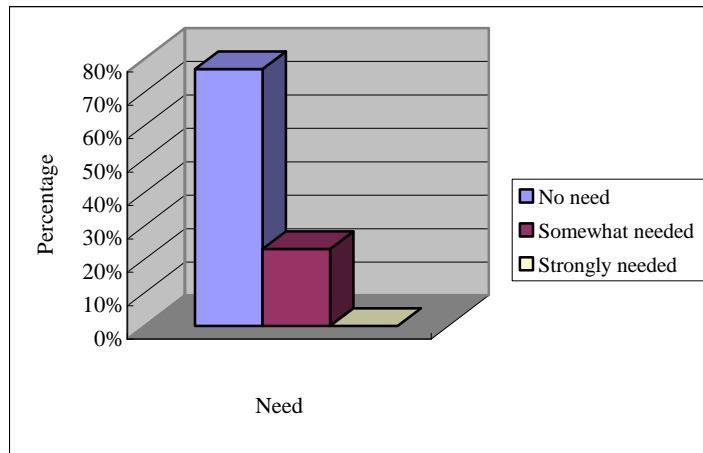
Source: JICA Study Team

Fig. 6-6 Reasons for Not Conducting External Training



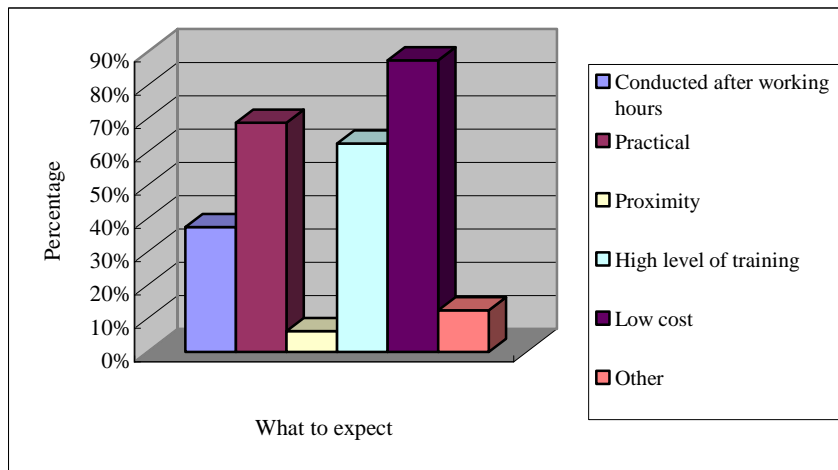
Source: JICA Study Team

Fig. 6-7 Need for Training for Plastics Injection Technology by External Organization



Source: JICA Study Team

Fig. 6-8 Requests for Training



Source: JICA Study Team

As seen from the results, many companies feel the need for training for improvement of plastics injection technology, but present efforts are mostly limited to the OJT because there is no training organization outside the company. Many companies want to receive adequate training from an external organization and give priority to: 1) low cost; 2) practical training; and 3) high level. The fact that the low cost is given of highest preference clearly suggests strong demand for the reinforcement of public support.

2) Press working technology

In the course of the present study, the study team has come to realize the need for upgrading of press working technology in the country. As a part of efforts to set a strategic direction, an interview survey was conducted for the trade association representing automotive parts manufacturers – which use a large number of metalworking

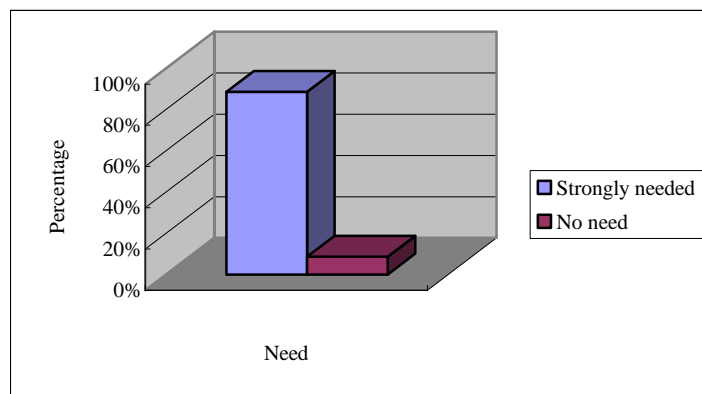
parts with high precision requirements - to find the industry's recognition on their present technology levels.

The Indonesian Automotive Parts & Components Industries Association (GIAMM), which responded to the survey, consists of 130 member companies, mainly SMEs, and was established to promote development of the automotive parts industry and improve its position and recognition. Thus, the GIAMM is considered as an organization representing the interest of the automotive parts sector and its views.

Responses from the GIAMM are summarized as follows. First of all, they are currently relying on the OJT as a principal means of training for press working technology and skills but are not necessarily satisfied. Although many companies feel the need for further improvement of press working technology, they do not have any other way to achieve the goal, largely because no external training organization is available. Finally, it is important realize that press die design and maintenance technologies form an integral part of press working technology, and training should preferably cover die-related field skills, namely: 1) to read and understand parts drawings; 2) to design and make a die; and 3) to use the manufactured die for actual press working.

Based on the results of the interview survey, a questionnaire survey was conducted for manufacturers of press working parts². The results support the conclusion drawn from the GIAMM survey results. (See Figures 6-9, 6-10, 6-11, 6-12, and 6-13.)

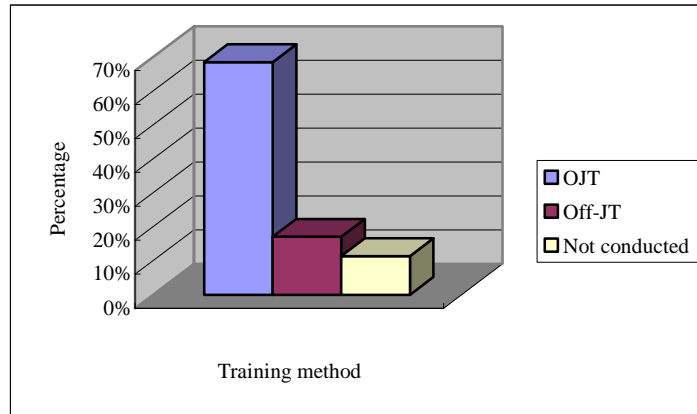
Fig. 6-9 Need for Training for Improvement of Press Working Technology



Source: JICA Study Team

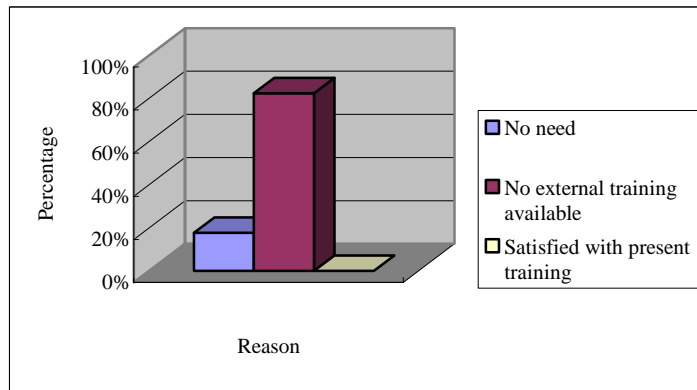
² 35 companies surveyed; respondents ranging between middle managers and CEO; survey methods (30 companies - direct contact and immediate response; 5 - response by facsimile); rate of response – 100%

Fig. 6-10 Training Method



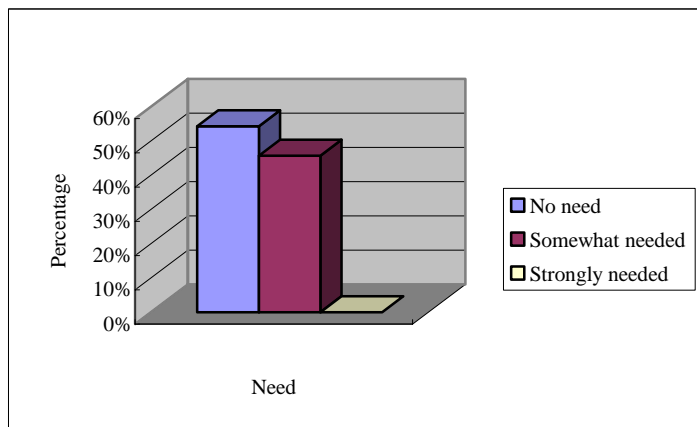
Source: JICA Study Team

Fig. 6-11 Reasons for Not Conducting External Training

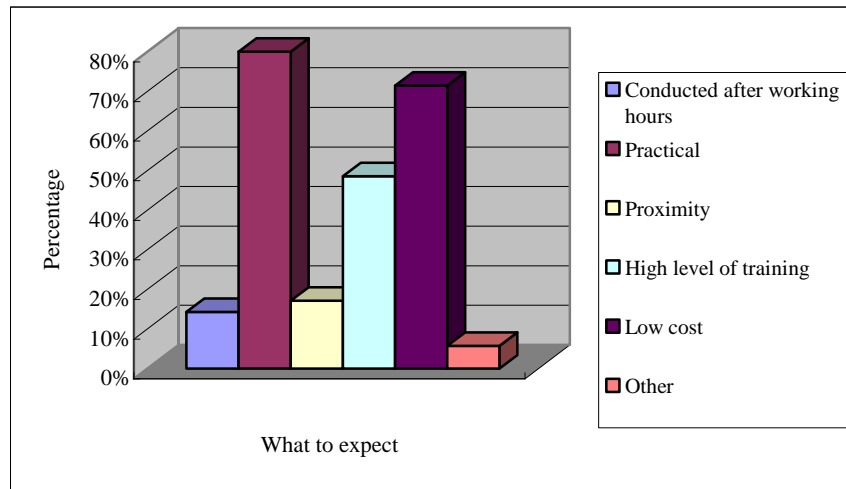


Source: JICA Study Team

Fig. 6-12 Need for Training for Press Working Technology by External Organization



