

## **CHAPTER IX. PROPOSAL OF MASTER PLAN**

### **1. DEVELOPMENT STRATEGIES PROPOSED FOR EACH INDUSTRY**

#### **1.1 DEVELOPMENT STRATEGIES FOR THE AUTOMOTIVE PARTS INDUSTRY**

##### **1.1.1 Present Status and Characteristics of the Automotive Industry and Parts and Components Manufacturers in Indonesia**

Characteristics and problem areas of the automotive industry and parts and components manufacturers in Indonesia are pointed out as follows.

- (i) Though production and sales volume of cars has been increasing steadily, market size as a whole is still small. Because of this, not only automotive assemblers but also their subcontractors who manufacture parts and components find it difficult to secure production volume large enough to enjoy merits of scale.
- (ii) Because domestic automotive parts and components production in Indonesia has been developed according to the localization program by the government, there exist many parts and components which do not have enough price and/or quality competitiveness in the international market. In addition, a relatively large number of parts and components have been localized by in-house production of assemblers themselves. As a result, the number of parts and components manufacturers is relatively small in comparison with the number of assemblers.
- (iii) Because the technological levels of local metal processing related manufacturers which are expected to be secondary and tertiary subcontractors are very low, linkage between these manufacturers and the automotive industry is very small. As a result, the usual industrial multi-layer structure with assemblers at the top and the primary, secondary and tertiary subcontractors spreading widely as a broad foundation does not exist. This causes several problems such as dependence on the import of parts and components which should be procured locally or increase in costs as the result of in-house production of parts and components which should be processed by subcontractors.

### **1.1.2 Basic Strategies for Development of the Automotive Parts and Components Industry**

In consideration of the present characteristics and problem areas mentioned above, basic strategies for development of the automotive parts and components industry which Indonesia should adopt are focused on the following points.

**(1) Development Focusing on Priority Parts and Components which should be Localized in Indonesia**

Selection and intensive development of priority parts and components which should be localized immediately in Indonesia from the viewpoint of technical importance or superior competitiveness in the international market.

**(2) Improvement of Essential Technology Relating to Metal Processing**

Improvement of competitiveness of parts and components in the international market by the immediate development of both companies and human resources which have essential technology relating to metal processing such as casting and presswork.

**(3) Development of domestic small scale metal processing companies as supporting industry**

Development of domestic small scale metal processing companies which have not reached the level of being able to manufacture automotive parts and components as supporting industry by modernizing management, modernizing production equipment and improving technological levels.

### 1.1.3 Development Target Indices

It is very difficult to set up specific future development target indices for the automotive parts and components because they are many unstable factors which will greatly influence the development of the industry in the near future such as the movement of national car policy and the mutual parts and components procurement system of automotive manufacturers in the ASEAN region. However, development target indices which roughly show the future status of the automotive parts and components industry were set up according to the following premises.

- i) The growth rate of the manufacturing sector as a whole in the medium and long term is set as 10%.
- ii) As for prediction of automotive production volume, an average annual growth rate of 7.5% from 1995 to 2002 is posited based on the GAIKINDO prediction until 2000. Further, the average annual growth rate from 2003 to 2007 is set at 5.0%.
- iii) As for the prediction of motorcycle production volume, the average annual growth rates of 10.0% from 1995 to 2002 and 3.0% from 2003 to 2007 are posited based on the interview survey with PASMI, etc.
- iv) Domestic demand prediction is posited based on the growth rates of automotive and motorcycle production volume.
- v) Prediction of the production value of parts and components for domestic demand is set based on the premises of local content ratio development of approximately 55% in 2002 and 70% in 2007.
- vi) Prediction of the import value of parts and components is based on the premises of average import rates of approximately 45.0% in 2002 and 30% in 2007. (The average import rate in 1995 was 68.7%.)
- vii) The export value is calculated based on the assumption that the export ratio for the total domestic demand would increase from approximately 4% in 1995 to 7.25% in 2002 and 29% in 2007.
- viii) Average annual growth rates of productivity per employee are set as 10% after 1995.

Table 9-1-1 Development Target Indices of the Automotive Parts and Components Industry  
(Unit: Rp. Billion, Unit)

	1995 (Actual)	2002(Predicted)		2007(Predicted)	
			Growth rate		Growth rate
Production value of manufacturing sector as a whole	186,367	363,177	10.0	584,899	10.0
Production volume of cars	387,541	643,000	7.5	821,000	5.0
Production volume of motorcycles	1,042,938	2,032,000	10.0	2,356,000	3.0
Automotive parts and components industry					
1) Domestic demand	8,588	14,718	8.0	18,606	4.8
2) Domestic production value	2,557	9,162	20.0	18,428	15.0
3) Import value	6,387	6,623	0.5	5,582	-3.0
4) Export value	356	1,067	17.0	5,404	38.5
5) Number of companies	362	666	9.1	831	4.5
6) Number of employees	47,177	86,761	9.1	108,336	4.5
7) Production value per employee (Million Rp.)	54.2	105.6	10.0	170.1	10.0

Note: Values are all in 1995 constant prices.

Source: The JICA Study Team

#### **1.1.4 Development Measures**

##### **(1) Development Measures of Priority Parts and Components Groups**

Based on the results of the study, priority parts and components groups which should be developed intensively are selected as follows.

**(i) Group 1: Crucial parts and components which are recognized as priority parts and components for localization by assemblers and should be localized immediately.**

- **Engine parts and components (4) : Alternators, Camshafts, Connecting Rods, Motor Starters**
- **Transmission parts and components (4) : Extension Housings, Gears, Input shafts/Main Shafts, Shift Forks/Speed Shaft Rails**
- **Drive axle parts and components (2) : Drive Shafts, Propeller Tubes**
- **Brake parts and components (1) : Backing Plates/Body Calipers**

**(ii) Group 2 (8 parts and components): Parts and components which have the potential to be competitive in the international market in the future and need to be more competitive by modernizing production technology and equipment.**

- **Engine parts and components (2) : Pistons & Piston Rings, Radiators**
- **Transmission parts and components (3) : Cases, Clutch Housings, Covers**
- **Suspension parts and components (1) : Shock Absorbers**
- **Universal parts and components (2) : Safety Glasses, Air Conditioners**

**(iii) Group 3 (9 parts and components): Parts and components which have already been exported but need to concentrate on further market expansion by intensifying competitiveness increasing efforts.**

- **Engine parts and components (3) : Air Filters, Fuel Filters, Oil Filters**
- **Clutch parts and components (1) : Facings**
- **Universal parts and components (5) : Batteries, Control Cables, Electric Parts, Tires,**

## Wiring Harnesses

Invitation of investment by superior overseas parts and components manufacturers and promotion of capital and/or technological collaboration between such overseas manufacturers and domestic ones are effective for the development of Group 1. A series of active governmental supports for technological development and financing in addition to efforts to improve management and technology by each manufacturer are expected for the development of Group 2. Activities aiming at the development of the overseas market by Indonesian manufacturers in cooperation with the Indonesian government are necessary in line with improvement of competitiveness of parts and components manufactured in Indonesia for the development of Group 3.

### (2) Development Measures of Essential Technology Level

Improvement of casting and forging technology is indispensable for the development of Group 1 and 2. The most important key technologies are forming and assembling technology of cores for casting parts, and heat treatment for surface hardening and die repairing technology for forging parts. In addition, improvement of technology in manufacturers specializing in heat and surface treatment is also necessary. On the other hand, for the improvement of parts and components in Group 3 which are directed to the international market, the establishment of mass production technology by improving both the automation technology for stable quality and the design technology of jigs and fixtures for efficiency is necessary. Further, die manufacturing and factory control technology, strengthening of rationalization technology and methods which are suitable for repeated production such as quality control, cost control and reduction of lead time, in addition to rationalization of production equipment and improvement of maintenance technology, are necessary.

### (3) Development Measures of Domestic Small Scale Metal Processing Companies as Supporting Industry

Such fields as casting, forging, heat and surface treatment, presswork and machining are

very important even in the case of the primary subcontractors. In the case of many parts and components or processes, procurement or processing costs can be reduced by developing the domestic secondary and tertiary subcontractors. Development of domestic small scale metal processing companies which have not been developed as the supporting industry of the automotive sector by supplying reliable parts and components to assemblers should be promoted by the following governmental supports.

- Expansion of management skill training systems
- Financial supports for equipment modernizing and upgrading
- Strengthening of technical guidance visits by experts for establishment of mass production technology
- Expansion of common facilities
- Supply of market information
- Strengthening of managerial and/or technological supports through assemblers and primary subcontractors

## **1.2 DEVELOPMENT STRATEGIES FOR THE ELECTRICAL AND ELECTRONICS PARTS AND COMPONENTS INDUSTRY**

### **1.2.1 Present Status and Characteristics of the Electrical and Electronics Industry and Parts and Components Manufacturers in Indonesia**

The present status and characteristics of the electrical and electronics industry and the electrical and electronics parts and components industry in Indonesia are summarized as follows.

- a. In the early 1990s, corresponding to the governmental deregulation policy, the electrical and electronics industry in Indonesia changed its characteristics from the import substitution industry to the export oriented industry. The industry has grown to become one of the most important exporting industries in the country, which contributes to securing foreign currency. However, most electrical and electronics products are produced by joint venture companies between Indonesian domestic companies and foreign companies, and the development of the domestic electrical and electronics industry lags far behind. In addition, the majority of companies which export electrical and electronics products are foreign affiliated. Domestic companies have not developed to the level where they can export products.
- b. The assemblers of electrical and electronics products depend on import for many parts, because the electrical and electronics parts and components industry in the country is still underdeveloped. Especially, foreign affiliated companies import most of parts and components used for the assembling of finished products to the overseas markets because the range of reliable parts and components produced in the country is very limited. As a result, the growth of the electrical and electronics industry in Indonesia has not yet fully influenced that of other industries.
- c. Domestic electrical and electronics parts manufacturers are lacking in technology, production facilities, and capital, and are not able to produce reliable parts and components except for simple plastic molding parts and simple metal press parts. Key parts and components such as functional devices and semiconductor related parts need



high level technologies, and are rarely produced locally. One of the reasons behind this is that foreign electrical and electronics parts manufacturers have long avoided a large amount of investments into Indonesia because the total demand for parts and components in the country has not been sufficient. However, as foreign electrical and electronic assemblers have accelerated investments into Indonesia since the beginning of the 1990s, foreign parts manufacturers are gradually increasing their investments in the country as well.

- d. Various plastic molding parts and metal press parts are assembled into electrical and electronics parts and components. These plastic parts are produced locally using molds and dies, more than 90% of which are said to be imported. Because molds and dies represent the most important production technology, Indonesia is considered to be highly dependent on foreign countries in its technology. In addition to the mold and die making technology, what is necessary for the development of supporting industry in the Indonesian electrical and electronic industry is production technology, mainly of precise processing.
- e. Compared with that in other ASEAN countries, the electrical and electronics industry in Indonesia is underdeveloped in terms of production value as well as in the ratio of production value over gross domestic production. In addition, as is different from the case of other ASEAN countries where the export of electrical and electronics products started after domestic demand was fulfilled, the industry in Indonesia has not fulfilled domestic demand.

### **1.2.2 Basic Strategies for Development of the Electrical and Electronics Parts and Components Industry**

Taking the present status and characteristics of the industry mentioned in 1.2.1 into consideration, basic strategies for the development of the electrical and electronics parts and components industry, which Indonesia should adopt, are determined as follows:

- a. Invite foreign investments in the export oriented electrical and electronics parts and components industry

Among electrical and electronics parts and components, functional parts and devices are, in general, not made based on certain specifications of customer companies. Instead, they are rather general parts, and are produced in large scale, aiming at international markets. In order to develop those export oriented functional parts and components manufacturers in the country, the stress of strategy is to be placed on the acceleration of the invitation of investments of foreign manufacturers into Indonesia.

- b. Develop the electrical and electronic parts and components industry through strengthening the linkage between assemblers and the supporting industry.

From the point of view of technology, product competitiveness, and cost, parts and components which are considered to be localized shall be chosen. Among these chosen parts and components, those which are ranked very high in priority shall be developed through strategic alliance between Indonesian companies and foreign electrical and electronics assemblers, as well as foreign parts and components manufacturers.

- c. Improve technology levels of essential technology in the metal process fields

Key elements of technology which are lacking in the electrical and electronics parts and components industry in Indonesia are production technologies in the metal process fields such as the production technology of precision press dies and plastic molds, and the production technology of precise processing. The strategy should be designed to develop human resources in those companies which have the basic technology of metal processing.

### 1.2.3 Development Target Indices

It is very difficult to set up strict future development indicators for the electrical and electronics parts and components industry because the industry is still in the infant stage. In addition, there are unstable factors which may influence the development of the industry greatly in the future such as the behavior of multinational companies. However, development indicators which show the outline of the future electrical and electronics parts and components industry are proposed based on the following assumptions.

- (i) The annual growth of the whole manufacturing sector in the medium- and long-term is set at 10%.
- (ii) The annual growth of the electrical and electronics assembling industry is set at 20% between 1996 and 2002, and at 15% between 2002 and 2007. (Actual annual growth between 1989 and 1995 was 39.1%.)
- (iii) In 1995, domestic demand for parts and components over the total production of electrical and electronics finished products is estimated at 47%. This ratio is supposed to increase to 62% in 2002, and 70% in 2007.
- (iv) Domestic parts production value over domestic demand, i.e., localization ratio, which was 25% in 1995, shall be increased gradually so as to reach 40% in 2007.
- (v) Average annual growth of export is set at 20% between 1996 and 2002, and at 15% between 2002 and 2007. (Actual annual growth between 1989 and 1995 was 65.5%.)
- (vi) Import value is calculated based on the assumed localization ratio. ((Domestic demand x localization) - (Domestic production - Export value))
- (vii) Productivity per worker is assumed to increase 10% every year after 1995.

Table 9-1-2 Development Indicators of the Electrical and Electronic Parts and Components Industry

(Unit: Billion Rp.)

	1995 (actual)	2000 (estimate)		2007 (estimate)	
			annual growth rate		annual growth rate
Production value of whole manufacturing sector	186,367	363,177	10.0	584,899	10.0
Production value of the electrical and electronics industry	10,686	38,289	20.0	77,012	15.0
Electrical and electronics parts and components industry					
1) Domestic demand	4,996,	23,739	24.9	53,909	17.8
2) Domestic production	3,244	15,173	24.7	35,999	18.9
3) Import	3,755	15,743	22.7	32,345	15.5
4) Export	2,003	7,177	20.0	14,436	15.0
5) Number of companies	207	497	13.3	733	8.1
6) Number of employees	72,169	173,406	13.3	255,493	8.1
7) Production value per employee (Million Rp.)	44.9	87.5	10.0	140.9	10.0

Note: Values are all in 1995 constant prices.

Source: "Laporan Kegiatan Direktorat Industri Alat Listrik Elektronika dan Telekomunikasi tahun 1995", Ministry of Industry and Trade; Estimate by the Study Team

#### 1.2.4 Development Measures

Although the electrical and electronics industry has maintained rapid growth, the electrical and electronics parts and components industry which supports the former is substantially behind in progress. In order to develop the parts and components industry, it is imperative to have a development strategy that includes strong support from electrical and electronic assemblers. To expedite this, it is necessary to invite participation actively from foreign parts and components manufacturers as well as to strengthen relationships between assemblers and parts and components manufacturers. Specific development measures are as follows:

- a. Strengthen relationships between assemblers and the supporting industries

Support from assemblers for the supporting industries generally deals with technical matters such as quality assurance and specific technical problems in production processes. In most cases, these supports are not systematic and regular, and most companies receive support from assemblers only when quality problems occur.

