becoming one's own property).

(c) Lease floor space in an apartment-type factory (no proprietary rights).

Table V-21 LAND AND FACTORY ACQUISITION PLAN

Land, factory acquisition method	301 employees or more		300 employees or less		Total	
	Companies	Proportion (%)	Companies	Proportion (%)	Companies	Proportion (%)
Purchase land, design factory	56	(43.4)	58	(22.1)	114	(29.1)
Standard design, ready-built factory	18	(14.0)	57	(21.8)	75	(19.2)
Lease floor in apartment-type factory	26	(20.1)	115	(43.9)	141	(36.1)
Other	29	(22.5)	32	(12.2)	61	(15.6)
Total	129	(100.0)	262	(100.0)	391	(100.0)

V.2.5 Overall analysis of the questionnaire survey to Japanese parts industries

This section overall analyzes attitudes of Japanese parts industries, mainly SMEs, in foreign investment. There were some striking differences between the distribution of answers as to the countries where previous investments were made, and the distribution of answers as to candidate countries for future investments.

1) Of the answering companies, 40% said they were thinking of investing abroad. China was far and away the country in which the most interest was expressed (224 companies). However, until now only 28 of the companies have invested there. Thailand was second as an investment candidate; it was mentioned by 80 companies (11.8%).

2) In keeping with past trends, the desire to invest in the ASEAN countries was strong. If the answers that mentioned the ASEAN region without naming a specific country are included, a total of 281 companies (41.4%) gave ASEAN as a future investment candidate.

3) The desire to invest in the Asian NIEs – Taiwan, Korea, Hong Kong – is on a downward trend. Eighty of the companies had previously invested in these countries, but only 35 showed interest in them for future investment. The desire to invest in Singapore, which was classified as an ASEAN country, is similarly declining.

4) As regards the Western countries, the desire to invest in the United States was still strong among the autoparts companies, but the electric/electronic parts companies showed little interest in investing there. Interest in investing in Europe was also low.

5) Vietnam was also interested among the candidates for future investment, 30 companies expressing interest in it. In the future Vietnam will probably receive much attention as a place for foreign investment.

Japanese companies in parts industries mainly consisting of SMEs have the following desires in their foreign investment.

With regard to the desired proportion of stock, 74.5% of the answering companies said they would want to retain more than 50% of the stock and have the right to control business. By contrast, many countries, including Thailand, have a policy that seeks to restrict the share of stock held by foreign capital to less than 50%. Whether these countries relax this policy or not is something that will probably affect their competitive ability to attract foreign investment.

When it comes to establishing a factory abroad, more than 78.9% of the companies said that, for their equipment, they would want to use not all but at least some used machinery. It can be assumed that what they had in mind was transferring the machinery currently being used at their factories in Japan. Of these companies, 21.9% said they would want to bring in all used machinery. A few even said they were thinking of transferring their entire factories, as is, overseas. From this it can be inferred that some companies, due to the pressures from the strong yen, have already concluded that they have no choice but to discontinue production in Japan.

In the answers about land and factory acquisition plans, the No. 1 answer among all the companies, given by 36.1%, was that they would want to rent floor space in an apartment-type factory. This is probably because of a desire to reduce start-up costs as much as possible and avoid risk.

With regard to problems during the preparatory stage of a foreign investment, it is obvious that the companies mentioning either a shortage of personnel (43.0%), a

shortage of capital (32.6%), or the inability to pre-determine the buyers (23.4%), were worried about their company's lack of strength.

Worries related to after the start of operations were mentioned by 38.6% of the companies. The subjects of concern included labor management (50.7%), ignorance about local legal and accounting procedures (29.7%), and the safety of personnel from Japan and the education of their children (18.4%). Main problems during the project design stage included unfamiliarity with how to do feasibility studies (19.1%), unfamiliarity with how to look for a partner (19.1%), and lack of knowledge about how to go about finding someone to cooperate in a local survey (5.3%).

We believe that the government of Thailand can effectively refer to the results of this questionnaire as it considers what it should do, and what it can do, to attract the investments of Japanese parts companies (and presumably the parts companies of other countries as well). The success that Thailand has had until now in attracting foreign investment has mainly been with large, powerful companies. However, in the future its focus will be on attracting the supporting industries or SMEs. Based on the answers to the questionnaire, it can probably be said that, if Thailand maintains the same policy for attracting foreign investment that it has followed in the past, there is a risk that various problems will occur.

VI. Conclusions, Recommendations and a Proposed Master Plan

The previous chapters reported the results of the Study on the present situations; problems and needs of supporting industries in Thailand.

This chapter summarizes these findings, describes the conclusions drawn therefrom, and makes recommendations for fostering supporting industries in the country. Finally, this chapter proposes a Master Plan that shows how to implement the recommendations. Hereinafter, the term of "supporting industries" is often referred to as SIs.

This chapter is composed of the following sections:

1) To offer the direction for promoting components and parts industries for each sector.

2) To delinerate a framework of a master plan presenting basic standpoints for recommendations taking parts industries of both sectors as a whole, namely "supporting industries".

3) To provide conclusions, based upon findings, and propose promotion programs for each of main problems involved in SIs of the country.

4) To formulate a master plan organizing the programs proposed in 3) above showing a time table, priority for implementation, and the expected benefits derived from each program.

Besides, the main report states policy recommendations for other important matters not addressed by the programs in the master plan from the viewpoint of strengthening competitiveness of Thai SIs.

VI.1 Direction of Parts Industry Development

VI.1.1 Autoparts industry

(1) Limits of parts focused promotion method

There is a way for development of the parts industry giving priority to certain parts by name or category. However, it is not necessarily feasible to select parts by name or category for development under uniform standards and from short-term perspective. Also, it may hinder market-oriented and healthy growth of the automotive industry and autoparts industry for the following reasons.

1) Investment requirements and economic size

To meet local content requirements imposed in Thailand, automakers have been localizing production of components which has smaller cost penalty, even in small quantity production. Similarly, parts suppliers have been making investment in the area requiring relatively a small amount of investment. This means, future localization will be less and less effective in terms of cost/benefit ratio. For instance, assuming 100 units of money have been invested so far to achieve the local content of 54% for passenger cars, additional 100 units are likely to be spent if the local content has to be raised to more 10% to 15%. This involves a difficult decision making unless volume production is feasible. It is not so easy for the industries to localize currently imported parts disregarding economy.

2) Difference in procurement strategies between automakers

The automakers operating in Thailand have their own procurement strategy designed to balance global relations, including local companies and foreign production bases, together with procurement under the BBC. Based on the strategy, each company has invested in some countries and has own future plans. Obviously, it is very difficult to select priority parts applicable to all the automakers. For instance, they produce different components in Thailand under the BBC scheme.

3) Relation with development policies of the automotive industry

The automakers are highly sensitive to tariff rate on CBU cars and change in local content regulations. On the other hand, most of parts suppliers complain about the unbalanced import duties; higher on raw materials and parts they use than CKD they produce. This is a highly volatile area for both automakers and autoparts makers. If the import duty system changes, priority parts may change accordingly.

(2) Basic Assumptions for Identification of Priority Parts

While it is difficult and problematic to select a certain group(s) of components uniformly for accelerated investment in the short run, a future direction can be identified from the long-term perspective, such as the year 2000 or a decade later, assuming that the automotive industry in Thailand and economic environment surrounding it are as follows:

1) Production of motor vehicles in Thailand exceeds 1 million units, and more than 50% of which are passenger gars.
2) Import duties on finished cars and auto parts are reduced, while the current imbalance in tariff rates among related items is corrected.
3) The local content regulation is lifted or significantly reduced.

(3) Autoparts Identified for Import Substitution

Currently imported components and parts will be encouraged for future investment by local and foreign companies. Components and parts which have been mostly localized (including in-house production) will require improvement of competitiveness. Note that the localization shall be promoted by fostering of the local parts industry and foreign investment attraction instead of regulations.