Source: JICA Study Team

Fig. 6-13 Requests for Training

Source: JICA Study Team

The survey results indicate the absence of training organizations in the field of press work and strong demand for such training from many companies. Then, many expect that training should be conducted at low cost, while teaching practical and advanced techniques.

From Fig. 6-11, it is clear that many companies do not train their employees for improvement of press working technology largely because there is no outside organization that offers a suitable training program. On the other hand, as indicated in Fig.6-13, many companies are willing to participate in an outside training program, even if it is offered after working hours and is far from their companies. As in the case of plastics injection technology, therefore, the results reveal the need for reinforcement of public support in the field of press working technology.

B.1 Establishment of a department in charge of human resource development for SMEs within the IDKM

Among the responses to the demand survey of SMEs, many complained about the inconsistent training programs by the government pointing out lack of a long-term plan.

Within the MOIT, the PUSDIKLAT-INDAG is a sole organization specialized in education and training. However, various departments implement training programs for private enterprises according to their own policy. Neither of them, including the IDKM, has no section specialized in human resource development. This suggests that the MOIT's

training programs are not necessarily conducted under a long-term plan. Most importantly, no coordination or information exchange has been made among related departments, including the PUSDIKLAT-INDAG, although several attempts to improve the situation have been made in the past. Clearly, the present implementation system does not satisfy its users.

Long-term policy making, annual planning, budget allocation, and coordination of program implementation organizations can be made efficiently by assigning all the functions to a single organization, while enabling the government to meet the actual needs of the affected industry effectively and quickly. As government involvement in human resource development for SMEs is positioned as part of SME promotion policy, and as the IDKM is responsible for the development of SME promotion policy for the manufacturing and service sectors within the MOIT, it is therefore recommended to create, within the IDKM, a department in charge of human resource development for SMEs in the manufacturing sector.

In Chapter 4, we have analyzed various governments and their organizations engaged in human resource development for SMEs. In Japan, the METI has the Small- and Medium-sized Enterprises Agency as its external agency, under which the Japan Small and Medium Enterprise Corporation (JASMEC) is operating. Within the JASMEC, the Institute for Small Business Management and Technology conducts training programs, thus the implementation organization is directly below the policymaking agency. In Thailand where promotion of supporting industries has been successfully progressing, the Department of Industrial Promotion (DIP) under the Ministry of Industry (MOI) is responsible for policy making, and under the DIP, the Bureau of Entrepreneur and Enterprise Development (BEED) has been implementing SME human resource development programs for an extensive period of time. An emphasis has been placed on dissemination and teaching of management technologies in collaboration with the private sector (including educational institutions), although the focus is recently being shifted to business startup support. In Taiwan, the Small and Medium Enterprise Administration (SMEA), which was established by the Ministry of Economic Affairs (MOEA) in 1981, builds national networks and is responsible for both policy making and operation of human resource development programs as part of policy implementation. In Malaysia, human resource development programs are largely conducted by private organization, universities, and local governments under subsidy of the central government, while the Small and Medium Industries Development Corporation (SMIDEC) under the central government supervises departments in charge of planning of human resource development in collaboration with policymaking departments.

Whether government is directly involved in implementation of human resource development programs for SMEs varies among countries, most governments leave the functions of SME promotion policy making and program implementation (including human resource development) to a single organization. This should constitute a reliable ground for the establishment of a department in charge of human resource development for SMEs within the IDKM.

B.2 Establishment of a department specialized in training for manufacturing SMEs within the PUSDIKLAT-INDAG

General profiles of the PUSDIKLAT-INDAG, a sole training organization under the MOIT, are described in Chapter 2. It was created from a merger of the former PUSDIKLAT that carried out training of employees of state-owned companies and the MOIT staff, and the PUSBINLAT that was responsible for school education and training of corporate employees. Thus, the PUSDIKLAT-INDAG is currently responsible for: 1) training of employees of state-owned companies and the MOIT staff; 2) school education; and 3) training of employees of private enterprises. Within the MOIT, it is positioned as an independent organization separate from the IDKM, the BPPIP, the NAFED, and other departments.

Its training programs are specialized in “soft” technology whereas the programs by BDI include those of production technology for local industries. Notably, as for training programs open to the private sector, the PUSDIKLAT-INDAG is responsible for soft technology and the BPPIP hard technology.

As for effectiveness of training programs intended for employees of private enterprises at the PUSDIKLAT-INDAG, however, the following problems are pointed out.

- Basically, the training of employees of private enterprises is placed in a subordinate position among other functions. Aside from MOIT staff training and school education, most training programs are designed for employees of state-owned companies and some of them accept employees of SMEs. There is no training program specifically designed for SME employees.
- As a result, there is no training program that teaches basic management and production control technologies, which are highly demanded by manufacturing SMEs.

In Indonesia, there are approximately 160 state-owned companies, although they have been gradually decreasing with the progress of privatization. All of them are large enterprises

employing more than 2,000 persons each. Their line of business includes cement, fertilizer, paper making, shipbuilding, and banking. The PUSDIKLAT-INDAG provides training for employees of around 20 state-owned companies on a fee basis (no government subsidy).

In planning and implementing a training program, it is imperative to define a type of person for which the program is designed. More precisely, knowing the type of industry, the type of ownership, the enterprise size, and the position and the function of a participant is essential for the program organizer to provide information useful for the participant in an effective and efficient manner. The problems cited above come from the fact that the PUSDIKLAT-INDAG tries to accommodate training of employees of SMEs within training programs designed for state-owned companies, which are essentially large enterprises.

It is important to realize that background knowledge of employees and their area of interest vary greatly between large enterprises and SMEs, which are summarized as follows.

- Generally, employees of large enterprises have higher levels of knowledge (basic management knowledge and latest management techniques) than those of SMEs. As a result, a training program for the latter should often start with basic knowledge before teaching a main theme of the program. The program content should be tailored to the actual level of understanding, including technical terms and expressions that often vary according to the enterprise size or the type of industry.
- Employees of large enterprises perform the function that is narrower in scope and higher in the degree of specialty, compared to those of SMEs. A training program for the former, therefore, should provide information that is highly focused and responds to a specific interest in professional knowledge.
- Managers of large enterprises have less knowledge on day-to-day field operation than those of SMEs do, so that a training program for the former needs to avoid such subject or give background knowledge as introduction.
- Employees of large enterprises tend to prefer a subject that is related to a management theory and principle, rather than practical knowledge, compared to those of SMEs. They believe that their job is to learn and apply theoretical knowledge to actual operation. On the other hand, employees of SMEs expect to obtain practical knowledge that can be applied to every operation as it is.
- By the same token, large enterprises generally prefer a training program that serves the interest of human resource development from long-term perspectives, whereas SMEs opt to send their employees to a training program that teaches knowledge and skills that can readily be applied to field operation. As a result, training programs for employees of

large enterprises generally emphasize theories and long-term human resource development. On the other than, those for SME employees tend to focus on hands-on knowledge and know-how.

- Managers of large enterprises are supported by a larger number of staffers, while those of SMEs have much fewer supporting staff. As a result, many SME managers are willing to participate in a training program because, in many cases, they do not have staff that can understand and apply the learned knowledge to the betterment of operation.

Since there is a large difference between large enterprises and SMEs in the type and level of training expected, together with background knowledge, it is not appropriate, and more infeasible to offer the same training program for employees of the two types of enterprises.

The organizational chart of the PUSDIKLAT-INDAG is presented in Chapter 2. Notably, there is a department in charge of MOIT staff training, whereas a department is responsible for school education, training of state-owned companies' staff, and training of employees of private sector. Even in the proposal of restructuring of human resource development organizations of the MOIT presented by the Indonesian University in December 2003, one department of the PUSDIKLAT-INDAG remains responsible for training of both state-owned companies and private sector.