Under the circumstances, systematic and comprehensive support from large scale assemblers to small and medium scale parts and components manufacturers is urgently required. It is considered to be very useful for the government to give assistance to assemblers in organizing cooperative associations among their vendors, which is prevalent among large-scale assemblers in Japan, so that assemblers can give various kinds of support to the supporting industries effectively.

In addition, it would be worthwhile to make a feasibility study on the establishment of electrical and electronics industrial estates where assemblers, parts/components manufacturers, and the second tier supporting industries in electrical and electronics fields are concentrated so that a stronger linkage among them can be achieved.

- b. Promote foreign investments into the fields of priority products through the strengthening of investment incentives

Priority parts and components which are selected in Chapter IV of this report are represented below. Invitation of foreign investments into these product fields through the strengthening of investment incentives is required. Even for those priority parts and components which have been already produced in the country, it is effective for the government to set up incentives to expedite further production expansion in the country and technology transfer.

- (i) Electrical parts and components

- PCB (one side, both sides, multi-layer)
- Induction motors
- DC motors
- Audio speakers

- Electric connectors
- Low voltage connectors
- Very low current connectors

(ii) Electronics parts and components

- Registers
- Condensers
- Semiconductors

In order to develop parts and components manufacturers of the above items, the development of essential technologies in metal processing such as presswork, die and mold making and heat treatment, and managerial skills are necessary. Measures mentioned below are considered to be effective.

c. Short-term training programs and seminars for parts and components manufacturers

It is suggested that strong assistance from third parties including both Indonesian and overseas public institutions is necessary to provide short-term training programs and seminars for the supporting industry. In reality, industrial associations such as GEI and governmental institutions such as MIDC are regarded as being appropriate organizations which fill the role of various supporting activities such as invitation of foreign experts, holding short-term training programs and seminars, and providing the supporting industries with technical advice by regular factory visits.

d. Develop technical training schools

It is suggested that universities, politekniks and high schools strengthen basic science education. The development of technical training schools where theory and practice are taught is considered to be necessary, and governmental research and development institutions such as MIDC as well as industrial associations such as GEI may contribute to the establishment of such schools.

On the other hand, it was revealed through the Study that few companies use governmental institutions such as MIDC. It is suggested that the Indonesian government make a plan as to how the supporting industries can utilize governmental institutions effectively.

e. Establish information sources related to metal processing

The establishment of information sources in the field of metal processing and the professional assistance to medium and small scale companies on how to access such information sources is important. Especially, it is regarded as being very useful for the government to set up a system where both technical and managerial information is transferred from assemblers and parts/components manufacturers to the supporting industries. Industry associations such as GEI may be most appropriate to gather a wide range of information to be rendered to the supporting industries. However, many industrial associations in Indonesia are underdeveloped, and therefore support from governmental organizations as well as foreign organizations is strongly required.

f. Develop systematic governmental loan schemes

Under the present governmental financial schemes, the maximum loan amount is relatively low, and the target industries for the loans are limited. It is therefore imperative to develop systematic governmental loan schemes to meet the actual financing needs of the supporting industries. In addition, it is regarded as being very useful for public financial institutions to send financial and accounting consultants to small and medium scale companies so that they can receive professional advice on a wide range of managerial matters.

### **1.3 DEVELOPMENT STRATEGIES FOR THE MACHINERY PARTS INDUSTRY**

#### **1.3.1 Present Status and Characteristics of the Machinery Industry and Machinery Parts and Components Industries in Indonesia**

In Indonesia, the whole machinery industry is still very underdeveloped. By major product items, both the number of companies and the production values of each product of the machinery industry are very small, except for two items of construction machinery and combustion engines. In short, the machinery parts industry in Indonesia is still at the beginning stage of development, and most of their production items are limited to various kinds of maintenance parts.

One reason for this delay of the development of the machinery industry is that the domestic demand for machinery is still small due to the low level of industrialization in Indonesia. Another reason is that a strategic development policy for the machinery industry by protecting domestic market could not be taken, because it would decrease the total competitiveness of the Indonesian manufacturing industry. A third reason is the delay of the development of the metal processing industry which has such elemental technologies as castings. This means that the following vicious cycle has been formulated in Indonesia : immaturity of the machinery industry → low demand for machinery parts → underdevelopment of the metal processing industry → immaturity of the machinery industry.

Not only in Indonesia but also in most of the other ASEAN nations, the development of the machinery industry is delayed compared with such industries as the electrical and electronics industry or the automotive industry. The largest reason for this is that the major machinery manufacturers in the developed countries such as Japan are not yet active in transferring their production bases to the Asian region. Thus, the majority of the high quality machinery used by investors in export product manufacturing is imported from Japan and other developed countries. As for the low-end machinery which is low grade but cheap, those products of such countries as Taiwan that succeeded in the early achievement of industrialization, or China that strategically developed its machinery industry, dominate the market.



Under the above circumstances, most ASEAN nations aim at developing the machinery industry as one of their future core industries, following to the electric and electronics industry and the automotive industry.

### **1.3.2 Basic Strategies for the Development of the Machinery Parts Industry**

From the current status of the industry in Indonesia as mentioned above, the basic strategies for the development of the machinery parts industry would be summarized in the following.

#### **(1) Development of the core machinery industry**

The core machinery industry consisting of a selected number of product items should be strategically developed not only from the viewpoint of the development of the machinery parts industry itself but rather from the viewpoint of its being the driving industry of the whole manufacturing industry.

#### **(2) Improvement of Essential Technology Related to Metal Processing**

Those companies and technical persons that have essential technology related to metal processing such as casting and presswork should be developed urgently.

### **1.3.3 Development Target Indices**

Because the development of the machinery and machinery parts industries in Indonesia is still at the beginning stage, it is hard to set future development target indices for the machinery parts industry. Based on the following broad assumptions, however, the development target indices, which could be used for assuming the general picture of the industry in the future, were set.

- i) The annual average growth rate of whole manufacturing sector in the medium and long

term is set at 10%.

- ii) In 1994, the percentage share of the machinery industry was only 1.4%. From the experience of other nations, that share was assumed to increase to 2.0% in 2002, and 3.0% in 2007.
- iii) The medium and long term average annual growth rate of the domestic demand for machinery parts was posited at 10%, which is equivalent to that of the whole manufacturing sector.
- iv) The import ratio to the domestic demand in 1995 is estimated at 86%, which was assumed to decrease to 60% in 2002 and to 40% in 2007.
- v) The same annual growth rate as that for total domestic production was assumed for exports.

Table 9-1-3 Development Target Indices of the Machinery Parts Industry

(Unit: Rp. Billion)

	1994 (Actual)	1995 (Estimate)	2002 (Projection)		2007 (Projection)	
				Growth rate(%)		Growth rate(%)
Production of whole manufacturing sector	155,825	186,367	363,177	10.0	584,899	10.0
Production of machinery sector	2,203	2,135	7,264	16.6	17,547	19.3
Machinery parts industry						
1) Domestic demand	3,758	4,494	8,757	10.0	14,104	10.0
2) Domestic production	726	868	3,975	23.3	9,221	18.3
3) Imports	3,234	3,868	5,254	4.5	5,642	1.4
4) Exports	202	242	472	10.0	759	10.0
5) Number of companies	269	280	659	13.0	949	7.6
6) Number of employees	37,119	38,578	90,735	13.0	130,794	7.6
7) Production value per employee (Million Rp.)	19.6	22.5	43.8	10.0	70.5	10.0

Note: Values are all in 1995 constant prices.

Source: The JICA Study Team

### **1.3.4 Development Measures**

The development of the machinery parts industry has to be achieved together with that of the machinery assembly industry. For the development of the machinery industry in Indonesia, the following measures are recommended.

- 1) Invitation of overseas manufacturers' investments in Indonesia by expanding the investment incentives including income tax exemption or reduction

A package of strategic investment incentives should be applied to the companies which would start production of strategic machinery products such as those recommended in Chapter 4, Section 3.2. Selection of Priority Products and Essential Technologies (Group II to Group V).

- Air compressors
- Universal metal working machines
- Molds, jigs and fixtures
- Universal machine tools
- Bearings (rolling)
- Precision dies and molds
- High grade tools
- Oil hydraulic pressure devices
- Servo-mechanisms
- NC machine tools (2, 3 and 5 dimension)
- Industrial robots
- Precision metal working machines

- 2) Promotion of capital and technical tie-ups between local manufacturers and overseas manufacturers

Matching service activities should be promoted by setting up an organization that accumulates the information which would be useful for local companies trying to find overseas partner companies or the overseas manufacturers desiring to find suitable local partner companies.

Further, the technical levels of local metal processing industries such as casting, forging, press work or machining industries have to be improved by instituting the following measures.

- 1) The capability of public central R&D support organizations such as MIDC should be strengthened. They should establish the basic technologies of metal work and try to diffuse those technologies to local manufacturers.
- 2) The technical guidance capability to local small and medium scale manufacturers has to be strengthened by upgrading the facilities and technical levels of workers of those technical service organizations which are established in the areas where many metal working industries are concentrated such as Ceper, Sukabumi or Tegal.

In addition, the following measures would also be considered effective for the development of the machine parts industry.

- 1) New investment by local and overseas manufacturers in the metal working areas should be promoted by offering them industrial estates which features all of the necessary infrastructures such as power, upper and lower water supply, telecommunication, transportation network, waste disposal facilities or public technical service organizations as well as estate administration offices which can having function as one-stop service agencies.
- 2) By establishing a soft loan scheme directed for capital investments of the supporting industry, the obsolete machines and equipment of the existing companies would be replaced and new investment for the capital intensive metal working industry would become easier.

## **1.4 DEVELOPMENT STRATEGIES FOR THE ELEMENTARY TECHNOLOGY INDUSTRIES**

The current situation and the development measures for each essential technology industry are described in detail in Chapter 7. Although they are duplicated, the measures proposed for the development of each elementary industry are briefly summarized in the following section for the purpose of the establishment of overall development strategy for the supporting industry in general.

### **1.4.1 Casting Industry**

From the results of evaluation of management and production conditions of the casting companies in Indonesia, the following improvement measures were proposed.

- 1) The technical personnel of the casting industry should be trained by the following:
  - a. sending technical experts to international conferences with the aim of the absorption of advanced technologies;
  - b. setting up casting technology seminars organized by the industrial association for the level up of foremen and supervisors; and
  - c. conducting mutual factory visit tours under the leadership of the industrial association.
- 2) Financial support system should be expanded for the modernization of machinery and equipment.
- 3) The accumulation and diffusion of such technical know-how as casting process plan, core molding or injection check should be proceeded in the whole industry bases.
- 4) As for the wooden and metal pattern making, local supply system should be established either by inviting foreign specialized companies or upgrading technical levels of national enterprises.

- 5) The reduction of defect ratio should be achieved by the following:
- a. improving quality test capabilities of public institutions for materials and sub-materials;
  - b. upgrading consulting service capabilities of public R&D institutions;
  - c. expansion of testing service facilities of public institutions; and
  - d. collecting the success cases of casting technology improvements among industries under the leadership of industrial associations.
- 6) The maintenance system for advanced processing facilities should be established by public R&D institutions.
- 7) The safety awareness and safety management should be upgraded by local enterprises.
- 8) The production know-how of such key casting products as automotive parts should be established by public R&D institutions.
- 9) The joint efforts of small scale casting companies should be promoted especially in the area of marketing.

Further, the strengthening of following measures were proposed.

- 1) The governmental support should be given for the joint development of small, inexpensive and easily operating facilities for mass production of small and quality machinery parts, which would modernize the old facilities of traditional small-scale casting enterprises.
- 2) The technical guidance schemes in which experts would visit each target factory and give advice at each factory site should be expanded.
- 3) The apprentice training system in which the workers of small-scale enterprises would

- 3) The apprentice training system in which the workers of small-scale enterprises would be trained at factories of large-scale casting companies should be further expanded.
- 4) A subsidy system which would support the joint R&D efforts of small and medium scale enterprises for the development of key technologies of industrial common needs should be established.

#### **1.4.2 Forging Industry**

Compared with other essential technology industries, the forging industry in Indonesia is still underdeveloped. The current relatively large scale forging companies are mostly the joint ventures with overseas manufacturers. As the improvement measures of this forging industry, the following were recommended.

- 1) The operating rates of many forging factories are low due to such factors as i) installment of improper production facilities compared with the market demand or ii) the low reliability of delivery due to the lack of established production procedures. This condition should be improved by the following:

- a. Improvement of production facilities bade on the market needs study;
- b. establishment of the technical support system for the introduction of proper production and cost control system; and
- c. establishment of such basic technologies of forging as the proper selection of processing plan or the designing of forging molds and their diffusion.

- 2) An industrial technology association of the forging industry should be established and the basic technologies should be developed by its mutual cooperation.

- 3) The public R&D institutions should analyze the common causes of the forging defects and establish effective countermeasures.

### **1.4.3 Presswork Industry**

From the results of evaluation of management and production condition of factories, the following improvement measures for the presswork industry were proposed.

- 1) The collection of technology information should be promoted through industrial associations or public R&D institutions.
- 2) The chances of training of basic presswork technologies for workers should be expanded.
- 3) The public financial support system should be established, and the modernization of facilities such as press machines, machine tools for mold making and inspection equipment should be proceeded.
- 4) The facilities for quality control should be expanded and quality control training should be enhanced.
- 5) The technology for designing and manufacturing press molds should be developed in public R&D institutions.
- 6) The marketing capabilities for OEM market should be strengthened by the database information and matching service activities of public organizations.
- 7) Through joint efforts of both private and public sector, the technical improvement of



both presswork and mold designing should be promoted according to the following schedule.

Target period	Types of technologies to be developed or improved
Short-term	single presswork (block type), single presswork (yoke type), compound work (yoke type), progressive work (yoke type, less than 9 processes), transfer work (yoke type, less than 9 processes)
Medium-term	fine blanking work (insert type), press line work (yoke type, mechanized)
Long-term	precision progressive work (insert type, more than 8), precision transfer work (insert type, more than 8 processes), press line work (yoke type, automated)

#### 1.4.4 Plastic Molding Industry

The improvement measures proposed from the results of management and production conditions of the plastic injection molding and plastic injection mold making industries were as follows.

- 1) The standardization of work processes should be promoted through the activities of industrial associations, and operator training schools should be expanded.
- 2) The training courses for mold designing and machining should be expanded at technical training institutions for the development of mold engineers.
- 3) Technology information should be collected both by industrial associations and

public technical service organizations.

4) The improvement of production process of plastic injection molding should be achieved through the following:

- a. adoption of appropriate inventory control system;
- b. establishment of a quantitative measuring system for the stability of materials;
- c. research for the relationship between various resin mixing rates and quality of products;
- d. training on the decision of appropriate molding conditions;
- e. training on the temperature control of molds;
- f. improvement of measuring technology and measurement equipment; and
- g. increase of technical trouble shooting capability.

5) The production process of molds should be improved by the following:

- a. improvement of the levels of basic knowledge of molds by injection molders;
- b. expansion of education and training of mold engineers;
- c. level up of production scheduling by setting standard processing time;
- d. improvement of machining condition setting and tool selection;
- e. expansion of heat treatment facilities;
- f. establishment of hard chrome plating technology;
- g. improvement of polishing and adjustment of mold technologies;
- h. development of engineers having trouble shooting capabilities; and
- i. establishment of quality inspection standards.

## **2. OVERALL DEVELOPMENT STRATEGIES**

### **2.1. PRESENT SITUATION AND PROBLEMS OF THE SUPPORTING INDUSTRIES IN INDONESIA**

In summary, the following are the major problems of the present situation of the supporting industries in Indonesia.