1) Iron castings

Toyota and a J/V between Thai and Japanese companies are currently building foundries to produce diesel engine components for pickup trucks, cylinder blocks and heads, cam shafts (sometimes made by forging). Those many supply them to other automakers. Cars (mainly gasoline engines) may be locally produced if production volumes reach an economic size in the

future. Cast iron valve guides can also be locally produced if existing makers receive technical assistance from foreign vendors.

Water pump bodies and impellers are currently produced using imported CKD parts. The recent investment by a Japanese water pump manufacturer will help improve the localization level. As clutches and housings are partially localized, and local foundry makers are expected to gain market share. On the other hand, cast iron transmission cases will continue to be produced by automakers or imported as part of transmission assembly. As for ductile iron brake disks, efforts are required at existing foundry makers for quality improvement and capacity expansion. Ductile iron front hubs and knuckles are closely related to precision machining, and feasibility of local production needs to be studied in the future.

2) Aluminum alloy castings

Aluminum alloy castings are made by a variety of methods including sand mold casting, gravity diecast, pressure diecast, and low pressure die casting. At present, the following components and parts are imported in relatively large quantities. Note that some of them are imported as part of CKD production because of the lack of local suppliers.

> Rocker arms, intake manifolds, oil pump cases (assemblies), water pump bodies, steering wheels, steering gar housings, and transmission cases

As for cylinder blocks, some makers use aluminum alloy products and others iron casting products. An automaker who consumes a large number of aluminum alloy cylinder blocks plans to import them to Thailand from the existing diecast shop in Indonesia. Metal molds for large die castings are mostly supplied by users, i.e., most of them are imported.

3) Forgings

Crank shafts and connecting rods for pickup trucks (mainly diesel engines) are required to be locally produced by 1995 under BOI's local content regulations. Cam shafts may also be produced by means of forging. While

there is no forging maker to supply these products in Thailand, a foreign maker is said to invest in the near future, so that local production will be started in due course. As for the same components for passenger automobiles (mainly gasoline engines), local production will depend upon how far domestic demand grows to reach critical mass. Other forgings such as arms, shafts, hubs, and knuckles are imported as part of CKD components.

Note that some of the above forgings are made by casting or press working, too.

4) Sintered alloys

Bearings used for pistons are produced by foreign-affiliated makers. There is no local manufacturer of sintered alloys for engines, but a foreign company seems to plan investment. Sintered alloy-made components include valve guides, valve seats, and rotors and gears for oil pumps.

5) Press products

Press products, including dies, are at the highest level of local production in the country.

Still imported are engine mounts, body outer plates, and exterior parts. Outer plates (skin parts) for pickup trucks are produced by automakers, and those for passenger automobiles are imported. Exterior parts include radiator grills, garnish ingot, head lamps, wheel covers, most of which are localized for pickup trucks. Those for passenger automobiles have still to be localized due to high quality requirements and an insufficient local market size.

6) Plastic products

Among plastic components, large components requiring precise forming and those requiring difficult forming techniques, such as instrument panels, console boxes, and fenders for passenger automobiles, are imported or partially produced by automakers. Small plastic components are mostly localized, but their quality needs to be further improved.

7) Rubber and glass products

Rubber products are used for hoses and vibroisolation parts, which are entirely localized. Safety glass is also locally produced. Supply capacity is sufficient, but efforts should be made to reduce cost for small-lot production of a large variety of products.

8) Raw materials

Steel plates are all imported and satisfy quality requirements. There are several coil centers to ensure stable supply. A plan to build a steel plant seems to be considered, but no detail has been revealed. As for plastic materials, olefin-based general-purpose resins are locally produced by using natural gas, while engineering plastic materials and various chemicals for additives are imported. Note that a detailed survey on the raw material industry will be conducted during Phase II.

9) Machining and assembly

Machining is needed for many castings, forgings, and round bars and pipes, such as gears, shafts, cylinders, and housings. Mold and die making manufacturing is classified as part of machining operation. In addition, the repairing and maintenance of machinery and equipment which owned by component suppliers is considered as part of machining operation, as they are indirectly related to production of components. Among them, the machining of castings and forgings, including heat treatment, is one of key areas related to promotion of the auto parts industry in the future.

VI.1.2 Electrical/electronic parts industry

(1) Electrical/Electronic Parts Identified for Import Substitution

In identification of priority parts for electrical/electronic industries, the currently imported parts will be chosen in the same manner as that for auto parts.

1) Parts for electrical home appliances

Air-conditioners, refrigerators, washing machines, electric fans, and rice cookers, on so called white products have developed to healthy subsectors that bring significant valued added to the country's trade balance. Production techniques required for these products, including press work, plastic molding, diecast, and painting, have established their position in the industry. Technically, localization has virtually completed for these subsectors. The future challenges are quality improvement and capacity expansion to boost supply to the export-oriented set makers operating in the country. Components and parts under this category are as follows:

Air-conditioners:	compressors, evaporators, and fan motors
Refrigerators:	evaporators and fan motors
Washing machines:	Nothing in particular
Microwave ovens:	Magnetron, fan motors, sealed doors, glass trays, frame and body assemblies
Electric fans:	Nothing in particular
Rice cookers:	Nothing in particular

(Note) Localization of components and parts for microwave ovens should wait until production grows to critical mass.

2) Parts for electronic home appliances (audio and visual equipment)

Components and parts for color TVs and VCRs should be directed to overall localization by establishing technical feasibility. The process should start from localization of components and parts meeting domestic specifications. In particular, production technology related to components and parts for color TVs is most advanced and covers a wide range of areas among consumer electrical and electronic equipment. Localization will diffuse and upgrade diverse technologies from mechanical, mechatronics, electronics, chemical, photographing and printing, and coating.

Color TVs:	CRTs, chassis, electronic parts
VTRs:	Magnetic heads, electronic parts

Production of audio equipment, such as radio receivers, tape recorders, and stereos, is remarkably small compared to Malaysia and Singapore. Thus, it is important to foster parts makers for these equipment. In particular, functional parts will mainly consist of electronic parts).

3) Parts for equipment of communications and office automation

In Thailand, consumption for electrical and electronic home appliances is being satisfied, and the center of gravity in consumer consumption will shift to equipment of communications and office automation. There are 7 telephone set makers, 1 facsimile machine maker, 1 printer maker, and 1 copier maker. In the future, manufacturers of wordprocessors and personal computers should be attracted to fill the expected gap, and parts makers should also be attracted or fostered. Since these products required high levels of production technology, the fostering of components and parts suppliers should be promoted with high priority in medium and long term views.

Major components and parts are as follows:

Telephones:	connectors and other electronic parts
Facsimile machines:	Thermal heads, cutters, nickel batteries, and electronic parts

(2) Direction of Electrical/Electronic Parts Industry Development

In promoting the supporting industries by selecting particular components and parts, the most popular approach is to give incentives for accelerated local production. In light of the fact that these parts are usually selected for import substitution purposes, and they are so selected because they are not currently produced locally due to a high level of production technology not available in the country. The approach inevitably requires foreign technology and/or investment. In fact, the part-focused promotion of the supporting industry intrinsically leads to a policy direction that encourages foreign investment.

(Note) Most of ASEAN countries including Thailand took the policy-mix for their parts localization by a combination of tariff protection, tax incentives, approval for monopolized production, and mandatory

regulations. Those methods or protectionism, except the tax incentives, resulted in the low competitiveness of local parts in international markets.

Another approach is to strengthen the foundation of the supporting industry by disseminating fundamental technology to local enterprises. Again, foreign technology plays a critical role, but the approach is considered to be somewhat "level-up" as it emphasizes the fostering of local small and medium scale enterprises.