As pointed out earlier, training programs to teach soft technology to manufacturing SMEs should be separated from those for state-owned companies, which are large enterprises with a different area of interest. To plan and implement the training programs effectively by understanding the needs of potential participants, it is recommended to establish a department exclusively in charge of training programs for SMEs in the manufacturing sector.

B.3 Establishment of a human resource development committee led by the IDKM's new department in charge of human resource development and consisting of representatives of the MIDC and the PUSDIKLAT-INDAG's department in charge of training for manufacturing SMEs

The MOIT has transferred the MIDC, which was previously a technical support center under the BPPIP, to the IDKM for the purpose of developing it to an organization to provide integrated support for SMEs in the area of production technology. On the other hand, a new department of the PUSDIKLAT-INDAG in charge of training programs for private sector, as proposed here, should serve as a core element of teaching and disseminating management and

production control technologies to SMEs, for the PUSDIKLAT-INDAG is a sole training institute for soft technology under the MOIT.

It is recommended to establish a human resource development committee consisting of representatives of the MIDC and the PUSDIKLAT-INDAG's department in charge of SME-oriented training, under the leadership of the IDKM's department in charge of human resource development. The committee will be charged with tasks to realign the ongoing training programs for SMEs, which are currently implemented by different organizations, to develop a long-term plan and an annual implementation plan on the basis of needs assessment, and to implement and manage training programs accordingly.

The committee will be in charge of, for the time being, initiation and implementation of a training program for manufacturing SMEs to teach management and production control technologies, as proposed in A.1. The preparation of the program has been started as a TOT under this Study. TOT was implemented under the support of the study team and marks the first joint program of the IDKM and the PUSDIKLAT-INDAG.

The committee is expected to become the nucleus to promote the establishment of the "SME Human Resource Development Center" which is proposed in the "Policy Recommendation for SME Promotion in Indonesia 2000, JICA". The "Policy Recommendation" recommends the establishment of the center as an integral part of the human resource development initiatives, and more importantly, it points out that the government's leading role in establishing the center serves to show its firm commitment to human resource development for SMEs to private sector.

Finally, as discussed in Chapter 4, the move toward the establishment of the SME management consultant certification system has been started in Indonesia. This serves the interest of SMEs that want to receive guidance and training from a consultant whose service quality is officially assured. The introduction of the certification system constitutes a next important step for the government's involvement in improvement of SME management and human resource development. At present, several organizations are working to start up different certification systems without much coordination or communication among them. Besides, government organizations are expected to become a certifying agency for individual consultants. It is therefore desirable to see that the proposed human resource development committee will grow to the "SME Human Resource Development Center," which will then

play a leading role in introduction of a uniform certification system for SME management consultants.

Note) Establishment of the MOIT HRD committee was announced by the decree of Director General of the IDKM in June 2004. However proposed departments 1) of the IDKM in charge of HRD for SMEs and 2) of the PUSDIKLAT-INDAG specialized in training for manufacturing SMEs have yet to be established.

6.4 Future Vision for the Support System for Human Resource Development of Manufacturing SMEs

Recommendations for MOIT's SME human resource development policies and programs are presented in 6.2. Prior to the discussion on the action plans, their common goals are presented as the "Future Vision for the Support System for Human Resource Development of Manufacturing SMEs" and activities to be conducted by the central government (MOIT) are defined. The action plans are positioned as the means to embody the future vision.

In the area of human resource development for SMEs, the MOIT has the following missions:

- Teaching, training and dissemination of management and production control technologies to corporate employees
- Teaching and dissemination of production technology to corporate employees, and skills training
- Teaching and training of international trade practice to corporate employees

In Indonesia, the Local Government Act was enacted in 1999 and decentralization has been promoted since January 2001. In establishing the future vision for human resource development and defining it as the MOIT's goal, actual moves relating to the decentralization process should be taken into account. In fact, major portions of the IDKM's SME promotion budget are diverted to rural regions. The IDKM's local offices are currently operated as DINAS under local government, which is responsible for fostering local industries, including human resource development, under the local government's budget as well as subsidy from the central government (MOIT). On the other hand, key implementation bodies for the MOIT's human resource development programs – PUSDIKLAT-INDAG, BPPIP and IETC – have their own local institutes or offices.

Support for human resource development for manufacturing SMEs will be conducted through the following four channels:

Channel 1 – Individual SME advisors and consultants

Channel 2 – Local government (DINAS)

Channel 3 – Balai Besar (technical support organization)

Channel 4 - Local institutes or offices of PUSDIKLAT-INDAG, BPIIP and IETC

(1) Management Technology

As discussed in 6.3, many manufacturing SMEs in Indonesia continue to operate using technology that has been imported years ago and obsolete equipment. To ensure that they maintain and develop production activities, “soft” technology, i.e., management and production control technology, is essential, together with production techniques (including machinery operation) and market information. Importance of soft technology can apply to all sectors, including supporting industries for assembly sectors and local industries such as food, textile and furniture. Teaching and dissemination of soft technology is the primary mission for the MOIT's human resource development program for SMEs.

In light of the progress of the decentralization process, teaching and dissemination of soft technology to SMEs should be primarily led by: 1) DINAS under local government (Channel 2); 2) local institutes of PUSDIKLAT-INDAG (BDI) (Channel 4); and 3) individual management consultants (Channel 1).

The MOIT's SME support should be centered on training programs conducted by DINAS and BDI, which take into consideration characteristics of local industries, including their actual needs and wants. On the other hand, many SMEs wish to have advice and guidance from experts within their production facilities, together with personal training. They seem to believe that field advice is a better solution for problems they are facing than external training of their employees, probably because they often require customized guidance for specific problem solving, while SME owners are concerned about possibility of losing their employees who may look for other job after training. At present, there is strong demand for competent management consultants, who include not only private consultants but extension officers as well. The MOIT is expected to secure quality of individual management consultants and provide adequate support for them.

(2) Production technology and skills

Unlike the teaching of soft technology, training and dissemination of production technology and skills to corporate employees requires physical facilities and equipment, in addition to support staff and instructors. UPT, operated under local government, can be a candidate as it has a national organization, but it does not function well due to obsolete equipment. Instead, Balai Besar under BPPIP of the MOIT (Channel 3) and its local organizations (BARSTAND) (Channel 4), which are responsible for training and dissemination of hard technology to the private sector including SMEs, are expected to lead the initiative.

As for dissemination of production technology to local industries, local government is currently playing a central role through DINAS and will continue to do so in the future.

(3) International trade practice

Training activities in the area of international trade practice are currently led by IETC through its local organizations (RETPC).

(4) Activities of the central government (MOIT)

To maintain the above-mentioned support system for SME human resource development, the central government, i.e. MOIT, should provide support in a variety of areas, which are listed below. Note that the recommendations and the action plans contained in this report define the steps to be taken in order to ensure the MOIT's future activities.