#### **1) Industrial Structure**

- The supporting industries have not yet adequately developed either in number and size. They do not compose a pyramid structure, ordinarily observed in the advanced countries, where wider secondary and tertiary layers are formed under the assemblers.

#### **2) Capabilities of local parts and components manufacturers**

##### Management

- Most of the businesses are family-run and they have not acquired modern management skills.
- They lack marketing know-how and do not engage actively in marketing activities.
- They are not eager to start new business.

##### Technology

- They are lacking in modern production control technologies.
- It is not unusual that their equipment and facilities are obsolete.

##### Production Management

- Their internal training is not sufficient enough to develop good supervisors.
- Delay in delivery often occurs due to poor delivery control systems.
- Poor quality control systems bring about unstable quality and high defect ratios.
- The operating ratios are low due to a low level of order receipt and inadequate production management.
- Their cost competitiveness is weak for their quality level.

#### **3) Investment trend of foreign parts and component manufacturers**

- The number of foreign parts and components manufacturers investing in Indonesia is steadily increasing as a result of the Indonesian Government's open economic policy

and the requests by assemblers operating in Indonesia.

- When foreign parts and components manufacturers decide to invest in Indonesia, they consider the following factors:
  - i. Existing business relationships with assemblers operating in Indonesia
  - ii. Advantages compared with such neighboring countries as Thailand and Malaysia.
  - iii. Size of the domestic market
  - iv. Potential of exports to the neighboring countries, etc.

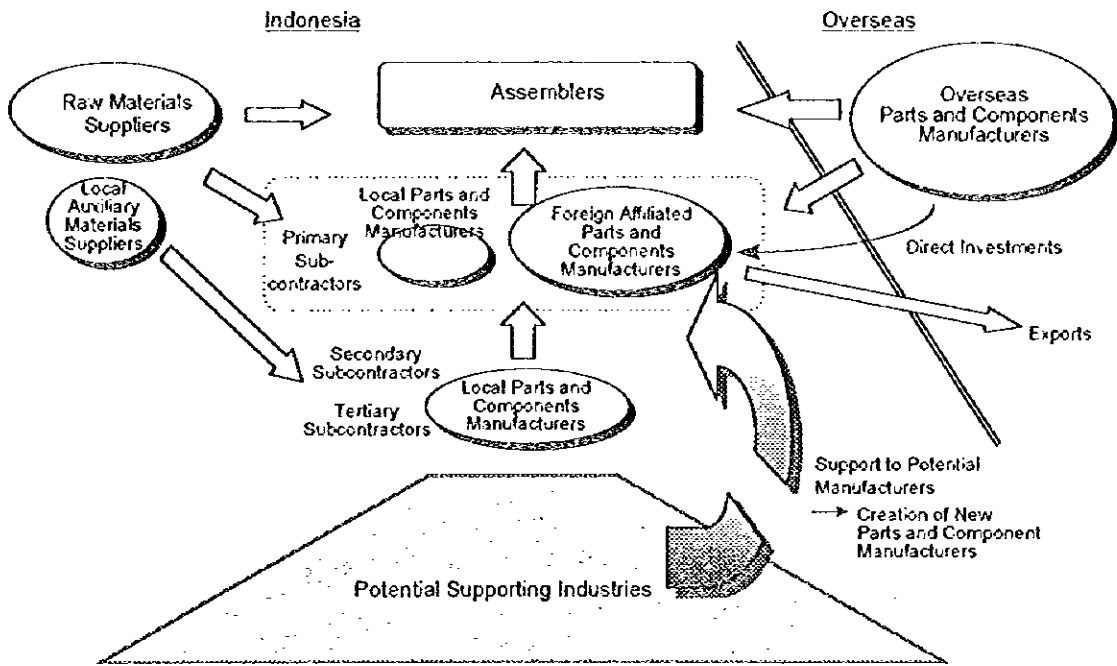
#### 4) Trend of local procurement by assemblers

- Assemblers still rely mainly on imports and in-house production for essential and/or critical parts and components.
- Among their local procurements, purchases from foreign-affiliated companies occupy a larger portion in terms of value.
- Indonesian parts and components manufacturers supply a limited range of products, such as products which do not require high technologies and auxiliary materials.

#### 5) Competitive Situation

- The competition with the neighboring countries will be intensified with the realization of AFTA in 2003.
- The domestic markets will continue to grow responding to the rise in income levels.
- The export markets will expand as a result of the progress of market liberalization and income increase in the neighboring Asian countries.
- The competition in the domestic market among Indonesian manufacturers and foreign-affiliated manufacturers will be more severe as a result of increasing investments by foreign parts and components manufacturers.

Fig. 9-2-1 Structure of the Supporting Industries in Indonesia



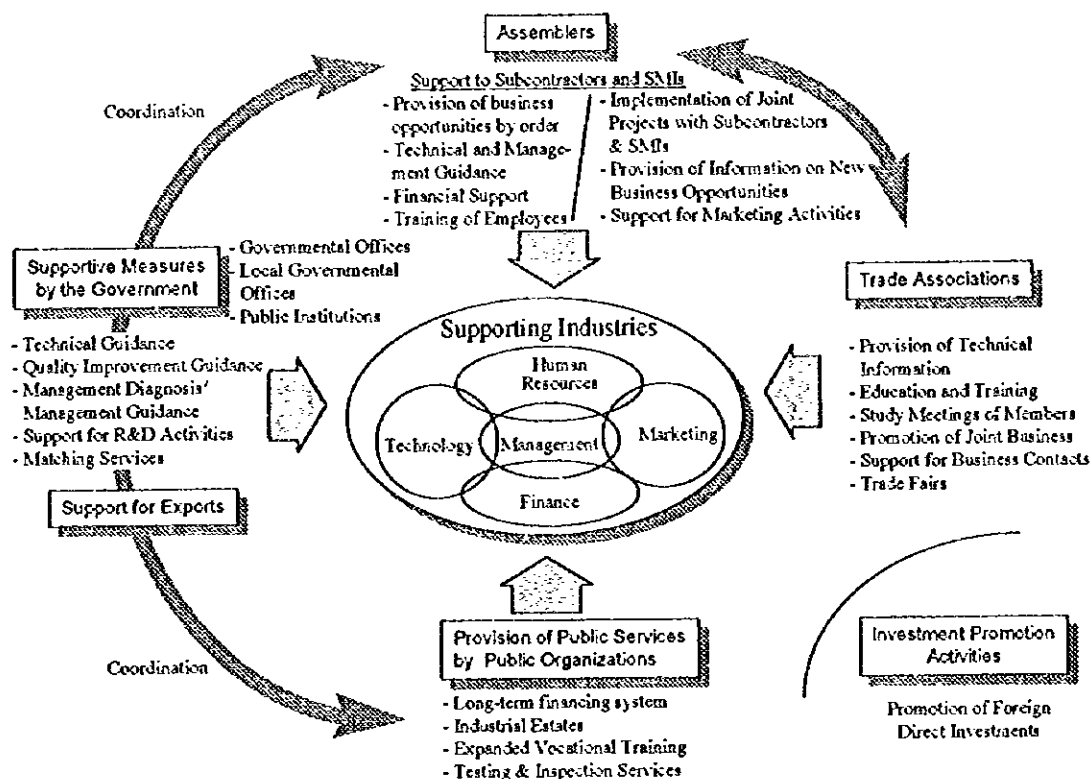
## **2.2 BASIC STRATEGIES FOR THE DEVELOPMENT OF THE SUPPORTING INDUSTRIES**

### **2.2.1 Principles of the Development**

The development of the supporting industries shall be promoted on the basis of the following principles:

- i. The development will be effectively promoted by taking an integrated approach towards identified development targets, with the purpose of developing strong parts and components manufacturers instead of protecting small scale enterprises. An integrated approach will be realized through the joint efforts by the public sector and private sector based on the well-organized coordination among related organizations, i.e., governmental offices, public institutions, assemblers, and trade associations.
- ii. The development will place importance on self-supporting development efforts by the supporting industries.
- iii. The development will make use of supportive activities by the private sector, especially those of assemblers.
- iv. The investments by foreign parts and components will be actively promoted with the emphasis on its role as a driving force.
- v. The development will emphasize the market mechanism to build competitive industries.
- vi. The government's participation will be basically directed to the creation of good business environments and the provision of services which can not borne by individual companies, in other words, industrial infrastructure, which match the needs of the supporting industries.

Fig. 9-2-2 Concept of Integrated Approach by the Public and Private Sectors



## 2.2.2 Basic Development Strategies

The following six approaches shall be adopted as basic development strategies for the supporting industries in Indonesia:

**Approach 1:** To establish a policy framework for the development of the supporting industries and an organization for effective implementation.

**Action to Be Taken:** To establish a policy set-up for the development of the supporting industries. (No. 1)

**Approach 2:** To improve the levels of the supporting industries in terms of production technologies and managerial skills. As well as the government's support, supports from assemblers and trade organizations will play an important role. Human resource development will be also important for the upgrading of technological and managerial levels of the supporting industries.

Action to Be Taken: To support the improvement of the technological level of the supporting industries (No. 2)

To support the improvement of managerial skills of the supporting industries. (No. 7)

**Approach 3:** To expand subcontracting businesses of the supporting industries in order to develop the linkage between assemblers and subcontractors. Technological transfer from assemblers to subcontractors will be promoted and information for subcontracting business promotion, such as buyer information, supplier information, and market needs, will be provided.

Action to Be Taken: To support marketing activities of the supporting industries. (No. 10)

**Approach 4:** To promote the foreign direct investments by leading parts and components manufacturers and capital and/or technological tie-ups among overseas and local manufacturers.

Action to Be Taken: To support foreign direct investments and technological tie-ups. (No. 12)

**Approach 5:** To expand exports of parts and components by raising international competitiveness and supporting overseas marketing activities.

Action to Be Taken: To support overseas marketing activities of the supporting industries. (No. 11)

**Approach 6:** To promote the development of industrial infrastructure by the government to provide a good business environment for the supporting industries. Industrial infrastructure will include such areas as financing system, R&D support, standards, and tax systems, in addition to such ordinary infrastructure as industrial estates.

Action to Be Taken: To establish quality management systems of the supporting industries. (No. 3)

To expand the support for R&D activities of the supporting industries. (No. 4)

To expand loans toward the supporting industries. (No. 5)

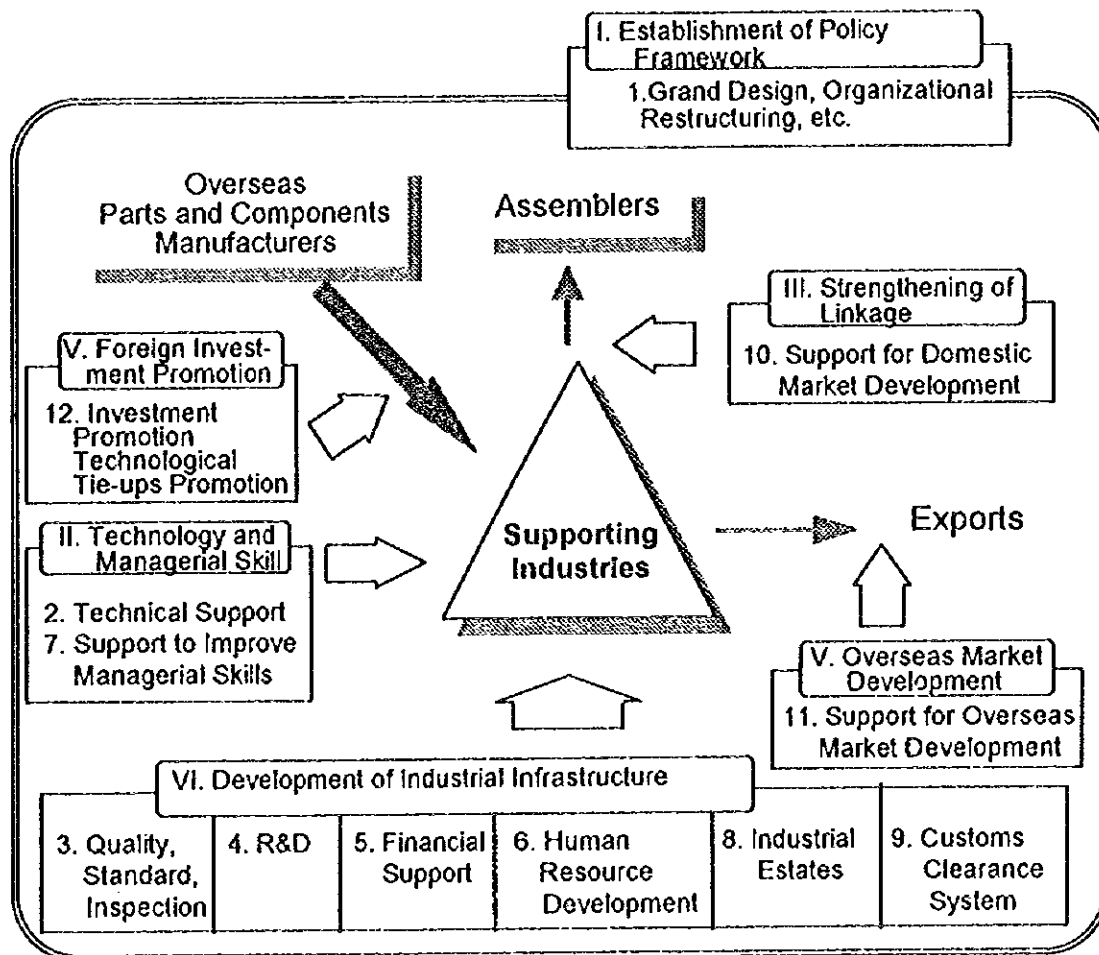


To expand human resource development (education and training). (No. 6)

To develop industrial estates for the supporting industries. (No. 8)

To improve customs clearance systems. (No. 9)

Fig. 9-2-3 Basic Strategies for the Development of the Supporting Industries



### 2.2.3 Development Targets of the Supporting Industries

Targets in terms of the number of parts and components manufacturers to be developed are as shown in Table 9-2-1. They will be increased from approximately 1,000 at present to 1,800 in the year 2002, and to 2,500 in the year 2007 according to the growth targets by industries.

Table 9-2-1 Targets of the Number of Parts and Components Manufacturers to Be Developed

	(No. of Companies)		
	Year 1996	Year 2002	Year 2007
Targeted Number of Parts and Components Manufacturers	900	1,800	2,500
Existing Parts and Components Manufacturers	900	900	1,800
Additional Parts and Components Manufacturers		+900	+700
Of Which, New Foreign Investments		+250	+150
Of Which, New Domestic Investments		+300	+250
Of Which, to Be Developed from Existing SMIs		+300	+300

Referential Data Based on Development Targets by Industry

		1995	2002	2007
Automotive Parts	No. of Companies	362	661	831
	Average Sales per Company	7,064 Rp. Million	13,757 Rp. Million	22,176 Rp. Million
	No. of Employees	47,177	86,761	108,336
Electrical and Electronic Parts and Components	No. of Companies	207	497	733
	Average Sales per Company	15,671 Rp. Million	30,529 Rp. Million	255,493 Rp. Million
	No. of Employees	72,169	173,406	255,493
Machinery Parts and Components	No. of Companies	280	659	949
	Average Sales per Company	3,100 Rp. Million	6,032 Rp. Million	9,717 Rp. Million
	No. of Employees	38,578	90,753	130,794
Total No. of Companies		849	1,817	2,513
(Changes in No. of Companies)			(+968)	(+696)

The size of foreign investments is, in general, large. Most of them are export-oriented manufacturers. The share of foreign affiliated manufacturers in the total supporting industries will be larger in terms of production value and number of employees. Foreign parts and components manufacturers are considered to invest mainly in the areas of independent suppliers and primary subcontractors.