Localization of components and parts of electrical home appliances for the domestic market has been mostly completed in Thailand. The parts industry in this subsector shall expand their market to the export-oriented assemblers located in the country. In addition, efforts should be directed to localization of functional parts in the field of electronics, particularly audio/visual equipment and office equipment.

Generally speaking, the electronic industry develops in the form of an expanded backward linkage from the highest value added sector to lower ones. The evolution process can be depicted conceptually in Figure VI-1.

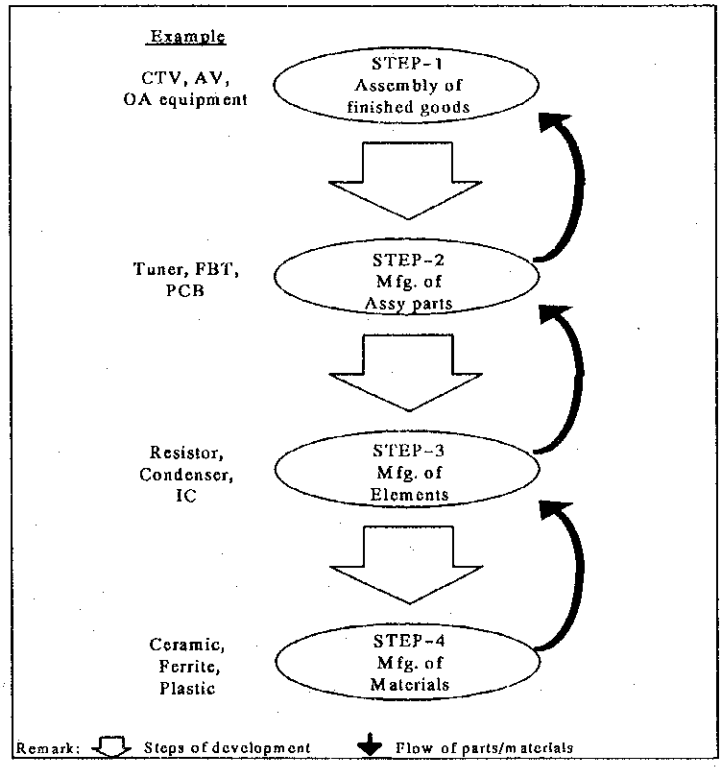

Figure VI-1 STEP OF ELECTRONIC PARTS INDUSTRY DEVELOPMENT

In the context of the conceptual diagram above, the Thai industry has mostly localized the "assembly of finished goods," of electronic equipment or Step 1. Now, Step 2 or localization of "manufacturing of assembly parts" is to be promoted as the short-term target. Then, the medium-term target will be production of elements to complete Step 3. At present in the country, foreign-capital manufacturers produce elements, most of which are directly exported. The production of elements calls for massive and repetitive investment due to a rapid pace of technology innovation. In the long-term, the nurturing of the materials industry to support elements production will constitute the final step, or Step 4.

For localization of the manufacturing of assembly parts, which is a short-term target, it is describe to disseminate to supporting industries basic technologies which are applicable to the next step development and other subsectors of industries. Those are called "common processing technology" in this section.

The common processing technologies includes presswork, plastic processing, machining, grinding, and mould- and die-making. Although the processing technologies are used for electrical home appliances, electronics often demand a higher level of precision when compared to those for electrical home appliances. To illustrate the common use of the technologies covering a wide range of products, relationships between major parts and the common processing technologies are plotted in Table VI-1. The table indicates that production of an individual component involves a wide range of common processing technologies. It also suggests that one technology can be applied to various components production as a common technology.

Localization of the common processing technologies for the cabinet parts, items 13 to 16 of the table with a low level of precision, has been almost completed in Thailand. The common processing technologies for the assembly parts of items 4 to 12 with a higher level of precision shall be localized as a present target being followed by localization of those for the elemental parts of items 1 to 3 with a highest level of precision as the next step.

Table 11.1-1 TECHNOLOGIES USED FOR ELECTRONIC PARTS MANUFACTURING

Parts Item		Element Parts			Assembly Parts									Cabinet Parts			
No		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
No	Parts Name / Common Technology	Registers	Capacitors	Inductances	Transformers	Remote Controllers	PCBs	Tuners	Speakers	CRTs	Magnetic Heads	Motors	Switches	Panels	Metal Parts	Cabinets	Frames
1	Press			○	○	○	○	○	○	○	○	○	○		○		○
2	Injection	○	○	○	○	○	○	○	○	○	○	○	○	○		○	
3	Lathe Cutting	○			○	○		○	○	○	○	○					
4	Gilding		○			○	○	○	○	○	○		○	○	○	○	○
5	Polishing	○	○							○	○	○	○				
6	Painting	○			○	○	○			○				○		○	○
7	Printing	○	○			○	○			○	○			○		○	
8	Adhesive		○		○	○	○	○	○	○		○		○		○	
9	Die Mold			○	○	○	○	○	○	○	○	○	○	○	○	○	○
10	SMT 1/			○	○	○	○	○	○	○	○	○	○				

(Note) 1/ Surface mounting technology (SMT) is increasingly used to fix semiconductors and other surface mouting devices (SMDs) on printed circuit boards (PCBs). Mounting can be done manually, but surface mouning machines are required for highly integrated devices.

VI.1.3 Summary of direction of supporting industries development for both sectors

(1) Autoparts industry in Thailand has been limited to the domestic market. However, there are topics that a Japanese automaker(s) may invest to Thailand for assembly of pick-up trucks for export. All in all, the autoparts industry has growth potential enjoying the expansion of markets.

(2) Electrical/electronic parts industry of Thailand is bi-polized; one for assemblers to the domestic market and the other for direct export as parts. There is few parts makers who supply parts to the export-oriented assemblers who are currently importing parts. This area is the target market for supporting industries.

(3) Automotive industry has only one finished product, that is a car. Contrary, electrical/electronic industry has variety of finished products in categories of electrical home appliances, audio/visual equipment, communications equipment and office machinery: In addition each category has various types

of products. Therefore, delineration of development is needed for the electrical/electronic parts industry, especially for parts suppliers owned by Thai capital. This report has concluded that dissemination of precision processing technologies shall be an urgent matter.

(4) Generally, there are two measures for promotion of parts industry or supporting industries. One is the investment attraction from overseas and within the country; the other is fostering of local parts suppliers. Taking into account these two measures, concrete promotion measures will be proposed in the subsequent sections.

VI.2 Objectives and a Framework of Policy Recommendations

VI.2.1 Objectives and rationale of supporting industries promotion

The Study defines the main two objectives of the fostering SIs (which refer to autoparts and electrical/electronic parts industries) in Thailand as follows:

(1) To improve the trade balance by import substitution through promoting the domestic production of parts.
(2) To build up a strong and balanced structure of industries of the country by fostering the supporting industries.

The first objective for promoting the substitution of imports by the domestic production of parts is derived from the reason why the automotive and electrical/electronic industries have accounted for a greater part of the total imports of the country.

The second objective for strengthening the industrial structure is derived from the reason why the Thai parts industry has few secondary and more downstream subcontractors (mainly small- and medium-scale enterprises: SMEs). The Study revealed that the number of primary subcontractors was 148 in the automotive industry and 175 in the electrical/electronic industry. The lineup of primary subcontractors is now being gradually formed.

In case of secondary and more downstream subcontractors who supply OEM parts to their upstreams, the analysis estimated that the number of secondary or lower subcontractors were limited to 124 in the automotive industry and 126 in the

electrical & electronic industry. The total number of OEM parts suppliers in the both industries is estimated 573 enterprises. Considering industrial structures in developed countries, the two industries in Thailand would for the present require 1,000 to 2,000 secondary and more downstream subcontractors. The development of the SIs which contribute to the automotive and electrical/electronic industries also may rise up the value-added of Thai products and consequently decrease imports.