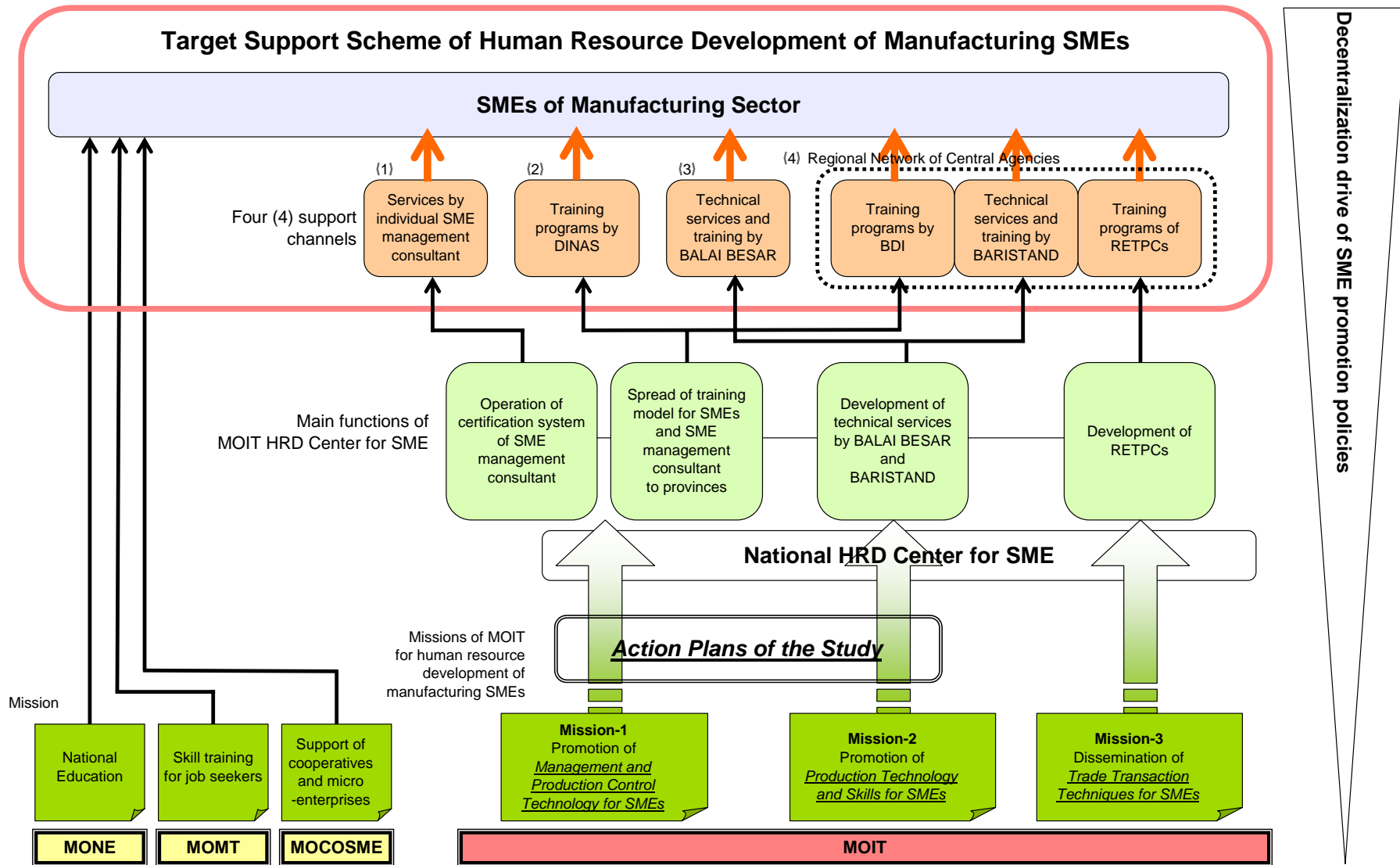
Areas of MOIT's support:

- 1) Support for human resource development on the basis of actual condition and needs of SMEs;
- 2) Establishment of a standard training program on soft technology for SMEs and training of instructors;
- 3) Implementation of the standard training program on soft technology for SMEs;
- 4) Dissemination of the standard training program on soft technology for SMEs to rural regions;
- 5) Certification of SME management consultants by law and administration of the certification system;
- 6) Implementation and promotion of training courses for SME management consultants;

- 7) Reinforcement of the support system for production technology and skills operated by Balai Besar and BARISTAND;
- 8) Promotion of local deployment of the international trade training center; and
- 9) Promotion of linkages among local training institutes (BDI) of PUSDIKLAT-INDAG, local organizations (BARISTAND) of BPPIP, and local organizations (RETPC) of IETC.

Fig. 6-14 shows a future image of the support system for human resource development for manufacturing SMEs, activities of the central government (MOIT) under the system, and the positioning of the action plans.

Fig. 6-14 Target Support Scheme of Human Resource Development of Manufacturing SMEs by MOIT and Action Plans of the Study



Source: JICA Study Team

6.5 Action Plans

The action plans, as proposed here, are a set of plans to embody the future image of the MOIT in relation to human resource development, as discussed in 6.4. Their frameworks are based on the following five recommendations made in 6.2, together with their rationales.

- A.1 Start of a training program for basic management and production control technologies suitable for manufacturing SMEs
- A.2 Reinforcement of a support system for upgrading of plastics molding, metal press, and die/mold technologies
- B.1 Establishment of a department in charge of human resource development for SMEs within the IDKM
- B.2 Establishment of a department specialized in training for manufacturing SMEs within the PUSDIKLAT-INDAG
- B.3 Establishment of a human resource development committee led by the IDKM's new department (above) and consisting of representatives of the MIDC and the PUSDIKLAT-INDAG's department in charge of training for manufacturing SMEs (above)

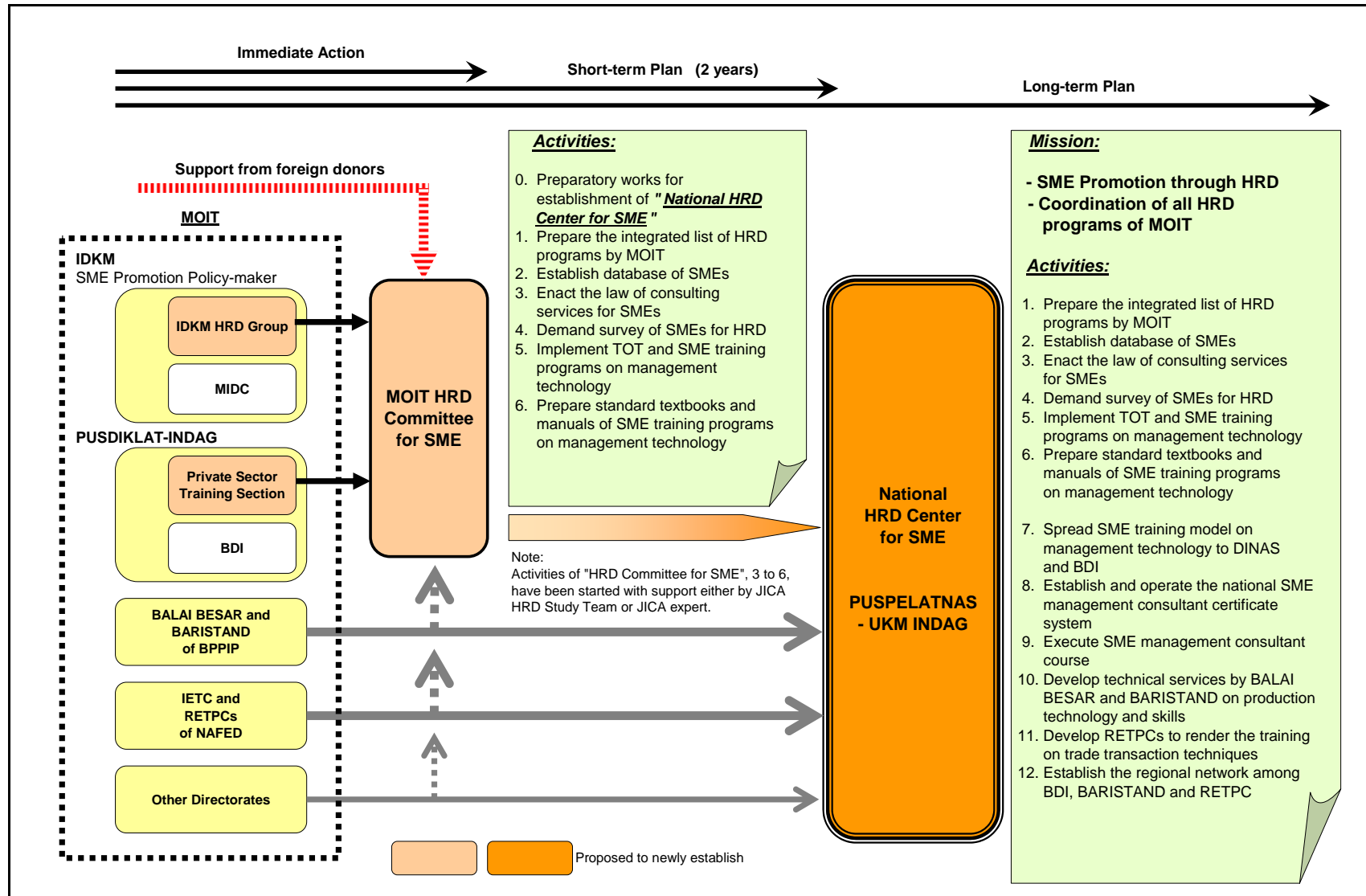
The above recommendations are organized into the following three action plans.

- Action Plan-1 Establishment of the MOIT Human Resource Development Committee (Recommendations B1, B2 and B3)
- Action Plan-2 Implementation of the Training Program for Management and Production Control Technology for Manufacturing SMEs (Recommendation A1)
- Action Plan-3 Reinforcement of the Support System Relating to Production Technology (Recommendation A2)

6.5.1 Action Plan-1 Establishment of the MOIT Human Resource Development Committee

Fig. 6-15 illustrates Action Plan-1, both in the short- and long-terms.

Fig. 6-15 Action Plan-1, 2



PUSPELATNAS: Pusat Pendidikan Pelatihan Nasional

Source: JICA Study Team

- (1) Objective: To establish the National Human Resource Development Center for SME
- (2) List of short-term actions and participating organizations

(2)-1 Formation of the Human Resource Development Group within IDKM

The MOIT's SME human resource development program should be led by IDKM that is responsible for policymaking in the field of SME promotion in order to establish human resource development policies, annual implementation plans, and long-term plans that should be consistent with SME promotion policy. At present, the program is being implemented by the MOIT's divisions (including IDKM) and agencies, which plan and implement different training programs on their own. IDKM does not have a division specialized in the planning and implementation of SME training programs.