New investments by local companies should be directed mainly to the areas of independent suppliers and primary subcontractors. However, some of them will be directed to secondary subcontracting.

Local SMIs to be developed will engage in production in secondary and tertiary subcontracting. At the same time, it is expected that some of them can reach the capability level of primary subcontractors.

Table9-2-2 Types of Parts and Components Manufacture by Type of Company

Type of Company	Type of Parts and Components Manufacture			
	Independent Suppliers	Primary Sub-contractors	Secondary Sub-contractors	Tertiary Sub-contractors
Existing Manufacturers	XX	XX	X	
New Foreign Investments	XX	X		
New Domestic Investments	X	XX	X	
Development from SMIs		X	XX	XX

Note: XX - Major type of manufacture X - Relevant type of manufacture

#### 2.2.4 Expected Results of the Development of the Supporting Industries

The following outcome can be expected as a result of the development of the supporting industries:

- i. Creation of employment opportunities as a result of the expansion of parts and components production
- ii. Reduction of parts and components imports at the progress of localization
- iii. Expansion of parts and components exports
- iv. Improvement in assemblers' competitiveness with the increased availability of high-quality and low-cost parts and components
- v. Improvement of technological fundamentals of essential technologies

Fig. 9-2-4 Trends of Domestic Production of Subject Parts and Components  
(Unit: Rp. Billion)

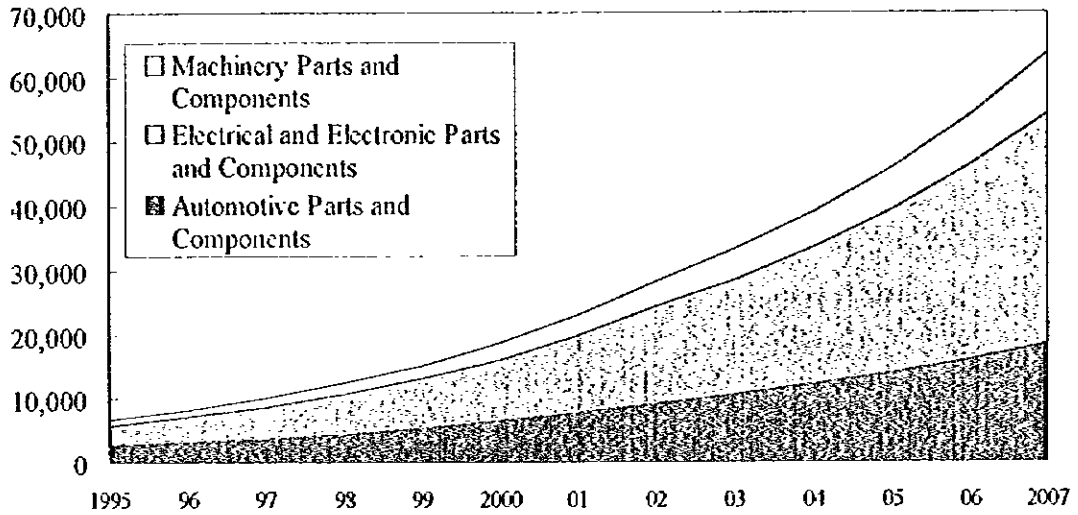


Fig. 9-2-5 Trends of Domestic Demand with Breakdown of Demand for Domestic Production and for Imports, and Exports of Subject Parts and Components  
(Unit: Rp. Billion)

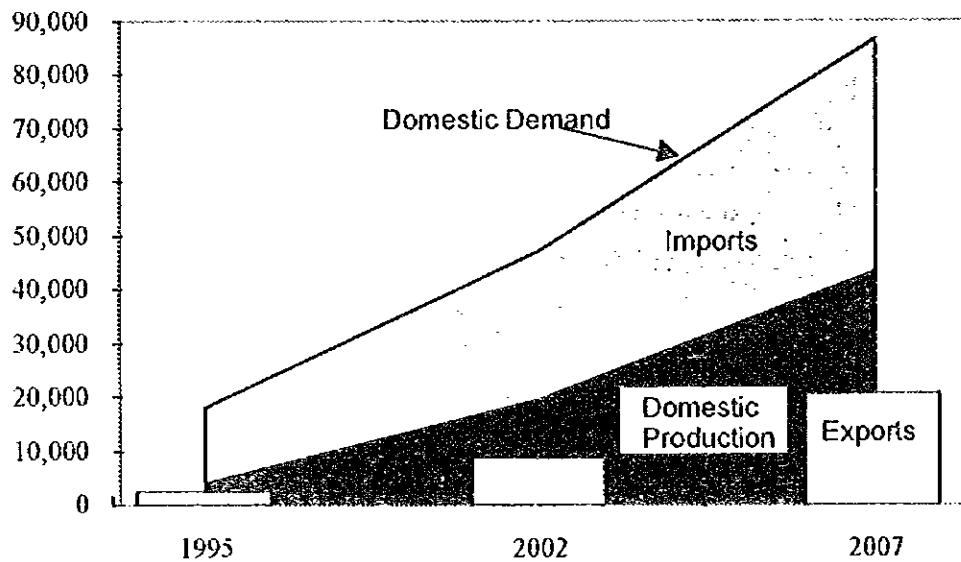
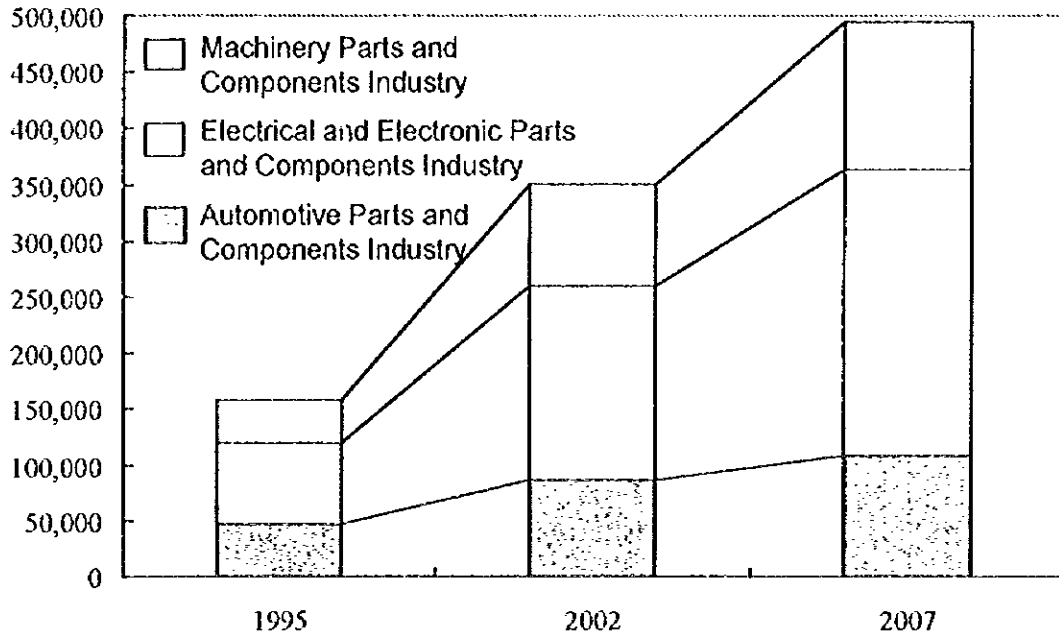


Fig. 9-2-6 Trends of Employment by Subject Industries  
(Unit: Persons)



## **2.3. OVERALL DEVELOPMENT MEASURES FOR THE SUPPORTING INDUSTRIES**

The following measures, the Overall Development Measures, are recommended to be implemented for the development of the supporting industries in Indonesia in line with the basic strategies mentioned above:

Table 9-2-4 shows how the measures recommended in the Overall Development Measures respond to the improvement targets by individual essential technology industries.

### **Institutional Policy Framework**

#### **Measure 1: Preparation of the Institutional Framework for the Development of the Supporting Industries**

##### **1.1 Problems Regarding the Institutional Framework and Policy Mechanism**

###### **(1) Problems of Existing SMIs Development Measures**

The following are pointed out as problems concerning the existing SMIs development measures:

- i. Policies and measures for the development of medium scale industries are lacking in the government's SMI policies.

The measures reviewed in "1.5 Small and Medium Industries Development Policies" in the Chapter III are presently being implemented to achieve the targeted development of small scale industries. However, they handle only small scale industries and do not cover medium scale industries, which play an important role as the supporting industries for the automotive, electrical and electronic, and machinery industries.

Table 9-2-3 Overall Development Measures for the Supporting Industries

Area	Measure	Content
Institutional Policy Framework	1: Preparation of the Institutional Framework for the Development of the Supporting Industries	(1) Establishment of Overall Supportive Measures for the Supporting Industries and Review of the Existing Small Industries Development Policies
		(2) Establishment of an Organization for the Development of the Supporting Industries
Technical Support/ R&D Capability Improvement	2: Improvement of Technological Level of the Supporting Industries	(1) Promotion of technological transfer from assemblers to their subcontractors
		(2) Expansion of technical guidance by public institutions
		(3) Promotion of education and training on production management for engineers
		(4) Expansion of activities of trade associations
		(5) Mediation of technological tie-ups
3. Improvement of Quality Control		(1) Establishment of an institution which engages in the diffusion of quality control technologies
		(2) Development of a quality control system suited to SMIs and preparation of an introduction manual for that system
		(3) Organizing of personnel in charge of quality control
		(4) Provision of information on quality control
4. Improvement of R&D Activities/ New Product Development Capabilities		(1) Promotion of the localization of the function of authorizing new parts and components at assemblers
		(2) Expansion of facilities of R&D institutions under MOIT
		(3) Promotion of joint R&D activities by the industry, public sector and academic sector
		(4) Support for R&D by private companies
		(5) Education and training for R&D personnel
Financial Support	5: Expansion of Finance to Small and Medium Industries	(1) To widen the eligibility of KUK to medium scale industries.
		(2) To introduce a two-step loan for the supporting industries
		(3) To establish a public financial institution specializing in finances for small and medium scale companies
Human Resource Development	6. Expansion of Human Resource Development System	(1) Establishment of a national-level vocational training system which responds to the needs of industries
		(2) Expansion of vocational training centers
		(3) Expansion of employee training within the industries
		(4) Training of engineers and technicians

Table 9-2-3 Overall Development Measures for the Supporting Industries (Continued)

Area	Measure	Content
Managerial Skills	7. Improvement of Managerial Skills	<ul style="list-style-type: none"> <li>(1) Expansion of education and training of managers</li> <li>(2) Management modernization through management diagnosis and consulting</li> <li>(3) Support for entrepreneurs</li> </ul>
Industrial Infrastructure	8. Development of Industrial Infrastructure for the Supporting Industries	<ul style="list-style-type: none"> <li>(1) Promotion for the locating of supporting industries in specific industrial areas</li> <li>(2) Preparation of industrial estates for small and medium scale companies</li> </ul>
	9. Rationalization of Tax and Tariff Systems and Realization of Quick Customs Clearance	<ul style="list-style-type: none"> <li>(1) Review of Domestic Tax Systems                             <ul style="list-style-type: none"> <li>a. To reduce luxury taxes on electric home appliances, except for high-grade products.</li> <li>b. To revise luxury taxes on automobile sales</li> </ul> </li> <li>(2) Improvement in Import Duty System                             <ul style="list-style-type: none"> <li>a. To unify import-related taxes.</li> <li>b. To shift from consignment customs clearance to customs clearance by the government itself.</li> <li>c. To simplify and speed up customs clearance procedures by introducing an electric data processing system.</li> <li>d. To integrate the taxation section and the refund section and to simplify and quicken tariff refund procedures.</li> <li>e. To secure an accord between industrial policy and the tariff system</li> </ul> </li> </ul>
Marketing	10. Support for Domestic Marketing	<ul style="list-style-type: none"> <li>(1) Support to parts and components manufacturers in finding orders from new customers</li> <li>(2) Preparation of a database on parts and components manufacturers</li> <li>(3) Expansion of activities of mediating between suppliers and buyers of parts and components</li> </ul>
	11. Support for Export Marketing	<ul style="list-style-type: none"> <li>(1) Expansion of public organizations' support for overseas marketing activities</li> <li>(2) Provision of information services on overseas markets by public organizations</li> <li>(3) Support for export-oriented parts and components manufacturers</li> </ul>
Investment Promotion	12. Expansion of Investment Promotion Activities	<ul style="list-style-type: none"> <li>(1) Establishment of clear foreign investment policies</li> <li>(2) Implementation of investment promotion activities toward clarified targets</li> <li>(3) Expansion of provision of information for investment promotion</li> <li>(4) Provision of assistance to investments by foreign small and medium parts and components manufacturers</li> </ul>



Table 9-2-4 Correspondence between Improvement Targets by Essential Technology and Overall Development Measures

Essential Technology	Improvement Targets by Essential Technology to Be Achieved	Actions Necessary for the Achievement of Improvement Targets	Corresponding Overall Development Measures	Major Implementation Agencies
Foundry	To improve quality control and safety management.	Improvement in quality control of raw materials and ancillary materials, improvement of consulting capability of advisors, expansion of traveling advisors, expansion of testing and inspection facilities	2,3	Public R&D institutions/public testing and inspection institutions
	To improve technological level of wood and metal pattern manufacture.	Diffusion of wood and metal pattern manufacture technologies to the foundry industry	2,3	
	To establish manufacturing know-how of key casting parts for automobiles.	Diffusion of manufacturing know-how to the foundry industry	2,3,4	
	To improve manufacturing process.	Accumulation of technological know-how for process improvement concerning casting plan, core making, casting inspection, etc.	2,3,4	
	To improve facility maintenance systems.	Establishment of maintenance systems for inspection equipment and high-grade casting facilities	2,3,4	
	To modernize facilities of small scale foundries.	Joint development of simple facilities	4	
	To improve production management and quality control levels.	Technical guidance to subcontractors by parent companies	2,3	Parent companies
	To improve quality control level.	Preparation of cases of casting plan improvement	2,3	Trade associations
	To train casting engineers.	Participation in international conferences, implementation of seminars on technologies, planning of factory visits	2	
	To modernize facilities and equipment.	Introduction of long-term loans for capital investments	5	Governmental agencies and financial institutions in charge of financial schemes and subsidies
	To promote joint R&D for important technologies	Introduction of subsidies for joint R&D	4	Governmental agencies in charge of investments
	To improve pattern making technologies in the industry.	Promotion of investments by overseas casting companies	12	Governmental agencies/ trade associations
	To develop new markets.	Improvement in marketing capabilities of small and medium scale foundries through joint business efforts	10	Governmental agencies/ trade associations

Table 9-2-4 Correspondence between Improvement Targets by Essential Technology and Overall Development Measures (Continued)