VI.2.2 Elements necessary for supporting industries promotion

It is generally said that 6 elements, "technology", "market", "finance", "management", "policy", and "investment" are necessary to foster SIs. In the Study, the 6 elements will be examined under the following major subjects which were identified through the local surveys.

(1) Policy and regislation
(2) Market development
(3) Technology upgrading
(4) Financial supports
(5) Upgrading of management
(6) Investment promotion

VI.2.3 Government's and private sector's roles in supporting industries promotion

Figure VI-2 shows the relationships between 6 government-supported elements and private sector's activities. The government must play a leading role in supporting the private sector's economic activities based upon the principle of market economy and building up a favorable environment for these activities, especially in terms of policies, legislation, tax system, finance, education and training, public supporting facilities and infrastructures. As another important role, the Government must exercise its full leadership in deciding the clear guidelines of sound industrialization for the future of the country and granting a great amount of the state budget appropriations to priority sectors.

In addition, private organizations must play important roles for promotion of supporting industries coordinating the manufacturing sector of supporting industries with the government. The first group of the private organizations is of

FTI, trade associations and industrial clubs which have memberships of supporting industries. The main roles of the first group are to collect various requests and needs raised by supporting industries and reflect them on the government's policy and assistance programs. The second group consists of NGOs who support the manufacturing sector especially in the fields of education, training and technical assistance. The last group is of private financing companies and corporations who support them through credits guarantees and other financing tools. The government has to support those private organizations too in addition to the direct support to the manufacturing sector of supporting industries. Thus, the government can indirectly but efficiently support the manufacturing sector in addition to the direct supported to them. The cooperation between the government and the private sector is surely very important. It may result in a loss of economic vitality of the private sector if the government will control the market economy. The economy and the people of the country should enjoy the fruits which the government produces by attaining the above-mentioned objectives.

VI.2.4 Basic standpoints in forming conclusions, recommendations, and the master plan

To make conclusions, recommendations and a master plan, the Study Team took the following basic standpoints:

(1) To place emphasis on the development of local SMEs among SIs, regarding their weakness in management, technology, marketing, financing and so on.
(2) To propose a comprehensive master plan with a broad outlook on supporting industries instead that for specific fields of the industries.
(3) To make the best use of the private sector's vitality, keeping in mind the small government-oriented policy of the Thai government.
(4) To give the first priority to the "feasibility" in making recommendations and a master plan
(5) To minimize the government's execution of compelling and intervention in the market economy, following the economy liberalization policy of the Thai government.

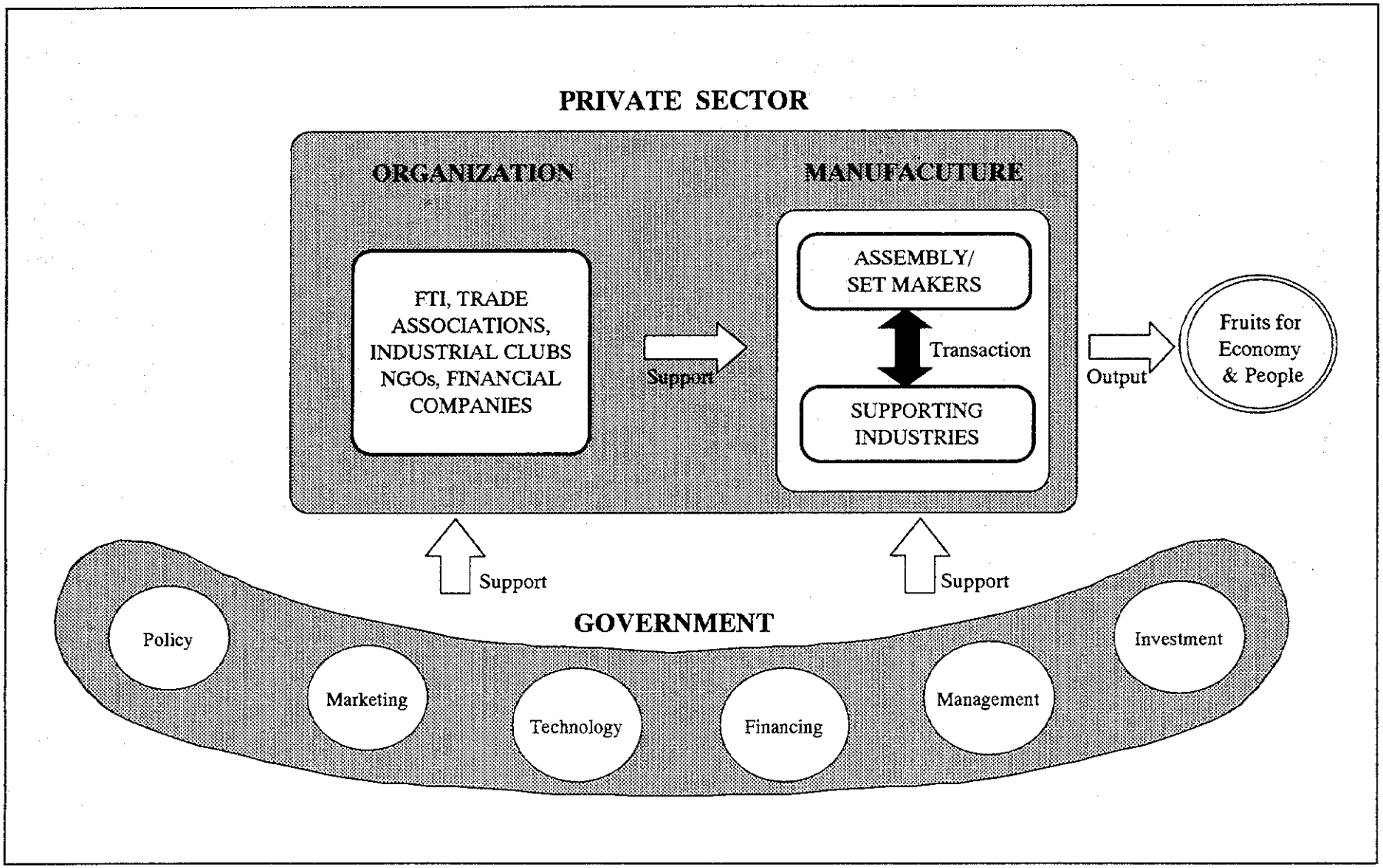

Figure VI–2 ROLES OF GOVERNMENT AND PRIVATE SECTOR FOR PROMOTION OF SUPPORTING INDUSTRIES

VI.3 Master Plan for the Development of Supporting Industries in Thailand

VI.3.1 Elements of master plan

To foster Thai supporting industries, it is necessary to draw up a variety of programs. A program for attaining a certain objective involves several elements. A package of financial and technical supports is necessary, for example, to promote subcontracting business. Therefore, the relationships between programs are indicated in Table VI-3.

(1) Basic Law of SMEs Development

The MOI has worked out the general policy of the overall industry, but no specific policy for SIs or SMEs, so far. Besides, there is not yet any nationally uniform definition of SMEs. The main reason is that the National Economic and Social Development Plan itself focuses on economic priorities, which are little related directly to policies for SMEs and SIs. Apart from the Plan, therefore, it is necessary to enact both the legislation and administrative foundation for fostering SIs mainly consisting of SMEs and subcontracting business. Therefore, it is recommended that a "Basic Law for Small- and Medium-Scale Enterprise Development" and a "Law of Subcontracting Promotion" should be enacted as administrative foundations and standards as well.

This law should be established for the following objectives:

- Clarify the goals of policies for fostering SMEs, and make them aware to the people.
- Protect and foster these enterprises under the law with higher efficiency.
- Build up a foundation for systemizing SMEs development.
- Clarify the necessity of mutual cooperation of agencies and institutions.