While the establishment of such division is desirable, it may take time to do so under the budget constraint. It is therefore recommended to organize the Human Resource Development Group as transitional measures. More precisely, the group will be composed of IDKM's staff who has been appointed as counterpart for JICA's HRD expert who is currently assigned to IDKM. They will be appointed to members of the proposed group and will operate under the Secretariat.

List of activities

- a) Compilation of a comprehensive list of human resource development programs

A list of human resource development programs conducted by the MOIT's divisions and agencies will be compiled, containing detailed program information, including titles of training courses, eligibility, number of participants, duration, budget, and instructors. At the same time, a formal system to collect and update information from relevant divisions and agencies on a periodical basis will be established for the purpose of understanding the ongoing human resource development programs in general perspective and sharing major issues and areas of improvement among the different programs.

- b) Development of a SME database

A project should be started to develop a database of SMEs that should be covered by the MOIT's human resource development programs. The planning and implementation of SME promotion policies, including human resource development programs, should be

always based on latest data on SMEs throughout the country. To the study team's knowledge, various directorates of IDKM maintain corporate data on different sectors that they are responsible for, but their coverage, updating method and frequency are not clearly defined. The project should therefore start with integration of different databases owned by directorates.

In most countries, registration of business enterprises or establishments is made with local government according to the place of business. In theory, integration of all databases on business registration owned by local governments can create, among other things, a comprehensive database on SMEs in the entire country. In practice, however, information provided for business registration is fairly limited and often does not contain key information required for the analysis of industrial sectors and the planning of industry promotion policy. In consequence, a division or ministry in charge of industrial policy in most countries has to develop its own database for the purpose of policymaking. Such database is primarily compiled from sources such as databases of trade associations and a list of suppliers owned by leading companies in each sector. Thus, IDKM is required to maintain communication and information exchange with trade associations.

c) Legislation

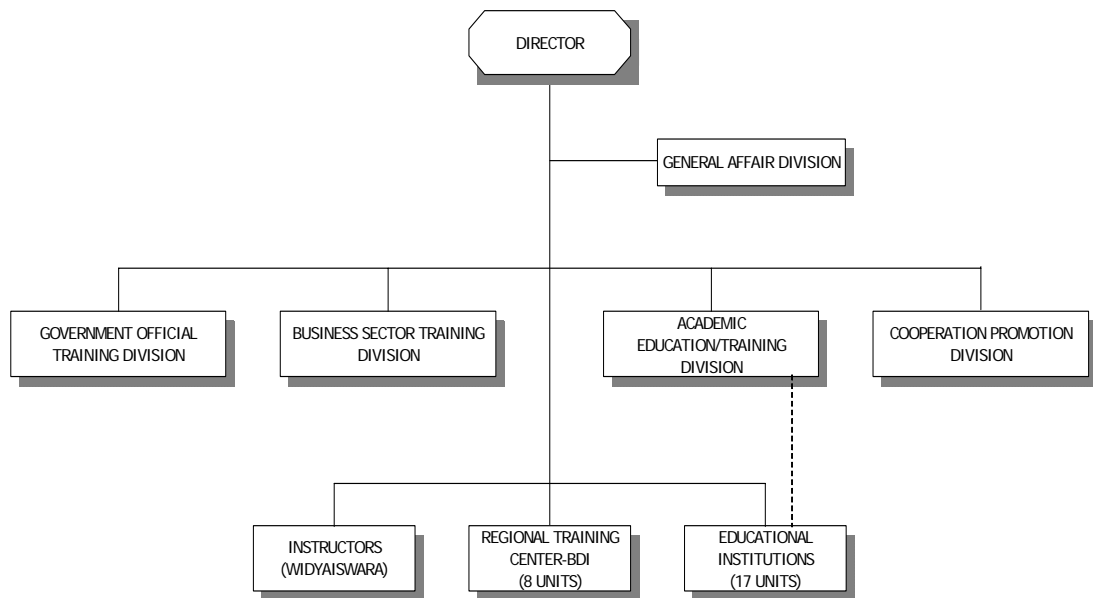
Legislation relating to SME guidance will be promoted. The MOIT has approximately 3,000 extension officers who serve as SME consultants throughout the country. However, their professional background varies greatly and no clear standard has been established to review and evaluate knowledge and skills required for SME consultation service. As a result, there is an apparent lack of incentive for extension officers to improve their skills, while reputation among SMEs is adversely affected. As extension officers, together with private consultants, are expected to play a leading role in SME guidance, it is crucial to establish professional standards, by law, for SME consultants, including qualifications, training requirements and scope of service.

(2)-2 Establishment of Private Sector Training Division at PUSDIKLAT-INDAG

PUSDIKLAT-INDAG, created by a merger between PUSDIKLAT and PUSBINLAT, has an organization that reflects those of the merged organizations. Other than school education, it has training programs for employees of government, state-owned companies, and private enterprises, but those for the private sector are not independent in terms of both program structure and organization to operate individual programs. In this conjunction,

organizational reforms are already discussed, and a new organization for PUSDIKLAT-INDAG is proposed as part of a reform plan for the MOIT's HR training institutes, which was submitted by the University of Indonesia in December 2003, as shown in Fig. 6-16. However, the proposed organization has only "Business Sector Training Division" responsible for both state-owned companies and private sector.

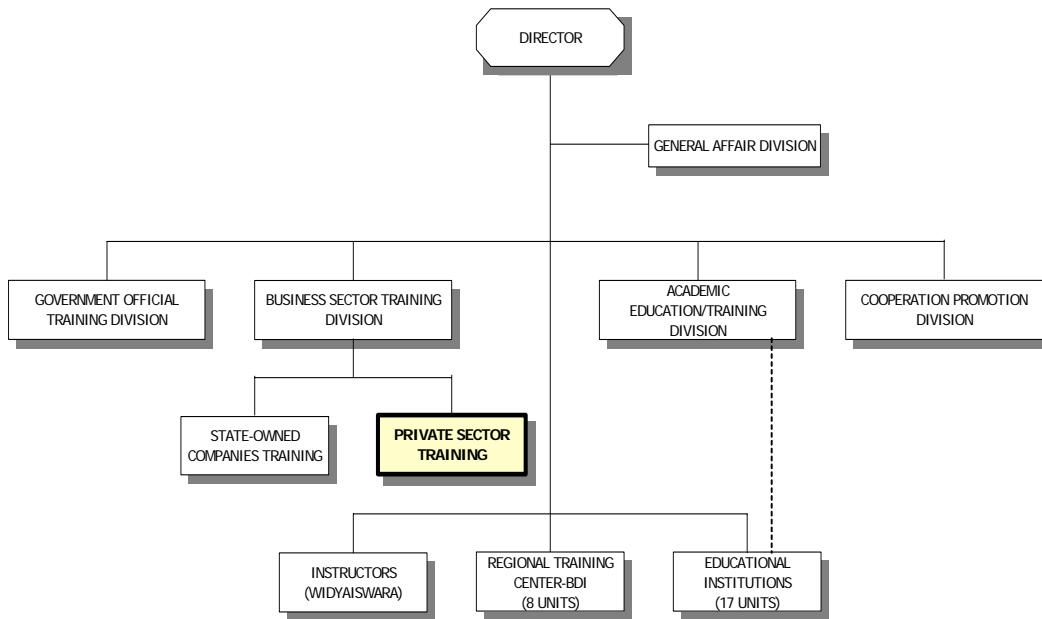
Fig. 6-16 Reform Plan of PUSDIKLAT-INDAG Organization by the University of Indonesia



Source: University of Indonesia

Importance of establishing a division specialized in training for private sector, especially SMEs, is discussed in 6.3 as a rationale for recommendation. Fig. 6-17 illustrates a new organization, which is based on that proposed by the University of Indonesia, with the establishment of Private Sector Training Division.

Fig. 6-17 Proposed Organization Chart of PUSDIKLAT-INDAG



Source: JICA Study Team

(2)-3 Establishment of MOIT Human Resource Development Committee

IDKM is responsible for policymaking in the field of SME promotion and should play a central role in human resource development. PUSDIKLAT-INDAG is an organization specialized in human resource development relating to management technology and has expertise and experience in designing and implementation of training programs, with required facilities and equipment. Also, it has been confirmed in the course of the model trainings under the present Study that it has potential instructors of management and production control technologies for SMEs. On the other hand, MIDC in Bandung is a metal engineering center conducting research and development and training, focusing on foundry, and it has been transferred from BPPIP to IDKM to make it as a core organization to support SMEs, especially supporting industries, in terms of production technology and skills.