Essential Technology	Improvement Targets by Essential Technology to Be Achieved	Actions Necessary for the Achievement of Improvement Targets	Corresponding Overall Development Measures	Major Implementation Agencies
Forging	To improve production management and cost management systems.	Establishment of a technical guidance system for the improvement of production management and cost control systems, expansion of technical guidance by advisors	2	Public R&D institutions
	To improve forging production technologies and pattern designing capabilities.	Establishment of technologies in the areas of selection of forging process, pattern planning, designing of forging dies, etc., and establishment of technical guidance system	2,4	
	To reduce defect ratios.	Analysis of causes of defects, establishment of defect preventing technologies	2,3	
	To improve production management and quality control levels.	Technical guidance to subcontractor by parent companies	2,3	
	To modernize facilities and equipment.	Introduction of long-term loans for capital investments	5	
	Metal Press	To diffuse forging technologies.	Organizing of a trade organization, establishment of basic forging technologies	
To improve technologies for designing of press dies and production.		Accumulation of technologies for designing of metal press dies and metal press production	2	
To accomplish improvements in press technologies and die technologies according to the recommended development plan.		Implementation of improvement activities for metal press technologies and die technologies	2	
To diffuse latest technologies		Collection of technological information concerning metal press	2	
To improve production control and quality control levels		Technical guidance to subcontractors in the metal press business by parent companies	2,3	
To modernize facilities and equipment.		Introduction of long-term loans for capital investments	5	Governmental agencies and financial institutions in charge of financial schemes

Table 9-2-4 Correspondence between Improvement Targets by Essential Technology and Overall Development Measures (Continued)

Essential Technology	Improvement Targets by Essential Technology to Be Achieved	Actions Necessary for the Achievement of Improvement Targets	Corresponding Overall Development Measures	Major Implementation Agencies	
Metal Press	To diffuse latest technologies	Organizing of a trade association, collection of information on metal press technologies	2	Trade associations	
	To improve skill levels of employees.	Training of basic metal press technologies	6	Vocational training institutions	
	To improve production management level.	Expansion of training on production management	6,7		
	To develop new markets.	Expansion of marketing activities toward OEM markets	10	Governmental agencies, trade associations	
	To improve plastic molding technologies and quality.	Studies and accumulation of plastic molding technologies and quality control technologies, expansion of technical guidance system	2,4	Public R&D institutions	
Plastic Molding	To improve technologies of mold manufacture.	Accumulation of technologies for designing and manufacture of molds for plastic molding, expansion of technical guidance system for mold designing and manufacture	2,4		
	To diffuse latest technologies	Collection of information on relevant technologies	2	Parent companies	
	To improve production management and quality control levels.	Technical guidance to subcontractor by parent companies	2,3		
	To modernize facilities and equipment.	Introduction of long-term loans for capital investments	5	Governmental agencies and financial institutions in charge of financial schemes	
	To establish the standardization of manufacturing processes.	Promotion of the standardization of manufacturing processes	2	Trade associations	
	To diffuse latest technologies.	Collection of information on relevant technologies	2		
	To improve skills of workers.	Opening of a plastic school	6		
	To train engineers in mold manufacture.	Expansion of training courses on mold design and machining	6	Vocational training institutions	

Table 9-2-4 Correspondence between Improvement Targets by Essential Technology and Overall Development Measures (Continued)

Essential Technology	Improvement Targets by Essential Technology to Be Achieved	Actions Necessary for the Achievement of Improvement Targets	Corresponding Overall Development Measures	Major Implementation Agencies
Machining	To improve operating ratios of equipment and reduce defective ratios.	Implementation of technical guidance by traveling advisors on facility maintenance and processing technologies	2, 3	Public R&D institutions
	To improve the productivity by automation.	R&D of automation technologies and tool designing, provision of those technologies	2, 4	
	To improve precision levels of machining.	R&D of laser processing technologies	4	
	To improve management systems.	Provision of management know-how for machining, provision of advice on management	2, 7	Trade associations
	To reduce financial burden for capital investments.	Promotion of sharing use of facilities	2	Trade associations, governmental agencies
	To improve competitiveness and management bases of small and medium scale enterprises.	Promotion of organizing of groups of small and medium scale enterprises, promotion of joint businesses by them	2	
	To improve operating ratios and reduce defect ratios.	Implementation of technical guidance on facility maintenance and production technologies	2	Parent companies
	To promote production centers where many machining factories gather.	Development of industrial estates for small and medium scale industries	8	Governmental agencies

- ii An integrated approach is required for the development of the supporting industries.

The SMIs policies are subject to the restraint that they have to cover a large number of companies located all over the vast country within the limited budgets. The necessary supportive measures for the group of small scale industries which should be promoted as the supporting industries are clearly defined under the existing Indonesia's small scale industries policies.

The policies for the supporting industries development must be strategic and definite. They call for an action, integrating approaches from various aspects such as technology, human resource, marketing, and so on, toward the target defined clearly.

- iii. Within the Ministry of Industry and Trade, the functions of SMIs development are consigned to several departments.

BAPIK is in charge of policy making, and individual sectoral directorates general engage in the actual implementation of the small scale industries development. BBPIP deals with technological development of industries including small scale industries and PUSBINLAT carries out human resource development.

On the other hand, from the private sector side's needs, support given to small and medium enterprises must be most appropriate to the development stages and levels of the companies and their circumstances, and they must be a set of necessary supports in technology, finance, marketing, and management.

In addition, the supporting industries extend over several sectors, i.e., the automotive, electrical and electronic, machinery, and metal processing industries. In order to promote the supporting industries, a cross-sectoral approach should be taken.

- iv. Coordination and cooperation with other related ministries is essential for effective development of the SMIs.

As for small industries development, financing is mainly administered by Bank Indonesia, human resource development by the Ministry of Manpower, and the promotion of business cooperation by the Ministry of Cooperative and Small Enterprises. It is necessary to establish a system of facilitating the cooperation among related ministries so that integrated support can be given to small and medium scale industries.

## (2) Direction of the Improvement

To solve the above-mentioned problems, it is necessary to establish an effective and consistent policy for the supporting industries, by reviewing existing policies and restructuring an organization for the promotion of SMIs. In more detail, the following actions are recommended:

- i. To review target enterprises under the SMIs policies
- ii. To establish an executing organization which can realize the effective implementation of the supporting industries development policies.
- iii. To review and streamline supportive measures so that they can be applied most effectively according to the types of supporting industries and their specific development targets.

## 1.2 Recommendations

### (1) Establishment of Overall Supportive Measures for the Supporting Industries and Review of the Existing Small Industries Development Policies

#### a. Purposes

To prepare an organization which can secure an integrated approach to the development of supporting industries. At the same time, the existing SSIs development policies will be reviewed.

#### b. Measures to Be Introduced

##### i. Upward shift of target companies of SMIs policies

To introduce a category of medium scale industries defined as below. The scope of small scale industries development measures will be extended to the medium scale industries and small and medium industries development will be concurrently promoted.

#### New Definition of Enterprises in the Industrial Sector

Small Scale Industries: Total assets (excluding land and buildings) of Rp. 600 million or less

Medium Scale Industries: Total assets (excluding land and building) of Rp. 2 billion or less

Large Scale Industries: Total assets (excluding land and buildings) over Rp.  
2 billion

- ii. Definite distinction between the development of the supporting industries and the protection and promotion of small and medium industries

To identify target companies in the supporting industries development and to carry out necessary supportive measures. Sets of measures will be appropriately provided according to the size and growth stage of companies.

- iii. Realization of efficiency in supportive measures from the aspect of expense - effect

To adopt measures effective to the promotion of supporting industries. This effort will place importance on the establishment of mechanisms which can make use of the dynamism of the private sector.

- iv. Listing of priority companies for development and proper selection of supportive measures for these companies

To identify and list potential companies among existing parts and components manufacturers and among small and medium scale manufacturers which do not presently supply to the assembly industries. The most suitable supportive measures will be decided after grouping them by their capabilities and potential.

- v. Establishment of harmony with international business rules and with society

The requirements set by the international business world, such as the protection of property rights, the introduction of environmental standards, and the restriction on unfair trade treatments by WTO, are connected directly and indirectly with Indonesian supporting industries. These problems should be fully considered in formulating the policies for the supporting industries development. In addition, careful consideration should be given to possible environmental problems. This is because the small and medium scale industries tend to create environmental problems, for example, in the pollution of nearby areas, bad working conditions, improper treatment of wastes due to obsolete equipment and bad operating conditions. There is a possibility that these problems will be more serious when these

companies advance to the process of further growth

(2) Establishment of an Organization for the Development of the Supporting Industries

a. Purpose

To actualize an organization for the development of the supporting industries through such activities as the unification of the process from planning to implementation; establishment of an efficient implementation system; and necessary renovation and expansion of facilities and equipment.

b. Measures to Be Introduced

i. Establishment of a department in charge of the supporting industries development

To set up a core organization for the promotion of the supporting industries to realize the efficient implementation of development policies.

An organization which administers the whole process of development policies for the supporting industries will be set up by unifying functions related to the supporting industries development within departments of MOIT, such as BAPIK and sectoral directorates general, and creating a specific department.

At the final stage, this department will fulfill the following functions:

- To make development policies for the supporting industries
- To implement development policies for the supporting industries
- To coordinate the activities of various organizations related to the supporting industries development
- To monitor and evaluate the progress of the measures and programs for the supporting industries development
- To carry out research and establish databases on the supporting industries

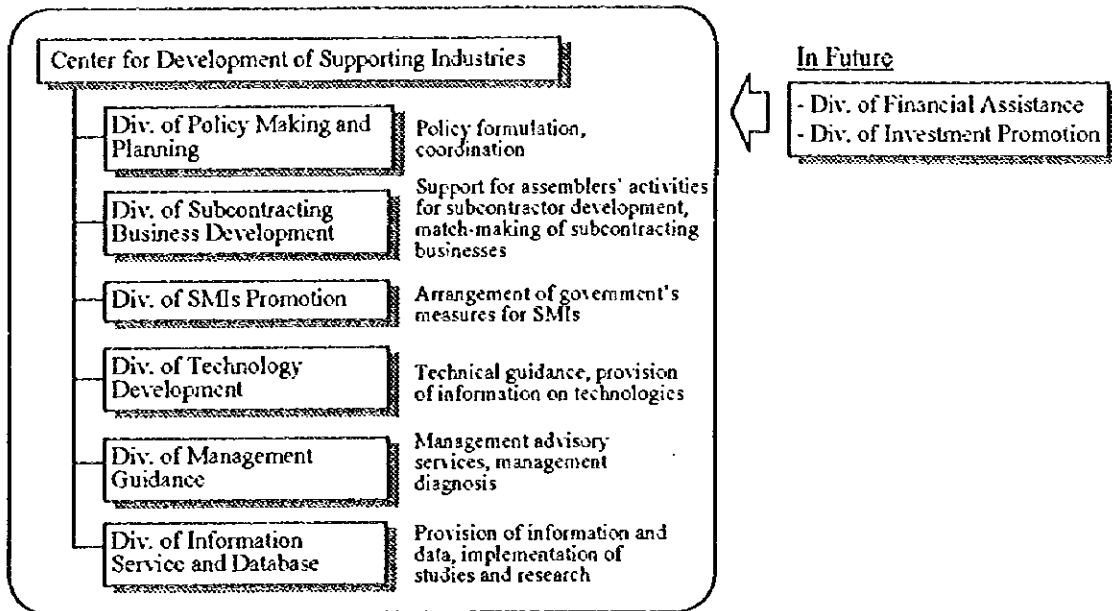
This department will be a "one-stop service center," general contact desk for government's services for the supporting industries. This will accept applications and provide the following services:

- Construction of databases and provision of information  
Provision of information on government's supportive programs; technical guidance programs; training programs; assemblers' purchase needs; and ex-



- port opportunities
- Matching services of subcontracting businesses
- Arrangements and implementation of management advisory services and technical guidance services
- Desk for receiving applications for various governmental approvals

Fig. 9-2-7 Organization and Functions of Assumed Department for the Supporting Industries



- ii. Examination of a plan for rationalizing and intensifying the organizations related to the supporting industries development

The organizations and institutions related to the supporting industries development will be reviewed and evaluated, and the necessary reinforcement measures including rationalization will be formulated.

### Technical Support/ R&D Capability Improvement

#### **Measures 2: Improvement of Technological Level of the Supporting Industries**

##### **2.1 Problems Regarding Technological Development**

Technologies required for manufacture by the supporting industries are mostly those which have been established and widely used among manufacturers in advanced countries. There-

fore, a key problem is how to gain access to and from whom to receive these technologies. Major sources of technologies which Indonesian parts and components manufacturers currently utilize are as follows:

Major Sources for Foreign Affiliated Parts and Components Manufacturers

- i. Utilization of parent company's technologies
- ii. Technical guidance from assemblers

Major Sources for Local Parts and Components Manufacturers

- i. Introduction of technologies by technical tie-ups with foreign parts and components manufacturers
- ii. Introduction of technologies from material or machinery manufacturers
- iii. Technical guidance from assemblers
- iv. Technical guidance from public institutions and specialists
- v. Study by information provided by trade associations, seminars, books, and so on.

Table 9-2-5 Present Situation and Problems of Technology Development by Types of Source of Technology

Source of Technology	Present Situation	Direction of Improvement
Technological transfer from parent company	Foreign parts and components manufacturers investing in Indonesia usually bring in technologies of their parent companies.	To promote investments of foreign parts and components manufacturers to accelerate the transfer of the latest technologies.
Technical guidance by assemblers	Automotive assemblers provide technical guidance to their primary subcontractors. But they usually do not support secondary and tertiary subcontractors.	To promote the expansion of supportive activities by assemblers. To encourage the support for secondary subcontractors by primary subcontractors.
Technical tie-up	Only large scale primary subcontractors can make a technical tie-up with a foreign manufacturer. Assemblers often act as a go-between for technical tie-ups. For parts and components, potential licensors are, in many cases, SMIs and they are sometimes reluctant in licensing.	To expand promotional activities for technical tie-ups. To provide tax incentives for technical tie-ups.
Introduction of technology from material and machinery manufacturers	When local companies purchase machinery and equipment, few of them receive technological guidance on production management from suppliers. Therefore, their plant maintenance capability and quality control are not im-	To promote the modernization of plants with the provision of preferential credits for plant modernization. To raise manufacturers' recognition of the importance of receiving technical guidance in the

	proved.	purchase of machinery. To advise them to include a maintenance system in a purchase contract at the introduction of new machinery.
Technical guidance by public institutions	Technical advisory services by R&D institutions obtain good results. However, there still exist such problems as the modernization of technologies and the necessity of expanding coverage of local areas.	To raise the level of technical guidance by R&D institutions. To expand technical guidance at local areas. To improve the level of visiting advisors. To introduce a registration system of specialists and make use of them as technical advisors.
Technical guidance by specialists	This is effective for the improvement of technological levels of manufacturers. Problems are who is to bear expenses and how to find specialists matching the needs of manufacturers. Long-term use of advisory service is necessary for the improvement of production management.	To prepare databases of specialists and introduce appropriate specialists to manufacturers. To promote the use of specialists by SMIs by providing incentives.
Introduction of technologies by trade associations	This can be a source of information which SMIs can easily access. At present, the introduction of technologies and technology exchanges by members are not active at trade associations.	To expand activities of trade associations and technology exchanges among members. To introduce overseas technology with the collaboration with overseas trade associations.
Study through seminars, books, etc.	The availability of information on latest technologies overseas is limited.	To increase seminars by R&D institutions to introduce latest technologies.

Production-related technologies can be largely divided into two categories: technologies specific to products and production management technologies. The former are technologies related to the technological level of product, such as R&D, production process and production equipment, and the later are the technologies related to QCD (quality, cost and delivery), such as production control, quality control, physical distribution, and labor management.

Specific technologies can be improved through the acquisition of basic technologies, introduction of new facilities and equipment, introduction of new production processes, introduction of new materials, and so forth. Production management technologies can be improved gradually mainly through the continuous activities for improvement at the workplace and the progress in mastery of operators and production managers.

The improvement of specific technologies should be promoted through the modernization of

facilities and equipment, and the introduction of latest production processes. Technical tie-ups, studies on latest technologies, and the expansion of R&D capabilities are major methods of upgrading specific technologies. As for production management technologies, continuous and steady efforts for improvement, upon managers' recognition of its importance, are necessary. Technical guidance by assemblers, public institutions, and specialists are effective methods of improving production management technologies.