(2) Law of Subcontracting Promotion

The objectives of this law are to provide measures for the efficient promotion of modernization of subcontracting small and medium scale enterprises and upgrading and strengthening the institutional organization for subcontracting business promotion. This law must contain the following items:

- Policy goals;
- Promotion measures for modernization of subcontracting SMEs
- Basic policy guidelines (in the areas such as promotion of subcontracting activities, mediations and arbitrations, promotion of exportation, spread of contracting, small-business measures, financial and tax systems)
- Functions of administrative organs and associations of SMEs, Institutional build-up.

The establishment of these laws will permit to make the clear definition of small- and medium-scale enterprises and subcontractors and to set up clear policy guidelines for fostering SMEs and promoting the activities of subcontractors, according to which the organs related may make policies. It is, however, able to include the gist of this law in the basic law of SMEs development, if the primary objective is to promote subcontracting small and medium scale enterprises for the present.

(3) Restructuring of DIP for SMEs and SIs Promotion

The essential point of the reorganization or restructuring is that there will be a clear separation of roles between DIP and OIE: DIP will be in charge of molting SIs and SMEs in general, while OIE will be in charge of promoting industries sector by sector.

The new DIP should be organized by divisions responsible for the following functions:

Research Division:	Collects information, makes investigations and analyzes findings.
Policy-making Division:	Examines, analyzes and draws up acts, policies and a tax system,
Promotion Division:	Makes coordination between industries, give guidances to enterprises, and organizes seminars and training courses.
Subcontracting Enterprise Division:	Promotes the activities of subcontractors and encourages fair transactions.

Finance Division:	Gives guidances to enterprises on financial measures and an institutional financing system.
Regional SMIs Division:	Takes measures for regional SMEs and foster small enterprises.

(4) Preparation of Industrial Statistics

The National Statistical Office, the MOI's Department of Industrial Works and the Bank of Thailand (BOT) have individually prepared their own industrial statistics, which were not based upon the same definitions of statistical items nor mutually complementary. Thus, industrial statistics are not well prepared in Thailand, though they are a basic information indispensable for any government to draw up an industrial development plan. It is a matter of great urgency for Thailand to have a complete system of industrial statistics in order to further its industrial development in the future.

At first, it is imperative to build up a total system of industrial statistics. The subsequent procedure may comprise defining details according to the total system, constructing a computer calculation system, allotting a data collection work to the institutions interested, and collecting statistical data. To build up such a total system, it is probably important to obtain advice from experts in developed countries.

(5) Expansion of BUILD's Activities

In June 1992, the BOI started to implement the BUILD scheme in order to promote subcontracting business and strengthen SMEs and SIs. The BOI has almost completed the first stage of making a database on ordering and ordered parties. It is now at the second stage to promote subcontracting businesses on a full scale.

In many other developing countries, databases have been also prepared to store any information necessary to promote subcontracting business. Also in many cases, however, the staff of several members simply files data in a computer. Such databases have a limited effect on their subcontracting business promotion activities. To make the best use of such a database,

therefore, it is necessary for a sales group to visit many companies interested in subcontracting.

The proposed sales activities should include the following:

1) Organization of information exchange meetings for buyers and suppliers.
2) Individual intermediation
3) Follow-up
4) Organization of exhibitions and intermediation for mutual visits to companies
5) Provisions of incentives and awareness

(6) Subcontracting Assistance Program

To promote subcontracting business, it is necessary to provide not only BOI's intermediary services as described in the previous section, but also a public subcontracting assistance to those companies which want to make subcontracts. It is recommended that the Government should draw up and carry out a full-scale subcontracting assistance program for those pairs of buyer and supplier who want to enter in subcontracts.

The beneficiaries should be those pairs of buyer and suppliers who are approved and registered for the Subcontracting Assistance Program. Those pairs of buyers and suppliers who will enter in or have entered in subcontracts should be qualified for application. It should be also conditioned that beneficiary suppliers must be SMEs with 70% to 80% or more Thai ownership. Beneficiary buyers are not limited to ownership, but pass a qualification screening in company size (with a certain lower limit in size) and other terms.

Firstly, if an existing or potential supplier has less ability to manufacture quality parts, the beneficiaries (the pair of supplier and buyer) should submit their "Supplier Improvement Project" with a cost estimate required for the improvement to the execution agnecy.

Upon the approval of "Supplier Improvement Project", every pair of beneficiaries (buyer and supplier) can receive public incentives as follows:

- Soft loans such as SIFC's should be given to the suppliers by priority for the purchase of fixed assets such as machinery and equipment. Financial institutions should grant loans without screening and credit guarantee must be unconditionally given.
- The expenses of new employment, education or R & D incurred by suppliers should be totally or partly exempted or reimbursed from the corporation income taxes due or paid. This means "double exemption" of income taxes,
- The buyer's expenses of technical assistance (consultant hiring from overseas, etc.) should be also totally or partly exempted from the corporation income taxes due. This is also "double exemption" of income taxes. If consultants are employed from abroad by the buyer, incentives should be granted to the buyer in terms of visa, working permit and foreigner employment limit.

(7) Technology Extension Service Program

The Thai parts industry has weakness in "software (production technology)" areas. Delivery and quality, which buyers show the most dissatisfaction with Thai suppliers, are originated in these weak software. Thus, to raise technology levels of SIs in Thailand, strategic focus should be placed on improvement of production software resources. Compared to hardware, production software needs to be introduced through technology transfer and assistance.

According to the result of the questionnaire survey on domestic suppliers, approximately 50% of respondents cited workshops as the preferred way of technology transfer. On the other hand, only 28% considered seminars useful. The result coincides with the interview survey by the Teams who visited a number of enterprises. Small percentage of owners and managers of SMEs showed interest in seminars teaching general theory. They want to learn and introduce production techniques that can be more applicable to their daily operations. Clearly, enterprises want more practical training and customized technical assistance, instead of general lecture in the form of seminars. Requirements of Thai industries in technology transfer have moved from the age of seminars to that of workshops combined with technical assistance in

their factories. For this reason, an integrated technology extension service program is recommended.

As the first stage, casting, presswork, plastics processing, and mold- and die-making are selected as target subsectors. The program will be participated by enterprises belonging to any of the above four subsectors, particularly SMEs. From each of three subsectors, 10 – 15 enterprises will be selected and organized into one group which is eligible for the program. Three to four consultants specialized in relevant areas (including experts invited from overseas) will form a group to serve as "mentors" for a selected group of enterprises. They will provide series of lectures and workshops to teach basic theory and knowledge, and will visit each member enterprise regularly to give guidance and advice according to particular needs and conditions at each factory. Extension service will constitute the core of the above activities, through which interrelationships between theory and practice will be taught. The program should be financed by multiple sources, including government assistance, corporate sponsorship, foreign aids, and service fees from participating enterprises. If participants can enjoy the services at free of charge, the effective goes down.

(8) Expansion for Trade Skill Standards System

The shortage of engineers and technicians in Thailand has been well known inside and outside the country, together with widespread job hopping which adversely affects sound corporate management and growth. These serious problems cannot be solved in a short term. Job hopping is caused largely by short supply of manpower and is a general practice deeply rooted in the country's culture.

Therefore, enterprises have to provide in-house education and training that will help improve the overall level of technology in the country as a whole by creating a pool of engineers and technicians who will proliferate technology and knowledge. In other words, it is supposed that the present short supply situation of manpower will be balanced after a certain period of time.

Expansion of the Occupational Skill Standards system is recommended. This is a major area where the government can take initiatives and is expected to

serve as an instrument to increase much-needed engineers and skilled workers, while preventing them from moving to other industries or trades.

The following skills are not covered by the current occupational skill standards system, despite their importance in fostering SIs:

- Casting
- Metal presswork
- Plastics Processing
- Mold- and die-making

To grant certification to engineers and technicians in fields of SIs through the national certification system, and guarantee their career and salary according to their professional levels. This will help prevent them from moving to other fields of industries so that technologies will be kept in individuals even not in enterprises, and make a sufficient pool of engineers and technicians.