After IDKM's Human Resource Development Group has been appointed and PUSDIKLAT-INDAG's Private Sector Training Division has been established, the MOIT Human Resource Development Committee including the MIDC will be established. IDKM will serve as leader because of its policymaking function.

While the MOIT Human Resource Development Committee will take over activities of IDKM's Human Resource Development Group, it will also be responsible for the following activities:

- a) Survey of SMEs relating to human resource development needs;
- b) Continuation of TOT and SME training programs which have been conducted under the present Study (see Action Plan 2)

TOT and SME model trainings were conducted jointly by IDKM, PUSDIKLAT-INDAG and JICA, and can be positioned as the first programs led by the MOIT Human Resource Development Committee;

- c) Compilation of standard textbooks for training programs;
- d) Development of training program manuals;
- e) Promotion of the establishment of a certification system for SME management consultants; and
- f) Promotion of the establishment of the National Human Resource Development Center for SMEs.

Note that the MOIT Human Resource Development Committee will serve as the parent body of the proposed National Human Resource Development Center for SME. It is also significant in that it is an interdepartmental organization founded by multiple divisions.

Note) Establishment of the MOIT HRD committee was announced by the decree of Director General of the IDKM in June 2004. However proposed departments 1) of the IDKM in charge of HRD for SMEs and 2) of the PUSDIKLAT-INDAG specialized in training for manufacturing SMEs have yet to be established.

(3) List of long-term actions and participating organizations

(3)-1 Establishment of the National Human Resource Development Center for SME

To ensure that the central government's SME human resource development activities are carried out in an integrated manner and consistently with ongoing SME promotion policies, the National Human Resource Development Center for SME will be established by

incorporating the MOIT's internal organizations relating to human resource development, under the leadership of IDKM that is the policymaking division.

As pointed out earlier, MOIT conducts several human resource development programs that are carried out by different divisions according to their own initiatives. The National Human Resource Development Center for SME needs to be participated by organizations other than members of the MOIT Human Resource Development Committee, especially BPPIP (production technology) and IETC (international trade practice). Also, the establishment of National Human Resource Development Center for SME can help advertise a strong commitment of the MOIT to human resource development to the public.

A major issue facing the National Human Resource Development Center for SME is whether: (1) it will truly integrate participating divisions by separating them from the present organization; or (2) it will serve as a coordinating organization for representatives of participating divisions, which will thus remain within the present structure. While it should be carefully considered, a primary objective is to ensure coordinated implementation of different training programs conducted by different divisions under an integrated, long-term plan, while building a system to allow various divisions to share expertise and information and work together to solve a problem that is encountered in program implementation.

Whichever function the new center will assume, i.e., integrated organization or coordinating one, its effective performance will depend upon the power to control the budget of all human resource development programs in an integrated manner.

Mission:

Promotion of SMEs through support for human resource development

List of activities

Based on the activity list for the central government (MOIT) under the future support system for SME human resource development, as discussed in 6.4, activities of the National Human Resource Development Center for SME are summarized as follows:

- a) Development of a long-term plan for SME human resource development programs, which is consistent with SME promotion policy;

- b) Coordination of different training programs implemented by various divisions in terms of scheme, content and program budget;
- c) Periodical updating of the SME database;
- d) Survey of SMEs relating to human resource development needs;
- e) Periodical survey of cost and management indices relating to SMEs;
- f) Development of a standard training program on soft technology for SMEs and training of instructors;
- g) Implementation of the standard training program on soft technology for SMEs;
- h) Dissemination of the standard training program on soft technology for SMEs to rural regions;
- i) Establishment of the SME management consultant certification system by law;
- j) Certification of SME management consultants and management of the certification system;
- k) Implementation and dissemination of SME management consultant courses;
- l) Reinforcement of Balai Besar's support system relating to production technology and skills;
- m) Promotion of local deployment of the international trade training center; and
- n) Promotion of linkages among local training institutes (BDI) of PUSDIKLAT-INDAG, local organizations (BARISTAND) of BPPIP, and local organizations (RETPEC) of IETC.

The details of f), g) and h) are described in Action Plan 2, and those of l) in Action Plan 3. The establishment and management of the SME management consultant certification system will become one of major tasks for the National Human Resource Development Center for SME. In the next section, recommendations are made for system implementation and management.

(3)-2 Establishment and management of the SME management consultant certification system

Support for training and dissemination of management and production control technologies, which are highly demanded by manufacturing SMEs, will primarily consist of two elements: training programs offered by public and private training institutes; and field advice and guidance by individual management consultants.

The latter is already being carried out under the BDS that is promoted by MOIT and MOCSME. While MOIT is expected to make its extension officers fulfill the role of the management consultant, they cannot fully meet demand in the private sector due to the reason associated with the development history of the extension officers system. Private management consultants, available in a certain number, largely provide service for large enterprises, and their service is not affordable for most SMEs with financial constraint.

As outlined in Chapter 4, the establishment of a national professional certification system is already discussed by various government agencies and trade associations, together with activities to promote it. However, all the activities emphasize on certification of professional skills, and certification of consultants is primarily discussed in the field of architecture and civil engineering. As certification of the SME management consultant has still to be on the table, several certifications may emerge to cause deterioration of quality and public confidence in the profession, if no effort is made to establish a unified certification system.

Clearly, the central government, i.e., the MOIT, is expected to certify the management consultant and its service quality, while providing a level playing field for individual consultants. The National Human Resource Development Center for SME should show leadership in adopting a uniform standard for the SME management consultant by mobilizing all stakeholders in the public and private sectors and taking into account various activities that are already underway to promote the certification system.

The center will be responsible for management of the certification system. While the actual training of SME management consultants will be undertaken by private organizations, the center is required to play a central role in the following areas:

- a) Development and implementation of a standard training scheme and curriculum;
- b) Establishment of a certification standard; and
- c) Publication and promotion of the standard training scheme and curriculum, and the certification standard.

(4) Implementation Schedule

Implementation schedule of Action Plan-1 is proposed as shown in the Figure 6-18. MOIT HRD Committee should be set up as soon as possible. Targeting the establishment of

“National HRD Center for SME” in two years, the Committee proceeds with the preparatory activities.

Fig. 6-18 Implementation Schedule for Action Plan-1

Action Plan-1		1 st Year	2 nd Year	3 rd Year	4 th Year	5 th Year	onward
Short-term	1 Formation of the HRD Group within IDKM	■					
	2 Establishment of Private Sector Training Division at PUSDIKLAT-INDAG	■					
	3 Establishment of MOIT HRD Committee	■					
Long-term	1 Establishment of the National HRD Center for SME			■			
	2 Establishment and management of the SME management consultant certification system				■		

Source: JICA Study Team

6.5.2 Action Plan-2 Implementation of the Training Program for Management and Production Control Technology for Manufacturing SMEs

- (1) Objective: Implementation of training for management and production control technology for manufacturing SMEs and dissemination to rural regions
- (2) List of short-term actions and participating organizations
 - (2)-1 Continuation of the training program for trainers (TOT) on management and production control technology

At present, training courses in the field of management and production control technology are in short supply and fail to meet strong demand from manufacturing SMEs. To support the MOIT's training program, the TOT (training of trainers) program will be implemented. Under the present Study, a model TOT program on management and production control technology has been carried out for IDKM's extension officers and PUSDIKLAT-INDAG's instructors. (See a report on the model TOT program in Annex 2.)

a) Implementation body

Participation of IDKM and PUSDIKLAT-INDAG is essential, and the implementation body will be the MOIT Human Resource Development Committee, as described in Action Plan-1.

b) Eligibility for TOT

Trainees for the TOT program will be in principle selected from extension officers of IDKM (including DINAS) and instructors of PUSDIKLAT-INDAG. As all of them have experience in teaching and/or providing guidance at a certain level, selection criteria should emphasize the field of specialization, work experience in the manufacturing sector, and the level of interest in TOT.

c) Instructors

Instructors will be recruited from MOIT, including trainees of the model TOT program (especially those selected as instructors for the SME model training program), private training institutes and companies. In the future, participants in the TOT program, who have good grades and are highly motivated, will be hired as instructors for the SME training program, as discussed in (2)-2. Then, those who have had experience in the SME program will be appointed to TOT instructors.

The TOT program is viewed as the first stage of the nationwide training program to be carried out by the National Human Resource Development Center for SME. The appointment of foreign instructors in the short- and long-run should be considered in order to learn from the experiences in other countries.

d) Contents of the training program

Textbooks used for the model TOT program will be used with some modifications and updating. In the course of the implementation, business administration, marketing, personnel affairs, and finance/accounting should be added. Most trainees do not have sufficient field experience. In addition to classroom lectures, field tours to visit factories are indispensable for the curriculum.

e) Budget

See (2)-2e.