When a parts and components manufacturer establishes mass-production technologies, they are required to have accumulated a lot of technological experience. Mass production can be possible on the basis of the appropriate adoption and combination of machinery for mass production and special machinery, rational layout of machinery, and rational level of automation. Low labor cost is one of Indonesia's competitive advantages. Therefore, many manufacturers adopt non-mass production processes. This is one of the bottlenecks for improving technological level. The automation necessary for maintaining product quality should be examined and introduced regardless of the problem of labor-saving automation.

The level of production management technologies at local parts and components manufacturers is far lower than that of foreign-affiliated manufacturers. At the same time, that of primary subcontractors is lower than that of secondary subcontractors.

The improvement of production management technologies is a key for the Indonesian supporting industries to reach the technological level at which they can supply OEM parts and components to assemblers including foreign-affiliated assemblers and they can acquire the international competitiveness in cost and quality against other ASEAN countries. Therefore, it is necessary to upgrade the level of production management technologies of Indonesia parts and components manufacturers to the level of 3.5 - 4.0 points in the factory management checklist used in this study.

## **2.2 Recommendations**

The following measures are recommended for the improvement in technological level of local parts and components manufacturers:

- i. Promotion of technological transfer from assemblers to their subcontractors

Assemblers are promoting the development of local subcontractors. Some of them have formulated an integrated program for subcontractor development, including technical

guidance. Examples are subcontractor development programs implemented by Toyota Astra and National Gobel. It is very important to further encourage these activities.

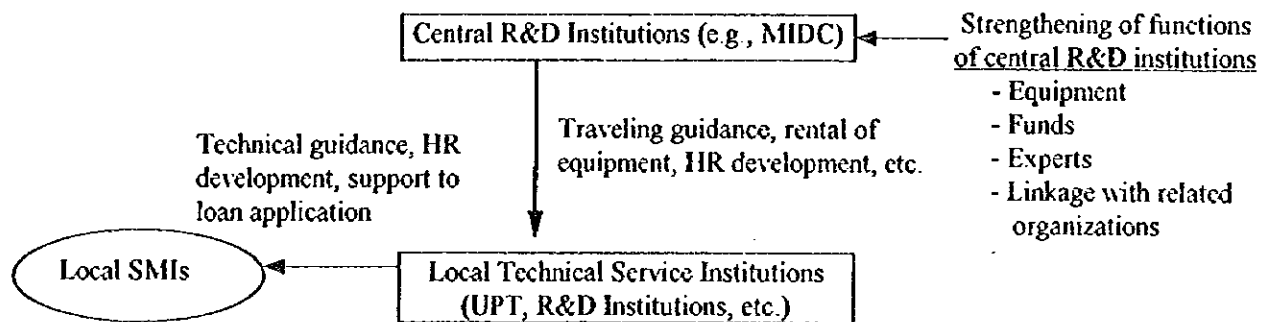
ii. Expansion of technical guidance by public institutions

It is recommended to expand traveling technical guidance by public institutions. The content of technical guidance will be upgraded through education and training of instructors and provision of additional necessary equipment. In addition, a technical advisor system will be introduced to register specialists and experts as technical advisors and to make the most use of them.

At local areas, the services of local R&D institutions and UPTs should be upgraded. It is necessary to reinforce central R&D institutions so that they can support the expansion of local R&D institutions' capabilities.

As for the expansion of local institutions, the important areas should be identified and given development priority. Possible candidate priority areas are JABOTABEK and Surabaya where many assemblers are located, and areas which are metal processing centers including casting and forging.

Fig. 9-2-8 The Relationship between Central R&D Organizations and Local Technical Service Organizations



iii. Promotion of education and training on production management for engineers

Factories of Indonesian supporting industries lack personnel who have sufficient knowledge on production management necessary for process control, product evaluation, and systematic improvement activities. It is necessary to expand education and training on production management at universities and public training institutions.

#### iv. Expansion of activities of trade associations

It is recommended that the activities of trade associations, especially activities for upgrading technological levels of member companies, be expanded. In more detail, the following should be carried out:

- Provision of information on latest technologies
- Formation of study groups of members for study on technology improvement
- Organizing of factory visits to excellent factories

#### v. Mediation of technological tie-ups

Technological tie-ups between foreign licensors and Indonesian parts and components manufacturers will be promoted and assisted by the Indonesian government and assemblers to start the production of parts and components which are not produced.

### **Measures 3: Improvement of Quality Control**

#### **3.1 Problems Regarding Quality Control**

The acquisition of ISO 9000 is a common task of parts and components manufacturers in Indonesia. This is essential for export-oriented parts and components manufacturers. However, it is very difficult for SMIs to establish a quality control system on the basis of ISO 9000. Therefore, it is necessary to develop a quality control system which is suitable for SMIs and get it to them.

In Indonesia, many primary subcontractors have introduced a quality control system. However, they have problems concerning the selection and maintenance of inspection equipment and this leads to the production of defective products. At secondary subcontractors, in general, even inspection systems are not sufficiently established and quality control systems have not been introduced.

Major problems in parts and components manufacturers establishing a quality control system are:

- i. Both top management and workers have insufficient recognition of the importance of quality.

- ii. Knowledge of quality control methods is insufficient.
- iii. There are insufficient personnel who can take care of quality control.

### **3.2 Recommendations**

- i. Establishment of an institution which engages in the diffusion of quality control technologies

In Indonesia there exist several organizations providing advisory services and training for quality control, for example, PT Sucofindo, B4T, and ITQC. However, there is no institution responsible for the diffusion of quality control to the whole country. It is recommended to set up an institution which carries out research on quality control and spreads systematically and continuously the outcome to companies in the country.

- ii. Development of a quality control system suited to SMIs and preparation of an introduction manual for that system

A quality control system which is appropriate for SMIs shall be developed and diffused to SMIs.

- iii. Organizing of personnel in charge of quality control

Quality control personnel and advisors of private companies, the governmental offices, public institutions, and the academic world shall be registered as QC specialists. The latest information on quality control will be distributed to the persons registered.

- iv. Provision of information on quality control

It is necessary to collect books and materials concerning quality control both overseas and domestic and make them open to the public, especially to persons engaging in quality control.

## **R&D Activities**

### **Measure 4: Improvement of R&D Activities**

#### **4.1 Problems Regarding R&D Activities**

Almost none of the parts and components manufacturers, except foreign-affiliated companies, engage in in-house R&D activities.

Local subcontractors are at the level that they can manufacture products as instructed by drawings provided by assemblers. Local manufacturers producing general parts or REM parts remain at the technological level of manufacturing products similar to other products on the market and it is hard for them to improve their products based on their original technologies. This situation is due to their insufficient R&D capabilities in terms of business size, facilities, technological level, and personnel.

Major governmental agencies and institutions which promote R&D of industrial technologies in Indonesia are LIPI, BPPT, R&D institutions under MOIT, and major universities. They engage in R&D activities for industrial technologies and provide various technology services and the outcome of their R&D to the private sector. There are cases that private companies consign R&D activities to public R&D institutions.

Both the provision of direct support and incentives to promote R&D activities by the private sector and the expansion of public institutions' support to the public sector are necessary for the betterment of R&D capabilities of the supporting industries.

#### 4.2 Recommendations

- i. Promotion of the localization of the function of authorizing new parts and components at assemblers

In the automotive industries, prototypes newly developed by parts and components manufacturers have to follow a complicated and time-consuming process of authorization until they are accepted by assemblers. This has been one of the major factors which hinder the development of parts and components manufacturers' R&D capabilities and original technologies. To promote the localization of assemblers' functions to encourage the use of local parts and components is important to activate R&D activities of parts and components manufacturers.

It is also important to promote the transfer of assemblers' product designs and development processes to Indonesia. If they carry out product development in Indonesia, the participation of local specialized parts manufacturers in this process becomes possible. Foreign electrical and electronic manufacturers are shifting development processes to



Asian countries. It is necessary to encourage this trend and prepare the necessary environment.

ii. Expansion of facilities of R&D institutions under MOIT

With the localization of parts and components, the products developed locally should be evaluated to see whether they are manufactured according to the designs. However, it is a big financial burden for parts and components manufacturers to be equipped with testing facilities. They ask public and private testing institutions or overseas institutions to provide such facilities.

In order to solve this problem, it is necessary to install large-scale and expensive testing facilities and equipment in public institutions which can not be borne by individual companies and provide testing services through public institutions to the private sector.

However, R&D institutions under MOIT can not respond fully to the testing needs of the supporting industries because they are not equipped with necessary facilities and the equipment is not well maintained.

It is necessary to survey the private sector's need for testing services and support for R&D and to expand testing services of public R&D institutions by supplementing necessary equipment, training necessary personnel, and establishing a quick service system. The upgrading of existing R&D institutions is presently implemented with the financial assistance from ADB. It is desirable to promote the expansion of testing services and support for the private sector's R&D within this project.

iii. Promotion of joint R&D activities by the industry, public sector and academic sector

Such products as automobiles, electrical and electronic equipment, and machinery are composed of a large number of parts and components which are synthetic and organically combined. Therefore, they call for both synthetic and diversified technologies as well as technologies specific to individual parts and components. In these industries, diversified joint R&D is undertaken in addition to R&D by individual parts and components manufacturers.

As for the use of new materials, joint R&D by material manufacturers, an assembler, and parts and components manufacturers is carried out in advanced countries. Joint R&D by types of processing, e.g., casting, forging, and machining, and joint R&D for assembled

units is also carried out.

The following are possible forms of joint R&D:

- An assembler takes the initiative to form a joint R&D group consisting of several parts and components manufacturers and gives support to this group in technical advices and product testing.
- Member companies carry out joint R&D initiated by a trade association. The trade association arranges necessary technological and financial supports from the public sector and assemblers.

#### iv. Support for R&D by private companies

Such governmental incentives as tax incentives and subsidies are necessary to promote private sector's R&D although their eagerness for product development is the key for success.

Tax incentives for R&D have already been introduced. However, it is pointed out that this does not function well due to operational problems. It is recommended that this system be reviewed to make it work effectively.

In addition to tax incentives, the introduction of an R&D subsidy which covers one third to a half of total expenses and subsidy for researches on overseas technologies should be examined. These measures are effective to support technology-oriented SMIs and ventures started by engineers who have excellent but need such support.

It is also recommended that a system be introduced where support of technical advisors for R&D is available at inexpensive cost.

#### v. Education and training for R&D personnel

The developing of excellent engineers is also an important task for the promotion of local R&D, as well as other technological issues. Especially for R&D, the following measures should be taken in the area of education and training:

- To expand the engineering curriculum at universities.
- To expand scholarships to promote overseas training at private companies.
- To activate information exchanges and association among engineers in private companies, public institutions, and universities.
- To accumulate experienced personnel through joint R&D activities.

## Financial Support

### **Measure 5: Expansion of Finance to Small and Medium Industries**

#### **5.1 Problems Regarding Finance for the Supporting Industries**

##### **(1) Problems Regarding Financial System**

At present, the Indonesian financial policy for small scale industries development is implemented within the framework of the financial system based on the market mechanism. It obeys the principle that funds for small scale industries development must not rely on the government funds or liquidity credits of Bank Indonesia which may lead to inflation, nor on offshore funds which should be a supplementary source of funds.

KUK (Kredit Usaha Kecil) exists as a credit program to small scale enterprises. The credits under this program have shown a rapid growth and the government's effort to facilitate funds for small scale industries seems successful. The policy objective of maintaining a tight monetary policy is also achieved because the funds for KUK are not fresh money.

However, the existing KUK is not sufficiently effective to satisfy financial needs of the supporting industries due to the following reasons:

##### **i. Eligibility**

Companies eligible for this program are those who have total assets of not more than Rp. 600 million. Many of the companies in the supporting industries which require a large amount of capital can not be benefited by this program.

##### **ii. Credit ceiling**

The maximum credit line of KUK is Rp. 250 million. This amount is not enough to cover purchase of high productivity and high accuracy facilities and equipment required by the supporting industries.

##### **iii. Character of short-term finance**

Sources of the funds are banks' own funds. Therefore, credits under the program are mostly short-term. This is not suitable for credits to the industrial sector's capital investments which should be financed by long-term credits.

The existing KUK is suited for small scale and household industries in the trade, service and agricultural sectors, whereas it is not suited for the supporting industries, because the sup-

porting industries require medium- and long-term credits and many companies in these industries are larger than the definition of small scale industries.

## (2) Problems Regarding Financing for Small and Medium Scale Industries

As major problems in implementing financial programs for small and medium scale industries, the following are pointed out:

### Problems on the borrower side

- i. They can not prepare a feasible project because they are not accustomed to application procedures and they lack the project formation capability.
- ii. There often is an eligibility problem concerning their management capabilities in administration, marketing and production management.

### Problems on the lender side

- i. Credit cost is high because amounts of credits to small scale industries are small.
- ii. It is difficult to find feasible projects.
- iii. Credits to small scale industries are high risk.
- iv. The number of branches of banks is limited and they do not cover the whole country.

It is necessary to raise the eligibility of small and medium scale industries and, at the same time, to improve the credit appraisal capability of financial institutions with the purpose of facilitating credits to the small and medium industries. It is an important measure for the government and Bank Indonesia to assist in the improvement of financing techniques, as well as the provision of funds, for better access to credits by the supporting industries.

From this point of view, such projects as SEDP/PPUK and PHBK, are conducting training and consultation services to credit officers in financial institutions. However, they are not sufficient under the present circumstances. Studies on techniques to prepare and evaluate credits to capital investments in the industrial sector, especially by small and medium scale companies, should be continued and it is necessary to expand training and consultation regarding financial management of the supporting industries.

## 5.2 Recommendations

While the principle of restraining the growth of the money supply is being maintained, it is necessary to adopt the following measures to expand the credits to the small and medium scale

industries:

- i. To widen the eligibility of KUK to medium scale industries.

The eligibility of KUK shall be modified for the industrial sector by increasing the maximum limit of total assets and expanding the credit ceiling.

- ii. To introduce a two-step loan for the supporting industries.

Within an acceptable range of money supply, a liquidity credit program shall be re-introduced for the supporting industries. A two-step loan will be borrowed to provide necessary funds for this program. This program will facilitate funds for the plant modernization by the supporting industries.

One way is to allocate a certain amount in credits for the supporting industries in a two-step loan which is currently under negotiation and the other is to introduce a new two-step loan for this purpose. The development of supporting industries will strengthen the export-oriented industries and this will compensate the effect of two-step loans on the Indonesian debt service ratio.

- iii. To establish a public financial institution specializing in finances for small and medium scale companies.

At the final stage, a public financial institution specializing in small and medium scale industries shall be set up. This institution will provide low-interest long- and medium-term credits for capital investments, leases for facilities and equipment, and funds for foreign experts. This institution will pool industrial credit specialists to promote project finding and reduce credit risks, which will result in a high efficiency of credits.

## **Human Resource Development**

### **Measure 6: Expansion of Human Resource Development System**

#### **6.1 Present Problems Regarding Human Resource Development**

Human resource development is one of the most important areas in the development of the

supporting industries. However, there are many problems concerning human resource development for the supporting industries.

Small and medium parts and components manufacturers have a problem of insufficient skilled labor because in-house human resource development systems are not established and working conditions are bad.

As for vocational training, public vocational training centers are insufficient in number, in facilities, and in curriculums. The vocational training is offered insufficiently not only for the supporting industries but for all the industries.