One of reasons for the above four skills not included in the current certification system is the need for costly equipment for testing of skills, and the shortage of qualified examiners. One solution is to contract some of certification tests to other organizations including private enterprises.

(9) Public Technical Service Center Activation Program

Technical service centers directly related to production activity are publicly owned in most countries, partly because service must be provided at an affordable rate, and partly because certificates and test reports require a certain level of authority and credibility. However, those organizations do not work well in most of developing countries. There are problems such as shortage of number of staff, and government budget allocation which tends not give priority to procurement of repair parts and testing materials. The study team recognize that public technical service centers should ask for cooperation and assistance of the private sector as far as possible, at least in the area of operation and management of the centers.

To activate public technical service centers by entrusting their operation and management to the private sector, and to develop them into organizations which can provide adequate and quick service to meet diverse needs of

industries. A foundation to operate technical service centers will be established on the basis of funds contributed by sponsoring companies as well as government subsidy. The foundation should be a non-profit organization.

While facilities, machinery and equipment owned by public centers will remain as the government property, their operation will be entrusted to the foundation under a formal contract between the government and the foundation (NGO). Operation of technical service centers by the private organization is expected to help utilize existing facilities and equipment in a highly productive way and to provide quick and better service, which will contribute to the saving in capital of SIs to purchase such facilities and equipment by themselves, as well as improved quality and shortened delivery time.

(10) Joint Industry-University Training Schools

For private companies, developing vocational abilities of their employees is a major concern. From the companies that the team visited and surveyed recently, it was clear that they, and especially the foreign affiliates, have a strong desire to invest in education. In order to encourage them to establish a genuine educational institution or training school – something that requires a huge sum of capital – more privileges should be given to those companies who will build training schools. For private companies that want to conduct vocational training for their company's employees and that have facilities of a certain level, instructors, and systematic training program will be given the status of educational foundations, with the attendant privileges, on the condition that the centers are operated jointly with a university or some other Thai educational institution. In this way, it will be possible to give practical vocational training not only to the company's employees but also to a broad range of outside workers (both formally and informally).

Joint industry-university training schools can enjoy the following incentives in addition to normal privileges attendant upon the Thai educational foundations.

a) Import duties on machinery and materials for training use will be exempted.
b) The permissible number of foreign teachers will be increased.
c) The school will be exempted from value-added tax.
d) Income taxes on foreign teachers' salaries will be exempted.
e) Application procedures for establishing the school will be simplified.
f) Measures will be taken to reduce the corporate tax of the companies sharing the project's cost.

(11) Improvement of SMEs Financing Scheme

In Thailand, there are almost all types of financial and credit guarantee systems for smaller businesses as far as institutions concerned. These system should continue to be maintained in spite of many problems.

The following is recommendation for the financial assistance system for SMEs in SIs:

1) Credit ceilings as well as the scale limit of companies eligible for receiving loans should be raised up, considering internationally competitive companies, which are expected to form the core of SIs.

2) The institutional financing system for SMEs should be more attractive with the combined conditions of low interest, long-term loans and grace period.

3) A nationwide network of financing agents should be built up in cooperation with commercial, city and local banks.

4) The financing business for smaller enterprises involves high risks and costs with a small spread. The government should bear such risks and costs, if it entrusts the financing business to private financial institutions.

5) The government should limit to a certain extent to carry on the financing business for smaller enterprises by public institutions, but mainly by using the nationwide network of private financing agents. In this case, the government should grant a subsidy by supplementing the rates of interest or spread for the

financing agents. The government should consider other supports such as shouldering part of credit guarantee fees for the financing agents.

6) Establishment of a credit insurance company should be carefully examined to cover risks on credit guarantee companies. Note that the credit insurance companies will much contribute to activation of SMEs financing but on the other hand, the financial burden to the government will become big because all the bad debts will flow into the insurance company from institutional financing systems for SMEs.

(12) Assistance of SMEs in Machinery Leasing

Using machinery and equipment on lease is favorable for SMEs with fragile financial base, partly because it needs no collateral, and partly because it involves no debt, only return the equipment and machinery at the end of lease period.

According to the results of the questionnaire survey for Thai supporting inustries, more than 40% of all the answerer-companies reported that their equipment was unsatisfactory, and about 40% of them complained that machines are too expensive to purchase. Nearly 45% of them had an intention of purchasing used machines, and smaller companies showed this intention more strongly. In the same inquiry, 60% of all the answerers had an interest in a machinery and equipment leasing system. The percentage rose up to 65% as far as smaller enterprises are concerned.

Considering these circumstances, it is concluded that it is necessary to find out a machinery and equipment leasing program more favorable for SMEs.

The government or other authorities should give supports such as a grant for supplementing the rates of interest and a guarantee for paying rental fees to the SMEs which use machinery and equipment on lease. Under this leasing program, the government should approve a short-term depreciation such as an accelerated depreciation for the machinery and equipment which the leasing companies purchase and lease to SMEs. The government also should grant these leasing companies any guarantee for rental fees not paid.

(13) Entrepreneur Re-education Program

In the questionnaire survey that was conducted on Thai companies, almost 70% of the managers said they would want to attend any educational programs for learning enterpreneurship. Their desire to learn modern methods of management was strong. The problem is, What specifically should they be taught? For example, general-education activities, such as a seminar on TQC, would, by themselves, not be enough. What is necessary, instead, is practical education that can immediately be put to use in improving management and increasing profit.

The target recipients of the program will be owners, entreprenuers and managers of a wide range of SMEs engaged in manufacturing business, including managers of OEM parts manufacturers in supporting industry.

It is not necessary to limit agencies that will conduct the program. Universities, government institutions and NGOs that are currently conducting educational training would all be acceptable as an executing agency. However, it will be necessary to unify the content of the curriculum. The implementation agency of the government is to be DIP.

(14) Continuation of Technoprenuer Development Project

The education of entrepreneurs who want to start a business, since King Mongkut's Institute of Technology North Bangkok (KMITNB), with assistance from Germany and the cooperation of Technonet Asia, is already promoting such education through the Technopreneur Development Project. This program should be continued in future.

(15) Grouped Investors Attraction Program

As a method for attracting foreign supporting industry (mostly SMEs) to Thailand – a method that can answer most of the above worries and desires – the method of encouraging and supporting investment by groups of companies will be recommended.

When it comes to conducting a pre-investment survey (F/S), SMEs often have nobody local to assist them, and are unfamiliar with how to look for a partner. Individually, companies may lack financial resources and personnel, but if they pool their resources as a group, various benefits, tangible and intangible, can be expected by both the potential investors and the receipant country. In addition to the current investment incentives, various advantages shall be provided to the group investors

(16) Entreprenuer Incubation Program

Modernization and strengthening of the parts industries will be sustained by the efforts of new and dynamic entrepreneurs equipped with expertise in modern technologies. Many of these entrepreneurs dared to venture out on their own business after acquiring their expertise through many years of work at a large manufacturing company. People who want to spin out from a large company and start their own enterprise generally have technical expertise, however, financial support is indispensable to construct a factory and begin operations.

The objective of the program is to lease a factory to entrepreneurs who shared his own business in SIs until they are able to stand on their own feet. As a rule, the beneficiaries will be limited to people who have technical background for a certain period in parts industries and also have completed the courses in the Technopreneur Development Project. The government will provide the land and factory buildings, or industrial estates will rent them at a low rate. The entrepreneurs will use them at free of charge or for a nominal rent. The period of occupancy of the land and buildings will be 3 years. After that, the entrepreneurs will become independent buying their own land and buildings. Machinery will be leased for 8-10 years and installed in the above-mentioned factories.