(2)-2 Continuation of the SME training program on management and production control technology

In combination with the TOT program, a training program on management and production control technology for manufacturing SMEs will be launched. A model program has been conducted for three weeks during the present Study, and instructors have been selected from participants in the model TOT program. (See a report on the model SME training program in Annex 3.)

a) Implementation body

The SME training program will be implemented in combination with the TOT program in (2)-1. The MOIT Human Resource Development Committee should act as the implementation body for the program.

b) Eligibility

The SME training program is intended for factory managers and foremen of SMEs in the manufacturing sector. It should not be limited to supporting industries, but SMEs in all manufacturing industries. In the initial stage, the program will be implemented for SMEs in industrial areas of Jakarta and its vicinities. As the training scheme is established and a core cadre of instructors is trained, the program will extend to SMEs in other regions.

c) Instructors

Instructors will be selected from TOT instructors as well as TOT participants with a good record and a high level of motivation. In addition, outside instructors will be invited from private training institutes and companies. As in the case of the TOT program, the recruitment of foreign experts should be studied.

d) Contents of the training program

The SME training program will focus on basic management and production control technology for manufacturing companies. It will be based on the model program and will consist of lectures and factory visits. Six textbooks used in the model program will be used with some modifications and updating. They will become standard textbooks.

In preparation for the program, a database on manufacturing SMEs should be built and needs surveys should be conducted. These are key tasks for the MOIT Human Resource Development Committee, which will be the program implementation body. The training

program will be upgraded on a continuous basis on the basis of the results of the needs surveys as well as those of questionnaire surveys of participants at the end of each course.

e) Budget

Assuming that the model TOT program (3 weeks) and the model SME training program (3 weeks), as conducted under the present Study, constitute one unit for the proposed programs, three units are carried out per year. The annual program budget is estimated as follows. In principle the participants will be charged.

$$450,000,000 \text{ Rps.} \times 3 = 1,350,000,000 \text{ Rps. / Year}$$

(2)-3 Preparation of local deployment of the training scheme

The MOIT Human Resource Development Committee will, through continuous implementation of the TOT and SME programs, train a core cadre of instructors, produce standard textbooks, and compile training manuals. These tasks will constitute a key preparation for local deployment of the training scheme.

(3) List of long-term actions and participating organizations

(3)-1 Local deployment of the TOT and SME training schemes

This is designed to establish local government (DINAS) and local institutes of PUSDIKLAT-INDAG (BDI) as key organizations to provide training and guidance for SMEs in the field of management and production control technology.

As the MOIT Human Resource Development Committee implements the TOT and SME training programs, local deployment of the training scheme will become ready. The establishment of the National Human Resource Development Center for SME is proposed as a long-term plan in Action Plan 1. Local deployment of the TOT and SME training schemes in the field of management and production control technology should preferably be carried out jointly by the National Human Resource Development Center for SME, DINAS and BDI. Nevertheless, it can proceed without waiting for the establishment of the National Human Resource Development Center for SME, for extension officers of local government (DINAS) and BDI's instructors will be able to participate in the TOT program conducted by the MOIT Human Resource Development Committee.

Local deployment is initiated by the National Human Resource Development Center for SME that send instructors having experience in the TOT and SME training programs to

local governments and BDI. The instructors will conduct TOT for extension officers (DINAS) and instructors (BDI), while providing support for the SME training program to be conducted in the region. Note that it is imperative to modify the standard curriculum and textbooks to take into account each region's (area's) industrial base (metal, food processing, textile, leather, etc.) and meet the needs of local industries.

(3)-2 Implementation of the training course for SME management consultants

Parallel to the TOT and SME training programs conducted by the MOIT Human Resource Development Committee and the National Human Resource Development Center for SME, the establishment of the SME management consultant certification system will proceed under the leadership of MOIT. As pointed out earlier, it is desirable that, once the certification system is formally launched, the actual training of SME management consultants is left to the hands of private organizations. The National Human Resource Development Center for SME's responsibility should be limited to the development of standard training course and curriculum. The center will then publish standards for training course design and implementation to encourage other organizations to plan and conduct the training course on their own, while offering a standard training course for persons who want to obtain certification.

In fact, as the SME management consultant certification system is established, the TOT program operated by the National Human Resource Development Center for SME will serve as a training course for SME management consultants. As a result, the TOT program will have participation from both persons who intend to become instructors and those who apply for the SME management consultant certification examination from the government or private sector.

Note) Provisional certification of SME management consultants

PUSDIKLAT-INDAG's instructors and IDKM's extension officers, who receive the TOT by the MOIT Human Resource Development Committee, are expected to be qualified as the future SME management consultant.

Until the SME management consultant certification system is established, therefore, provisional certification by the MOIT is considered to serve as an effective transition to the formal system. Once the certification system is inaugurated, persons who have a

provisional certificate will be certified, subject to the review process. Eligibility for the provisional certification extends as follows:

- A person who has served, for a specific number of times, as an instructor for the TOT program conducted by the MOIT Human Resource Development Committee
- A person who has served as an instructor for the TOT program, as invited from outside, such as an instructor of a private training institute, and who has met specific criteria as the TOT instructor
- A person who has completed the TOT program and has served as an instructor for the SME training program for a specific number of times

(4) Implementation Schedule

Implementation schedule of Action Plan-2 is proposed as shown in the Fig. 6-19. The TOT and SME training programs as joint implementation of IDKM and PUSDIKLAT-INDAG can be started even before the set-up of the MOIT HRD Committee. Full-scale deployment of the TOT and SME training model to the regional level will be done by the “National HRD Center for SME”. However it can be started during the second year by the MOIT HRD Committee. After the establishment of the national certification system of the SME management consultant, TOT will be continued as a management consultant course for those who apply for the certificate of the consultant.

Fig. 6-19 Implementation Schedule for Action Plan-2

Action Plan-2		1 st Year	2 nd Year	3 rd Year	4 th Year	5 th Year	onward
Short-term	1 Continuation of TOT on management and production control technology						
	2 Continuation of SME training program on management and production control technology						
	3 Preparation of local deployment of the training scheme						
Long-term	1 Local deployment of TOT and SME training schemes						
	2 Implementation of the training course for SME management consultants						

Source: JICA Study Team

6.5.3 Action Plan-3 Reinforcement of the Support System in the Area of Production Technology

There is an apparent lack of a public support system for the improvement of plastics and press working technologies that are key engineering technologies for supporting industries in the country. This action plan proposes, prior to program implementation, detailed surveys of the current state of technical support organizations throughout the country as well as of supporting industries. Then, the resources network will be established and the infrastructure for actual training will be reinforced in terms of both hardware and software.

(1) Goal

To improve competitiveness of the materials processing industry by reinforcing the technical support system in the areas of plastics injection, metal press working, and die/mold making, thereby to enhance and improve technical support and skills training. In order to achieve the goal, the following activities will be conducted:

- 1) Establishment of a division specialized in promotion of plastics and press working technologies;
- 2) Organization of interested companies and related organizations;
- 3) Development of the resources network;
- 4) Training of instructors;
- 5) Reinforcement of training facilities and equipment; and
- 6) Implementation of training programs for improvement of techniques and skills.

(2) Implementation Schedule

In consideration of the level of urgency for project implementation, the need for detailed study and design, and other factors, a preliminary schedule has been developed as follows. Needless to say, individual projects are to be started in a coordinated linkage to others.

Fig. 6-20 Implementation Schedule for Action Plan-3

		Action Plan-3	1 st Year	2 nd Year	3 rd Year	4 th Year	5 th Year	onward
Short-term	Urgent	1) Establishment of a leading division						
		2) Organization						
		3) Network development						
	Second Phase	4) Instructors						
		5) Reinforcement of training facilities and equipment						
Medium- and long-term	6) Actual training							

Source: JICA Study Team

(3) Target output for each activity

- 1) Establishment of a division specialized in promotion of plastics and press working technologies (IDKM as responsible body and Balai Besar as implementation body)
 - To establish a division responsible for management of a resources network for plastics molding and press work training.
 - To commission the responsibility to the MOIT Human Resource Development Committee for the time being and to establish the Special Subcommittee on Promotion of Training for Technology Upgrading (tentatively named) to assume responsibility for actual management.
 - To utilize local resources effectively by entrusting analysis and use of obtained data to the organization that actually implements training.

- 2) Organizations of interest companies and related associations/organizations (IDKM as promoting body)
 - To promote the organization of a trade association representing press working companies in order to collect latest technology information through interaction with foreign organizations (e.g., societies), in place of efforts that are currently being taken by individual companies.
 - To promote the establishment of a tool and die industry association by encouraging participation of related industries and companies, and polytechnic schools (especially, POLMAN ASTRA, POLMAN BANDUNG, and POLMAN ATMI have good track records in the area of manufacture of components for consumer products and are

indispensable), MIDC, Balai Besar, and ITB, with a major mission to improve die and mold design and making technologies.