From the viewpoint of upgrading the technological level, production management, and R&D of the supporting industries, an insufficient supply of engineers and technicians is pointed out as a problem. In addition to the fact that the number of university graduates from engineering faculties is limited, most of them go to the public sector. This results in the insufficiency of personnel to work as engineers at private companies. This is also a problem that most of them do not work at small and medium scale industries.

Human resource development is a task to be tackled from the long-term viewpoint in order to upgrade the level of Indonesian industries and achieve a sustained growth of industries.

## **6.2 Recommendations**

- i. Establishment of a national-level vocational training system which responds to the needs of industries.

It is necessary to expand and enrich skill training in the areas highly needed by the industries. The Ministry of Manpower periodically monitors the needs of the industries and identifies training needs. It is essential to expand the vocational training system flexibly responding to these needs.

There are several technologies related to the supporting industries which are not sufficiently covered by the existing vocational training system. Examples are plastic molding, metal press, and die and mold designing. For these subjects of high needs, the training system including curriculum, equipment, and the level of instructors should be enriched by such organizations as CHEVEST.

The skill certification system hardly covers skills related to the supporting industries.

In addition to the expansion of the training system, it is necessary, from the long-term perspective, to make the skill certification system cover skills related to the supporting industries. By certifying highly skilled personnel, the skill certification system can raise the position of skilled personnel, and furthermore, raise the skill level of the whole industry.

ii. Expansion of vocational training centers

The modernization of existing vocational training centers is steadily promoted by the Ministry of Manpower. It is necessary to continue to this effort to expand and enrich the vocational training in such fields as metal processing and electronics, which are highly demanded by the supporting industries.

At present, vocational training centers have introduced a dual training system which includes practice at companies in addition to training at centers. This should be expanded because this is effective from the viewpoint of practical vocational training.

iii. Expansion of employee training within the industries

Vocational training institutions operated by big enterprises possess abundant training know-how in the area of practical skills. It is useful to make these institutions open to the public and contribute to the improvement of employees' skills of the supporting industries. To provide engineers of the supporting industries with training courses for wide knowledge on technologies, even though that may be shallow, is effective to raise the technological level of the supporting industries. Therefore, such supports as tax incentives and/or subsidies should be given to the establishment of training institutions by private companies.

The promotion of vocational training by industrial organizations is also effective for skill development in the supporting industries. The implementation of skill training courses, and furthermore, the establishment of training schools should be promoted by trade associations. When they establish a training school, such support as the provision of training know-how and subsidies to employees to be sent for training should be introduced.

In the foundry industry, employees of small enterprises are trained by large enterprises with the mediation of the trade association and UPT. This is one attempt in line with large-scale enterprises' activities to support small enterprise. This type of training

should be expanded to other industries.

iv. **Training of engineers and technicians**

The following should be promoted to develop engineers and technicians with engineering knowledge:

- Expansion and enrichment of engineer education at universities
- Establishment of vocational training institute at the same level with polytechnics
- Introduction of education and training programs for technician level personnel working at companies

### **Management Skills**

#### **Measure 7: Improvement of Managerial Skills**

##### **7.1 Problems Regarding Management Skills**

It is pointed out that many small and medium scale companies engaging in secondary and tertiary subcontracting do not have modern management systems. The reasons for this are that most of them are family businesses and top management are not properly educated modern management skills.

Local small and medium scale companies should acquire a modern management system when they grow in order to be strong parts and components manufacturers which can support assemblers. In the near future, their competition with foreign affiliated companies will be more severe because foreign investments in parts and components manufacture will increase. Local small and medium scale companies should rationalize their management with modern management skills to compete with foreign affiliated companies.

In line with the above, it is also important for the modernization of the industrial structure of supporting industries to create actively small and medium scale companies with entrepreneurship. Activities of entrepreneur-type small and medium scale companies, including spin-offs from big businesses, will stimulate the industry.

##### **7.2 Recommendations**

- i. **Expansion of education and training of managers**



- To review existing training on managerial skill and expand it according to the needs of companies. It is necessary to include managerial skill training which is practical to solve problems of small and medium scale enterprises besides managerial skill training for large scale companies.
- To expand counseling activities by the departments related to the supporting industries and local offices within MOIT on management, including business planning, marketing, human resource management, and financing.
- To open forums and meetings of managers of small and medium scale companies to study and exchange information on management modernization.

ii. **Management modernization through management diagnosis and consulting**

Continuous support by management advisors with consulting capabilities is effective in the management modernization of small and medium scale companies. They should conduct management diagnosis, and based on the results, continuously give top management advice on appropriate business planning and improvements in management.

It is necessary for departments related to the supporting industries to develop effective management guidance techniques and train necessary personnel engaging in management guidance.

iii. **Support for entrepreneurs**

It is necessary to establish a package of assistance provided to newly established businesses which consists of support by assemblers in the form of guidance and order, technological support by public institutions, and financial support. One way to support them is to select capable potential entrepreneurs and give them assistance during a limited period.

Preparing industrial apartment buildings for small and medium companies with low tenant fees should also be examined.

**Industrial Infrastructure**

## **Measure 8: Development of Industrial Infrastructure for the Supporting Industries**

### **8.1 Problems Regarding Industrial Infrastructure**

The major problems from the viewpoint of foreign investments in the supporting industries are the preparation of industrial estates and preparation of good living conditions for foreigners. From the viewpoint of developing local parts and components manufacturers, major prerequisites are the preparation of industrial estates for SMIs and further development of infrastructure in local areas.

Although the machinery industry is located in several areas in Java, for example, in Bandung and Surabaya, besides the JABOTABEK area, the automotive assembling and export-oriented electronics industries are concentrated in the JABOTABEK area. Many parts and components manufacturers, especially primary subcontractors, locate in the JABOTABEK area because they want to locate near their customers.

As for the Jakarta area, where the demand for industrial estates has been expanding due to increased investments, new investors can not be received within the area. New industrial estates are being prepared in the surrounding areas, upon the satellite city plan, to absorb new investors. Keeping pace with the increase in foreign investments, the development of industrial estates has been rapidly promoted. The industrial estate development is mostly undertaken by the private sector. There are cases where large-scale assemblers secure space in industrial estates near its plants, and then invite parts and components manufacturers there.

Treatment of waste water from factories is one problem in the area of industrial infrastructure. Only a few industrial estates have prepared water treatment facilities. In many cases, companies locating in industrial estates which may create water pollution are obliged to treat waste water by themselves. However, there are still cases where the water is not properly treated because a water treatment facility is expensive for a company to afford.

### **8.2 Recommendations**

- i. Promotion for the locating of supporting industries in specific industrial areas

It is important to introduce industrial area allocation policies in accordance with the development of strategic industries. Therefore, the development of industrial areas should be promoted in order to accumulate essential technologies identified as priority during this Study into these areas.

The accumulation of small and medium scale companies in metal processing will be further promoted in the JABOTABEK area and its surrounding areas. It is necessary to establish a production division system and a network of mutual purchase and supply by setting up small and medium scale parts and components manufacturers in specific areas.

As for metal processing, such industrial areas as Ceper, Tegal, and Sukabumi, should be upgraded. Through the development of core companies, the overall level of these industrial areas will be increased. With this in mind, a support system including technological guidance should be prepared to support these areas as well as the upgrading of infrastructure such as electricity and roads.

The excess concentration of industries in the JABOTABEK area works against the diffusion of industries among regions, in addition to causing problems concerning manpower, roads and living conditions. It is necessary to tackle the problem of how to establish a vertical industrial structure from assemblers to parts and components manufacturers from a long-term perspective.

## ii. Preparation of industrial estates for small and medium scale companies

It is difficult for local small and medium scale companies to move to industrial estates, even if their factories become old or too small for their operation, due to high tenant fees. It is necessary to prepare industrial estates for small and medium scale industries which they can afford to enter. This can promote the accumulation of industries in specific areas.

These industrial estates for SMIs will have the function of supporting small and medium companies, for example, through the accommodation of such common facilities as water treatment facilities, machining facilities, and inspection facilities and the dispatch of technical advisors.

The establishment of industrial estates for SMIs was attempted through the setting-up of LIKs and UPTs. However, in this case, proposed industrial estates can be practical with the following measures:

- Target companies will be capable companies including medium scale companies.
- Technological advisory services will deal with technologies applicable to companies.
- Common facilities will satisfy the needs of companies.

## **Measure 9: Rationalization of Tax and Tariff Systems and Realization of Quick Customs Clearance**

### **9.1 Problems of Tax and Tariff Systems**

#### **(1) Problems Regarding Tax Systems**

Problems related to luxury taxes are one of the problems commonly pointed out with regard to taxes in Indonesia.

In Indonesia, a 10% of luxury tax is imposed on refrigerators and TVs, and 20% on stereos, VTRs, and tape recorders.

These high luxury taxes restrain the growth of the domestic market for electric home appliances. Therefore, the home electric appliances industry can not enjoy economies of scale. This is a problem for the cost competitiveness of the industry, and makes investment promotion and development of the parts and components industries difficult as well.

The luxury tax has become a controversial issue in relation to the National Car Project.

Passenger vehicles with engines of 1,600cc or less and more than 60% made in Indonesia and commercial vehicles more than 60% made in Indonesia have been exempted from the luxury tax since June, 1996. However, a 20% luxury tax is levied on commercial vehicles with a local content of 60% or less, 35% on passenger vehicles with engines of over 1,600cc or with local content of 60% or less, and jeeps with a local content of 60% or less. On the other hand, the models of the National Car Project are exempted from the luxury tax with the grace period of achieving the required local content.

This luxury tax exemption was introduced to encourage automobile assemblers' efforts to raise their local content ratios. In fact, automobile assemblers are making efforts to increase local contents in order to secure price competitiveness.

The local content ratio of the most localized model is, at present, around 45%. Under these circumstances, the preference to the National Car Project for luxury tax may hinder the business of other automobile assemblers. Also, there is the possibility that this discourages their promotion of localization and their undertaking of developing local parts and components manufacturers.

## **(2) Problems Regarding Import Duties**

Since April, 1985, the Indonesian government has been introducing deregulation measures, particularly through the reduction in import duties and the abolishment of import surcharges, in order to strengthen the export competitiveness of the non-petroleum sector. Import tariff reduction and import liberalization for related capital goods, parts, and raw materials have been implemented with the focus on target industries, e.g., electronics parts, computer parts, machine tools, textiles, steel, electric equipment, materials for automobiles, automotive parts, used machinery, used tools, used equipment, and so on. In May, 1995, the import duties on 6,000 items were reduced to prepare for the transition to AFTA, followed by the import duty reduction on 428 items of industrial machinery and raw materials by 5 - 20%, with the purpose of upgrading the competitiveness of industrial and agricultural processed products, in January, 1996.

Customs clearance services in Indonesia have been consigned to SGS/PT. Surveyor Indonesia. Discrepancies have often occurred between SGS/PT. Surveyor Indonesia and the customs office in opinions regarding classifications and evaluation of imported goods on which import duties are imposed. There were cases that an importer received an additional claim for import duty and that a re-examination of import documents was conducted 2 - 3 years later since importation. This has been a big burden for importers. However, by the Decree of the Minister of Finance on May 28, 1996, the government declared the termination of the consignment contract with PT. Surveyor Indonesia on April 1, 1997. The consignment customs clearance will be shifted to customs clearance by the government itself.

## **9.2 Recommendations**

### **(1) Review of Domestic Tax Systems**

Luxury taxes shall be reexamined from the viewpoints of effects on industrial development, fairness, and effects on consumers.

The expansion of domestic market, especially, is an important factor for increasing the attractiveness of investments in Indonesia. While Indonesia's income level is relatively low compared with other ASEAN countries, its population is a big factor attracting investors. In addition, the expansion of the domestic market plays an important role in the supporting industries realizing the scale of economies and, as a result, cost competitiveness. Therefore, it is necessary to review domestic tax systems.

- i. To reduce luxury taxes on electric home appliances, except for high-grade products.

There are many electric home appliances which can not be considered luxury goods if the rise in income level and the increase in diffusion ratios are considered. The reduction in tax revenues due to the reduction of luxury taxes will be, to some extent, compensated by the rise in tax revenues from increased corporate profits as a result of sales expansion on account of the demand increase.

- ii. To revise luxury taxes on automobile sales

The reduction of luxury tax on automobile sales should be examined from the viewpoint of domestic market expansion. In addition, the difference of tax rates among models should be reviewed. Discrimination between national cars and non-national cars in the exemption of luxury taxes should be also reviewed.

## (2) Improvement in Import Duty System

Even though the Indonesian government has been drastically reducing import tariffs, there are still some tariff-related problems to be solved. The tariff system should be modified from the following viewpoints:

- i. To unify import-related taxes.

Although import surcharges are being unified with import duties, there are still 112 items subject to import surcharges. The unification of import surcharges with import duties should be further promoted. It is also necessary to clarify on what basis, to what items and how much it is imposed at the time of unification.

- ii. To shift from consignment customs clearance to customs clearance by the government itself.

It is important to complete the shift smoothly and to establish an effective customs clearance system, by rationalizing the system in terms of organization and personnel and by abolishing overlapping work.

- iii. To simplify and speed up customs clearance procedures by introducing an electric data processing system.

The Customs Office is undertaking the computerization of custom clearance procedures. This is expected to enable rapid customs clearance and make it easier to obtain information on import duties. This plan should be promoted as scheduled.

- iv. To integrate the taxation section and the refund section and to simplify and quicken tariff refund procedures.

Import duties levied on raw materials and parts which are used in exported products can be refunded after finished products are exported. The procedure for this refund takes a long time, one year at the longest case, from the application. The merit of this drawback system is lessened if high interest rates are considered. It is necessary to quicken refund procedures by integrating the taxation section and the refund section.

- v. To secure an accord between industrial policy and the tariff system

As for the electrical and electronic industry, import duties on manufacturing materials and intermediates are 5 - 30%, whereas those on parts are 0 - 5%. The industry points out that this has been a big obstacle for the development of domestic parts and components industries. Adequate consideration should be paid to the accordance between the industrial policy and tariff system.

## **Marketing**

### **Measure 10: Support for Domestic Marketing**

#### **10.1 Problems Regarding Domestic Marketing**

One of the bottlenecks of local parts and components manufacturers in expanding their businesses is insufficient marketing capability and lack of new customer development activities. Many small and medium scale companies have a passive attitude toward new customer development so that they make a prototype and cost estimate only upon an inquiry from a potential customer. The major marketing activities are participation in trade fairs held by trade associations and joint receipt of orders through associations.

The other problem is that assemblers tend to enclose good subcontractors under their umbrella

because the number of good parts and components manufacturers is insufficient in Indonesia. In the automotive industry, production volume per model is small, and therefore, the order per part or component is also small. It is necessary to secure sufficient orders to maintain the continuing growth of parts and components manufacturers. Supports for subcontractors in finding new customers, by providing necessary information and mediating businesses, is necessary.

At present, the following supports are provided to support small and medium scale parts and components manufactures in finding new domestic customers:

- Information network services by BAPIK in MOIT  
This is a system which supplies a database on parts and components manufacturers and information on assemblers' wants for parts and components purchase, and mediates business between parts and components manufacturers and assemblers. However, this system is still at the stage of a pilot project, and it has obtained no results.
- New subcontractor development activities by assemblers
- Kemitraan promotion by the Jimbaran Bali group

To activate marketing activities by parts and components manufacturers and to expand match-making activities by public organizations are necessary in order for the domestic market to develop.