(17) Assistance for New Comer's Penetration

To get companies from other fields to enter the OEM parts field, financial assistance would be of less importance, since the companies were already set up and are running. More attention would have to be given to introducing new technology and promoting subcontracting contracts. Recommendation

for each of these matters have been made imprevious sections. One method of introducing new technology would be to promote technical tie-ups. In the survey of Japanese parts manufacturers, 93 companies said they would be willing to transfer (sell) technology to a Thai company. Achieving such transfers would require matching these companies with Thai companies that want to enter the OEM parts field.

The relationshiops between programs are indicated in Table VI-3. And Figure VI-3 illustrates a relationship between programs by objective to clarify the positioning of programs in the Master Plan. The objectives of the Master Plan as shown in the figure are listed as follows:

1) Investment:
   Enlarge the base of the parts industry by promoting investments.
2) Subcontracting:
   Link suppliers and buyers in the parts industry.
3) Technology:
   Find out a better technology transfer method in the parts industry.
4) Manpower:
   Give education and training to employees in factories.
5) Management:
   Re-educate the management to improve the industrial level.
6) Industrial infrastructure:
   Consolidate the industrial infrastructure to support the attainment of the above-listed objectives.

Table VI-2 SUMMARY OF PROPOSED PROGRAM

Proposed Programs	Objectives	Supporting Measures	Operational Institutions
1. Policy & Legislation			
1.1 Basic law of SMEs development	Unification of SME's policies.	Establishment of basic law.	Parliament, DIP
1.2 Law of subcontracting promotion	Subcontracting promotion and protection of subcontractors.	Establishment of basic law.	Parliament, DIP
1.3 Restructuring of DIP for SMEs & SIs promotion	Centralization and reinforcement of SME's policies implementation.	Establishment of basic law and department for SMEs.	Parliament, DIP
1.4 Preparation of industrial statistics	Basic data preparation for industrial development planning.	Build up data base system.	DIW & concerned
2. Market Development			
2.1 Expansion of BUILD activities	Subcontracting intermediation.	Information supply, trade fair, visiting parent enterprises regularly, etc.	BOI, DIP (NSDP)
2.2 Subcontracting assistance program	Subcontracting business promotion	Mediation of financial services, exemption of company tax.	BOI, DIP (NSDP), FTI
3. Technology Upgrading			
3.1 Technology extension service program	Improvement of soft wares in production & quality control skill.	Traveling clinic service.	DIP, FTI
3.2 Expansion of Occupational Skill Standards system	Upgrading of occupational skill and development of human resources.	Expansion to parts industries, favorable salary system and consignment testing system.	DSD
3.3 Public technical center activation program	Improvement of public services for industrial testing, R&D, etc.	Consigned management of institutions to NGO.	DIP, TISI, FTI, etc
3.4 Joint industry-university training schools	Fostering of skilled workers working in factories.	Providing of investment privileges.	University, Priivate sectors, Industrial estates
4. Financial Supports			
4.1 Improvement of SMEs' financing schemes	Expansion of financial service network for regional SMEs.	Promoting of loan agents network.	SIFC, IFCT, etc
4.2 Assistance for SMEs' in machinery leasing	Financial support for SMEs by a leasing system.	Interest subsidizing system, payment guarantee for leasing.	Leasing companies, Fiscal Policy Office
5. Upgrading of Management			
5.1 Entrepreneur re-education program	Improvement of management skill in manufacturing.	Teaching management by cost analysis method.	DIP
5.2 Continuation of Technoprenuer Development Project	Entrepreneurship education for new comers.	Continuation of KMITNB Program (TDP).	KMITNB, DIP
6. Investment Promotion			
6.1 Grouped investors attraction program	Investment attraction of foreign SMEs.	Assistance & incentives for grouped SMEs investors.	BOI, DIP
6.2 Entrepreneur incubation program	Extension of the foundation of parts industry by Thai capital.	Supporting for establishing new company with leasing system	DIP
6.3 Assistance for new comers' penetration	Extension of foundation of Thai parts industry.	Promoting technical collaboration with foreign companies.	BOI, DIP (NSDP)

Table VI-3 INTERRELATION BETWEEN PROPOSED PROGRAMS AND AREAS OF ASSISTANCE

(Remark) XX : The area mainly concerned to the program X : Areas related to or involved in the program	1. Policy & Legislation	2. Market Development	3. Technology Upgrading	4. Financial Support	5. Upgrading of Management	6. Investment Promotion
1. Policy & Legislation						
1.1 Basic law of SMEs development	XX					
1.2 Law of subcontracting promotion	XX	X				
1.3 Restructuring of DIP for SMEs & SIs promotion	XX	X	X	X	X	
1.4 Preparation of industrial statistics	XX					
2. Market Development						
2.1 Expansion of BUILD's activities		XX				
2.2 Subcontracting assistance program		XX	X	X	X	
3. Technology Upgrading						
3.1 Technology extension service program			XX	X	X	
3.2 Expansion of Trade Skill Standards system			XX			
3.3 Public technical center activation program	X		XX			
3.4 Joint industry-university training schools			XX			
4. Financial Supports						
4.1 Improvement of SMEs financing schemes				XX		
4.2 Assistance for SMEs in machinery leasing				XX		
5. Upgrading of Management						
5.1 Entrepreneur re-education program				X	XX	X
5.2 Continuation of Technoprenuer Development Project					XX	X
6. Investment Promotion						
6.1 Grouped investors attraction program						XX
6.2 Entrepreneur incubation program			X	X		XX
6.3 Assistance for new comers' penetration		X	X	X		XX