- To promote the exchange of technology with industrialized countries, collection of technical information, and engineering and consulting services through the trade association and related organizations.
- To study and evaluate possibility of promoting JIG, including promotion of press molding technology (at present, MIDC, POLMAN (ASTRA, BANDUNG and ATMI) and YPMG are considering promotion of JIG making technology).
- To promote alliance with existing trade associations (e.g., GIAMM and GAIKINDO) for the purpose of identifying and assessing the needs for training in related industries.

3) Development of the resources network (MOIT HRD Committee and National HRD Center for SME as the promotion body; see Fig.6-21)

- To maximize efficiency of program supply (through programs) by establishing or maintaining linkage with skills training programs in the field of plastics and press working technology, which are already underway (including those of small scale and/or at basic level).
- To maximize supply capacity and its variety by mobilizing existing programs and organizations to meet the diverse needs of industries for improvement of production techniques and skills.
- To build an information network that can collect and provide information on the demand side so as to allow effective use of training organizations that are limited in number, while ensuring the development of training programs that meet the actual needs of industries.

4) Training of instructors (Balai Besar and MIDC)

To carry out training for a target number of workers, the increase in the number of instructors and the improvement of their skill levels are required.

- To increase the number of instructors:
 - To hire part-time instructors from assemblers and related organizations.
 - To secure part-time instructors and technical advisors through alliance with the three polytechnic schools (POLMAN ASTRA, BANDUNG and ATMI).
- To improve skill levels of instructors:
 - To send instructors to polytechnic schools and assemblers for special training or to receive advisors from them.

- To implement the TOT program by foreign advisors (under a formal request to a foreign technical support organization).
 - To hire foreign experts as resident advisors.
- 5) Reinforcement of training facilities and equipment (Balai Besar and MIDC as implementation bodies, and National HRD Center for SME as the support and promotion organization)
- Machinery requirements vary with training programs and dies/molds to be used. After a short list of candidate trainees has been made, a training program will be designed and a facility and equipment will be selected³.
 - The same will apply to plastics injection⁴.
- 6) Implementation of training programs (implementation bodies: Balai Besar and MIDC)
- Technology and skill levels eligible for support
From the viewpoint of improving competitiveness of supporting industries and expanding the potential market, the training programs should focus on basic and intermediate levels of technology and skills. The basic level will be added to embrace a wider range of workers. Also, maintenance courses should be added. Target levels of technology and skill as well as promotional targets are defined as follows.
 - i) Reinforcement of supply capacity of supporting industries: Skill improvement training for basic class workers
 - Improvement of the ability of novice workers engaged in plastics injection, press work or die making to adapt themselves to the advancement of technology and skill requirements
 - Support for the start of the learning process relating to plastics injection, press work, and peripheral technology and skills

³ Note 3 Estimated prices of presses
Prices vary according to the manufacturer, type and mechanical rigidity. Generally, a press of C frame construction type is priced at slightly below \$1,000 per ton. A straight side construction type costs 3-4 times the C frame machine and ink type and high speed precision machines around 5 times. Peripheral equipment required for progressive feeding costs around 50% of the press itself. A robot line costs more or less the same as the press.

⁴ Note 4 Estimated equipment costs
1. Hydraulic press (80 ton class): Approx. \$80,000 (electric machine – 10% higher)
2. Auxiliary equipment: Approx. \$23,000 (materials dryer, die temperature controller, etc.)
3. Crane for die setting (chain block): Approx. \$2,700 – 3,500
4. Items required for lecture (component models, course materials, etc.): Approx. \$45,000
5. Dies for training: Approx. \$13,000

- Support for promotion of workers' awareness, the establishment of standard knowledge and practice including quantification, and support for application of knowledge to practical operation
 - Support for die and mold design techniques and know-how that cannot be documented as standard operation.
- ii) To secure share of local parts and components in the global market: skill improvement training for intermediate-level workers
- Adaptability to continued pursuance of high precision and production economy
 - Process design support for advanced production
 - Support for development capability meeting assemblers' requirements (applying to 3D)
- iii) Field guidance for supporting industries
- Periodical visit to individual companies for field training for die maintenance and inspection

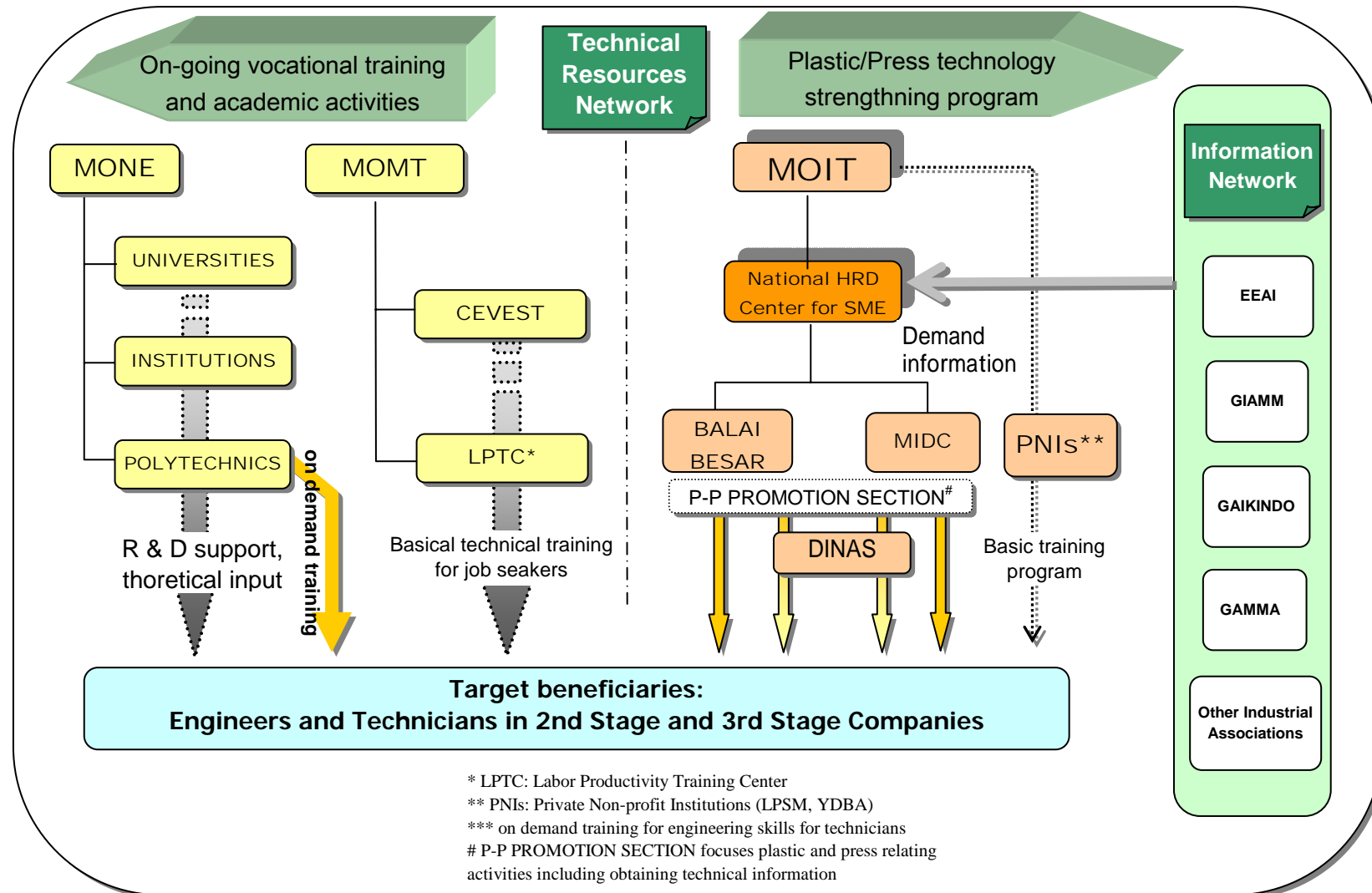
- Target areas

As transportation equipment (mainly automobile) and household appliance industries – leading sectors of the country's manufacturing industry – are concentrated in JABOTABEK and Bandung regions, key facilities for training and support will be established within these regions in consideration of accessibility to potential users.

While information on the technology and skill needs will be obtained from trade associations to use as a basis of developing a curriculum for training programs, trainees will be recruited through the associations. Training programs, although newly designed, will use existing facilities of Balai Besar, MIDC and other organizations under the MOIT as far as possible, by upgrading or adding equipment as required.

It should be noted, however, that Balai Besar (offering training courses on plastics molding) is located in Yogyakarta, far from JABOTABEK, and is thus not convenient for most companies to use frequently. It is therefore recommended to search for availability of more accessible facilities, such as B4T in Bandung.

Fig. 6-21 Concept of the Resources Network



Source: JICA Study Team