## 10.2 Recommendations

### i. Support to parts and components manufacturers in finding orders from new customers

The following activities should be provided:

- To support the preparation of a company's brochure and pamphlets
- To support the preparation of cost estimates
- To make standard models of contracts
- To open trade fairs
- To provide information on buyers' wants for parts and components purchase

### ii. Preparation of a database on parts and components manufacturers

As for the database on small and medium scale parts and components manufacturers, the existing WARUSI should be continuously promoted. At the same time, a database specializing in the supporting industries covering large-scale parts and components suppliers,



with more detailed information, should be developed for the business development of supporting industries.

The database will be developed by inputting with a unified form data of parts and components manufacturers collected by local offices of MOIT, local chambers of commerce and industry, and trade associations. The database will be equipped within MOIT and made open to the public, especially to buyers.

The promotion of the database will also be made so as to encourage access from overseas

iii. Expansion of activities of mediating between suppliers and buyers of parts and components

Besides the provision of information based on the database mentioned above, business negotiations at occasions such as trade fairs will be supported by public organizations.

**Measure 11: Support for Export Marketing**

**11.1 Problems Regarding Export Marketing**

Indonesia's exports of automotive parts and components can be classified into the following types:

Table 9-2-6 Types of Automotive Parts and Components Exports

Type of Export	Exporter	Major Direction of Export	Key Factor for Export
Mutual complementation of parts and components by automobile manufacturers within south-east Asian region	JV of foreign automobile manufacturers	South-east Asia	International procurement policy of automobile manufacturers
Division of production within south-east Asian region and mutual supply by automotive parts and components manufacturers	Foreign automotive parts and components manufacturers and its JV	South-east Asia	Promotion of investments by foreign automotive parts and components manufacturers
Exports of parts and components the production of which has lost cost competitiveness in the advanced countries to these countries	JV of foreign automobile manufacturers Foreign automotive parts and components manufacturers and its JV	Japan, Korea, USA	Promotion of investments by foreign automotive parts and components manufacturers
Exports of OEM parts and components	JV of foreign automobile manufacturers Foreign automotive parts and components manufacturers and its JV	Japan, South-east Asia, Europe, USA	Price, quality, technology including R&D
Exports of REM parts and components to after-sale markets	JV of foreign automobile manufacturers Foreign automotive parts and components manufacturers and its JV	Japan, South-east Asia, Europe, USA	Price, marketing activities, brand

As for any type mentioned above, necessary conditions for exports are that products possess cost competitiveness and satisfy a certain level of quality requirements. The problems concerning the export expansion of automotive parts and components are as follows:

i. Investment promotion of foreign automotive parts and components manufacturers

For the further localization of parts and components, the promotion of investment by foreign parts and components manufacturers, including joint ventures, is essential because the technological level of local parts and components manufacturers is, in general, insufficient for the manufacture of OEM parts. It is also expected that foreign affiliates which come to Indonesia will contribute to the export of parts and components because foreign parts and components manufacturers are proceeding with the international division of

production.

ii. Expansion of the size of domestic market

A large domestic market enables the export competitiveness in cost terms due to expected economies of scale. The size of the domestic market is one of the major factors deciding on the allocation of production bases when foreign automotive parts and components manufacturers examine mutual complementation within the Asian region. A larger size of the domestic market is an advantage in promoting investments by automotive parts and components manufacturers.

iii. Improvement of technological level

To improve technological levels through technological collaboration is effective for a local automotive parts and components manufacturer to acquire a technological level which can enable the production of exportable parts and components. The overall improvement of quality level should be achieved to realize the growth of the automotive parts and components industry as an export industry. The diffusion of ISO 9000 series should be promoted from this point of view.

iv. Strengthening of marketing capabilities

As for exports to overseas OEM and after-sale markets by local manufacturers, the strengthening of their marketing capabilities is essential. In addition, there are cases that conditions stated in the contracts for technological collaborations may hamper exports to a third country. To avoid these cases, how to set up a collaboration in marketing with a licensor is an important consideration.

v. Maintaining exchange rate stability

Cost competitiveness is an important factor for exports of automotive parts and components. Fluctuation of the foreign exchange rate makes it difficult for exporting companies to forecast their profitability.

vi. Supply of excellent manpower

Low cost labor force is a higher attractive factor for foreign companies investing in Indonesia. At the same time, excellent manpower is also necessary to manufacture products

with high export competitiveness.

As for electrical and electronic parts and components, general purpose electronic parts have the most export potential. These parts are exported by export-oriented foreign affiliates and they are directed mostly to the south-east Asian countries, Japan, Taiwan, China, etc., if exports to companies locating in EPZs and EPTs are excluded. The most important task for the export promotion of electrical and electronic parts and components is to promote investments by export-oriented foreign manufacturers.

## **11.2 Recommendations**

For the expansion of Indonesia's parts and components exports, activities integrating various approaches should be undertaken including assistance to raise the technological level, and as a result, raise the product competitiveness of the supporting industries, promotion of investments by export-oriented foreign companies, and support for export marketing activities. The supportive measures which are recommended hereafter are supports to export marketing activities by domestic parts and components manufacturers.

### **i. Expansion of public organizations' support for overseas marketing activities**

- To strengthen the linkage between public organizations such as NAFED, and trade associations in export promotion activities.  
Public organizations and trade associations should cooperate in such activities as participation in overseas trade fairs, dispatch of trade missions, and sales promotion to overseas potential buyers.
- To set up MOIT's offices in the ASEAN region to carry out export support activities.  
They will collect information on parts and components which local assemblers want to buy, make sales promotion of Indonesian products, and provide support for marketing activities of Indonesian companies.

### **ii. Provision of information services on overseas markets by public organizations**

- MOIT and trade associations should make comparative surveys concerning the export competitiveness of Indonesian products and identify products with export potential. Export promotion activities by individual companies and by trade associations will make use of the results of these surveys.
- To provide information on products which foreign buyers want to buy.

iii. Support for export-oriented parts and components manufacturers

- To expand facilities to companies locating in EPZs and EPTEs.
- To make quick export customs clearance procedures.
- To promote the acquisition of ISO 9000 series.

## **Investment Promotion**

### **Measures 12: Expansion of Investment Promotion Activities**

#### **12.1 Present Problems Regarding Investment Promotion Activities**

A greater number of primary and secondary subcontractors with more capabilities in technologies and production capability are necessary to realize a higher level of competitiveness and value added of Indonesian automotive, electrical and electronic, and machinery industries. From this aspect, it is necessary to expand investment promotion activities. For the Indonesian electrical and electronic industry to establish a position as an exporting industry, more investments by foreign export-oriented parts and components manufacturers are required.

With a set of deregulation policies introduced by the government, foreign investments into the manufacturing sector in Indonesia have been rapidly increasing in the 1990s. Foreign investments into the automotive, and electrical and electronic parts and components have been steadily increasing.

However, if the present size and capabilities of the supporting industries for automotive, electrical and electronic, and machinery industries, it is clear that further investment promotion into these areas is an urgent task.

#### **12.2 Recommendations**

i. Establishment of clear foreign investment policies

It is necessary to state clearly the time schedule of deregulation maintaining the existing deregulation policy. Business environments favorable to investors should be secured by maintaining the openness and fairness of investment and industrial policies.

ii. Implementation of investment promotion activities toward clarified targets

Most of the parts and components manufacturers are small and medium scale. Therefore, it is necessary to carry out investment promotion and provide investment supports which can match the needs of small and medium scale companies.

It is recommended that investment promotion activities be carried out, such as dispatch of investment promotion missions and invitation of potential investors, targeting foreign parts and components manufacturers producing priority products identified in this Study.

Leading foreign manufacturers of automotive, and electrical and electronic parts and components are establishing a system of a regional division of production within Asian region. Therefore, it is necessary to promote the investments into Indonesia by major parts and components manufacturers which have located in the ASEAN region.

Deliberate investment promotion should be carried out toward these companies after listing the target companies.

iii. Expansion of provision of information for investment promotion

It is necessary to set up a system which can provide foreign investors with information on local companies wishing a joint venture or technological collaboration with foreign companies by preparing a database of this information. At the same time, the services of mediating foreign companies and local companies will be expanded.

vi. Provision of assistance to investments by foreign small and medium parts and components manufacturers

For the promotion of investments by small and medium scale parts and components manufacturers, a system facilitating their investments should be prepared such as a one-stop-service center dealing with all the investment procedures and industrial estates which provide common facilities.

## 2.4. IMPLEMENTATION OF THE OVERALL DEVELOPMENT MEASURES

It is necessary to give priority from the aspects of development needs and requirements of the industries when implementing the recommended overall development measures. From this point of view, the following 14 action programs were selected from the recommended overall development measures as those of which implementation is to be started immediately.

### 14 Action Programs Recommended

- |             |   |
|-------------|---|
| Program 1.  | Strengthening of IRDMMI's technical support capabilities for the foundry industry |
| Program 2.  | Establishment of a joint R&D support scheme for small and medium scale industries |
| Program 3.  | Program for expansion of technical guidance in local regions                      |
| Program 4.  | Technical guidance visits to supporting industries by experts                     |
| Program 5.  | Sub-contractor development program  |
| Program 6.  | Reinforcement of industry association activities                                  |
| Program 7.  | Loan scheme for the development of supporting industries                          |
| Program 8.  | Establishment of advanced skill development center                                |
| Program 9.  | Management skill training expansion program                                       |
| Program 10. | Industrial estates development for the supporting industries                      |
| Program 11. | Computerization of customs clearance procedures                                   |
| Program 12. | Establishment of a subcontracting (business tie-up) promotion scheme              |
| Program 13. | Intensification of parts export promotion activities                              |
| Program 14. | Expansion of capital and technical tie-up promotion activities                    |

The relationships between the overall development measures and corresponding action programs are as shown in Table 9-2-7.

Further, the urgency for the implementation of each program was evaluated from the view point of 1) the maturity of the project or the progress of preparation at its implementation agencies and 2) the extent of its impact on the supporting industry development. The results of the evaluation, as well as a rough implementation schedule, are summarized in Table 9-2-8.

Table 9-2-7 Action Programs Responding to Overall Development Measures for the Supporting Industries

Area	Measure	Content	Responding Action Programs
Institutional Policy Framework	1. Preparation of the Institutional Framework for the Development of the Supporting Industries	(1) Establishment of Overall Supportive Measures for the Supporting Industries and Review of the Existing Small Industries Development Policies	-
		(2) Establishment of an Organization for the Development of the Supporting Industries	-
Technical Support/ R&D Capability Improvement	2. Improvement of Technological Level of the Supporting Industries	(1) Promotion of technological transfer from assemblers to their subcontractors	5
		(2) Expansion of technical guidance by public institutions	1, 3
		(3) Promotion of education and training on production management for engineers	8
		(4) Expansion of activities of trade associations	6
		(5) Mediation of technological tie-ups	14
	3. Improvement of Quality Control	(1) Establishment of an institution which engages in the diffusion of quality control technologies	-
		(2) Development of a quality control system suited to SMIs and preparation of an introduction manual for that system	4
		(3) Organizing of personnel in charge of quality control	-
		(4) Provision of information on quality control	-
	4. Improvement of R&D Activities/ New Product Development Capabilities	(1) Promotion of the localization of the function of authorizing new parts and components at assemblers	-
		(2) Expansion of facilities of R&D institutions under MOIT	1
		(3) Promotion of joint R&D activities by the industry, public sector and academic sector	2
		(4) Support for R&D by private companies	2
(5) Education and training for R&D personnel		2, 8	
Financial Support	5. Expansion of Finance to Small and Medium Industries	(1) To widen the eligibility of KUK to medium scale industries.	-
		(2) To introduce a two-step loan for the supporting industries	7
		(3) To establish a public financial institution specializing in finances for small and medium scale companies	-
Human Resource Development	6. Expansion of Human Resource Development System	(1) Establishment of a national-level vocational training system which responds to the needs of industries	-
		(2) Expansion of vocational training centers	-
		(3) Expansion of employee training within the industries	5, 6
		(4) Training of engineers and technicians	8
Managerial Skills	7. Improvement of Managerial Skills	(1) Expansion of education and training of managers	9
		(2) Management modernization through management diagnosis and consulting	4, 9
		(3) Support for entrepreneurs	4, 5, 9
Industrial Infrastructure	8. Development of Industrial Infrastructure for the Supporting Industries	(1) Promotion for the locating of supporting industries in specific industrial areas	3
		(2) Preparation of industrial estates for small and medium scale companies	10
	9. Rationalization of Tax and Tariff Systems and Realization of Quick Customs Clearance	(1) Review of Domestic Tax Systems a. To reduce luxury taxes on electric home appliances, except for high-grade products. b. To revise luxury taxes on automobile sales (2) Improvement in Import Duty System a. To unify import-related taxes. b. To shift from consignment customs clearance to customs clearance by the government itself. c. To simplify and speed up customs clearance procedures by introducing an electric data processing system d. To integrate the taxation section and the refund section and to simplify and quicken tariff refund procedures. e. To secure an accord between industrial policy and the tariff system	11
Marketing	10. Support for Domestic Marketing	(1) Support to parts and components manufacturers in finding orders from new customers	12
		(2) Preparation of a database on parts and components manufacturers	12
		(3) Expansion of activities of mediating between suppliers and buyers of parts and components	12
	11. Support for Export Marketing	(1) Expansion of public organizations' support for overseas marketing activities	13
		(2) Provision of information services on overseas markets by public organizations	13
		(3) Support for export-oriented parts and components manufacturers	-
Investment Promotion	12. Expansion of Investment Promotion Activities	(1) Establishment of clear foreign investment policies	14
		(2) Implementation of investment promotion activities toward clarified targets	14
		(3) Expansion of provision of information for investment promotion	12, 14
		(4) Provision of assistance to investments by foreign small and medium parts and components manufacturers	10, 12, 14



Table 9-2-8 Priority and Implementation Schedule of the Proposed 14 Action Programs

Program Title	Priority of Implementation	Implementation Process	Implementation Schedule				
			1st Year	2nd Year	3rd Year	4th Year	5th Year
P1. Strengthening of IRDMMI's Technical Support Capabilities for the foundry	A	1, Technical training 2, Technical guidance 3, Seminars and training courses					
P2. Establishment of a joint R&D support scheme for SMIs	B	1, Application of DAPATI 2, Establishment of support fund 3, Support implementation					
P3. Program for expansion of technical guidance in local regions	B	1, Planning 2, Training of trainers 3, Implementation of guidance					
P4. Technical guidance visits to supporting industries by experts	B	1, Establishment of ISC 2, A secretariat office establishment 3, Coordination of visit guidance					
P5. Sub-contractor development program	A	1, Preparatory study 2, Pilot program implementation 3, Promotion of the program					
P6. Reinforcement of industry association activities	B	1, Expansion of current activities 2, Governmental support measures 3, Tie-up with overseas organizations					
P7. Loan scheme for the development of supporting industries	A	1, Preparatory study 2, Original loan negotiation 3, Implementation of two-step loans					
P8. Establishment of advanced skill development centers	B	1, Preparatory study 2, Establishment of centers 3, Implementation of training					
P9. Management skill training expansion program	C	1, Curriculum development 2, Implementation of training 3, Provision of consulting services					
P10. Industrial estates development for the supporting industries	A	1, Grand designing 2, New estates development 3, Upgrading of existing estates					
P11. Computerization of customs clearance procedures	A	1, Model program development 2, Program development 3, A national network building					
P12. Establishment of a sub-contracting (Business tie-up) promotion scheme	A	1, Study for designing 2, Data base establishment 3, Matching service activities					
P13. Intensification of parts export promotion activities	C	1, Intensification of joint efforts 2, Expansion of NAFED 3, Export product development					
P14. Expansion of capital and technical tie-up promotion activities	A	1, Promotion of deregulation 2, One-step service activities 3, Investment promotion activities					

A : Implementation urgency is very high. B : Urgency is moderate. C : Urgency is not very high.