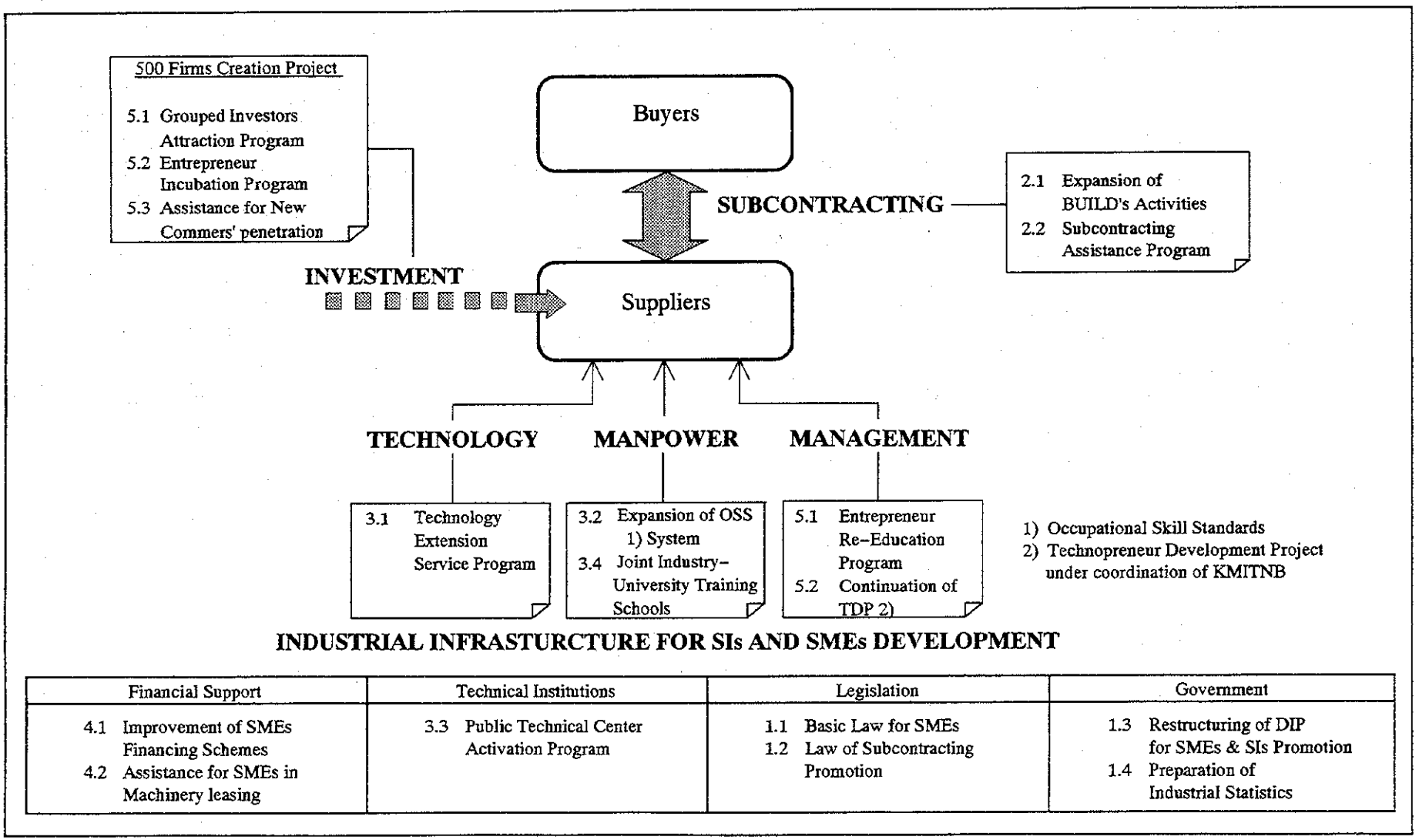

Figure VI–3 MASTER PLAN FOR DEVELOPMENT OF SUPPORTING INDUSTRIES

VI.3.2 Scheduling and priorities in the master plan

Figure VI-4 shows the scheduling of the 7-year Master Plan. The term of 7 years was adopted for the reasons: (1) The term of 5 years is too short to fully implement the Master Plan, and the term of 10 years involves a high uncertainty in carrying out the Plan. Thus, the term of 7 years was adopted as the median between 5 and 10 years; (2) It is desirable that the Master Plan is to have considerable effects as expected at the same time when the 8th 5-Year Plan (1997 - 2001) is completed. It is premised that all the programs would continue to be implemented after their effects had been reviewed and improved at the expiration of the 7-year term.

Priorities in all the elements will be described below, referring to Figure VI-4. According to the schedule, all the programs must start to be carried out or studied and prepared in 1995, except several programs (1.4, 2.2, 4.2, 6.2 and 6.3) that start in 1996 (marked with "○" at the starting point) under the new department and laws; namely "Department of Small-and Medium-Scale Industries" (1.3), the "Small and Medium Enterprise Act" (1.1) and the "Subcontracting Promotion Act" (1.2).

(Note) As mentioned before, if it will take more than one year for establishment of the new department in MOI and the proposed laws, those programs starting by the mark with ○ shall start immediately within the framework of National Supplier Development Program (NSDP) by a joint work of MOI and BOI. In such case, those programs shall start since the beginning of 1995 with a mark of as their starting points.

The programs which have been partly implemented at present but are to be strengthened, expanded, improved or modified are marked with dotted lines in the "1994" and subsequent columns. These programs may be immediately resumed at the beginning of 1995, after necessary reviews and preparations. The program "Preparation of Industrial Statistics" (1.4) under way is scheduled to be resumed by building up a complete total system at first, preferably after the "Department of Small and Medium Industries" has been created.

New programs, marked with "●" at the beginning of 1995, are scheduled to start at the beginning of 1995 including researches and preparations made for them.

All the programs in the Master Plan may produce effects by linking with each others so that they cannot be ranked in priority. As a reference, however, Table VI-4 indicates three ranks of programs in priority, considering the time series, and urgency.

VI.3.3 Potential benefits by implementation of the master plan

The potential outcomes of each program by the implementing Master Plan are shown in the rightmost column of Figure VI-4. The data in the column are estimated values, which may be considered as targets. The potential effects of each program will be described below.

(1) Policy & Legislation

The programs will clarify a responsible organ for fostering Thai SMEs as a majority of SIs, and also the applicable laws for the fostering of SIs and SMEs. A committee type approach will have limitations in the implementation of the Master Plan.

(2) Market Development

It can be expected that 20 to 30 new subcontracting businesses will be created annually, at least 150 in total for 7 years, with supports of the extended BUILD scheme. For this program period, some companies may enter in subcontracts independently or without any public support. If, in total, 500 new subcontracts are made for 7 years, 500 new subcontractors will be added to the 500 to 600 existing subcontracts totaling 1,000 or more in the automotive and electrical/electronic industries.

(3) Technology Upgrading

It is estimated that 180 companies will be able to receive a technical extension services for 6 years after 1-year preparations under the "Technology Extension Service Program" (3.1). In this case, it is assumed that 15 companies in each of 4 industries (casting, presswork, plastic

processing and mold- and die-making) would be able to receive the technical extension services for 2 years.

At present, about 2,000 workers in 31 trades take the national skill standards licensing examination (3.1) and about 50% of them are successful. Based upon these data, it is conservatively estimated that 480 workers in the new 4 trades will be able to pass the skill licensing examination (3.2) and obtain Grade 2 and 3 licenses for 7 years.

It cannot be predicted in number whether or not the "Public Technical Center Activation Program" (3.3) will permit to transfer the operation of public centers to NGOs. There are now 2 Joint Industry-University schools (3.4) in Thailand. It is assumed that a new school may be annually installed under this program.

(4) Financial Support

Expansion to regions of the network of loan agents of credit facilities provided for SMEs is mainly a matter of discussion between the government and private sectors such as commercial banks and local banks. Therefore, the loan agent network should be completed within 2 years, because it is not necessary to install any new bank. The program "Machinery Leasing Assistance for SMEs" (4.2) assumes that 100 enterprises per year would receive the governmental assistance like guarantee for payment of leasing fee and supplement of interest rate for leasing.

(5) Upgrading of Management

The "Entrepreneur Re-education Program" (5.1) forecasts that it is possible to re-educate 480 managers, especially in Thai-owned companies, for 7 years. The number of managers is likely to increase, if the participation in this program is a condition for receiving a financial assistance for SMEs. In this case, it is assumed that 20 managers would participate in each of 4 courses per year.

The "Continuation of Technoprenuer Development Project" (5.2) is now carried out with an annual program and 3 courses per year. This project is scheduled to be carried out for 7 years.

(6) Investment Promotion

This program plans to increase the number of companies from the existing 600 to 1,000 or more for 7 years creating 500 new projects in supporting industries for automobile and electrical/electronic sectors.

	No. of new companies
Foreign investment	300
Entrepreneur's incubation	80
Investment by other sectors	120
Total	500

Table VI-4 PRIORITY FOR EXECUTION OF THE PROPOSED MASTER PLAN

Program	Priority		
	1st	2nd	3rd
1. Policy & Legislation			
1.1 Basic law of SMEs development	■		
1.2 Law of subcontracting promotion	■		
1.3 Restructuring of DIP for SMEs & SIs promotion	■		
1.4 Preparation of industrial statistics			■
2. Market Development			
2.1 Expansion of BUILD's activities	■		
2.2 Subcontracting assistance program		■	
3. Technology Upgrading			
3.1 Technology extension service program	■		
3.2 Expansion of Trade Skill Standards system		■	
3.3 Public technical center activation program		■	
3.4 Joint industry-university training schools			■
4. Financial Supports			
4.1 Improvement of SMEs financing schemes			■
4.2 Assistance for SMEs in machinery leasing		■	
5. Upgrading of Management			
5.1 Entrepreneur re-education program			■
5.2 Continuation of Technoprenuer Development Project			■
6. Investment Promotion			
6.1 Grouped investors attraction program	■		
6.2 Entrepreneur incubation program		■	
6.3 Assistance for new comers' penetration		■	

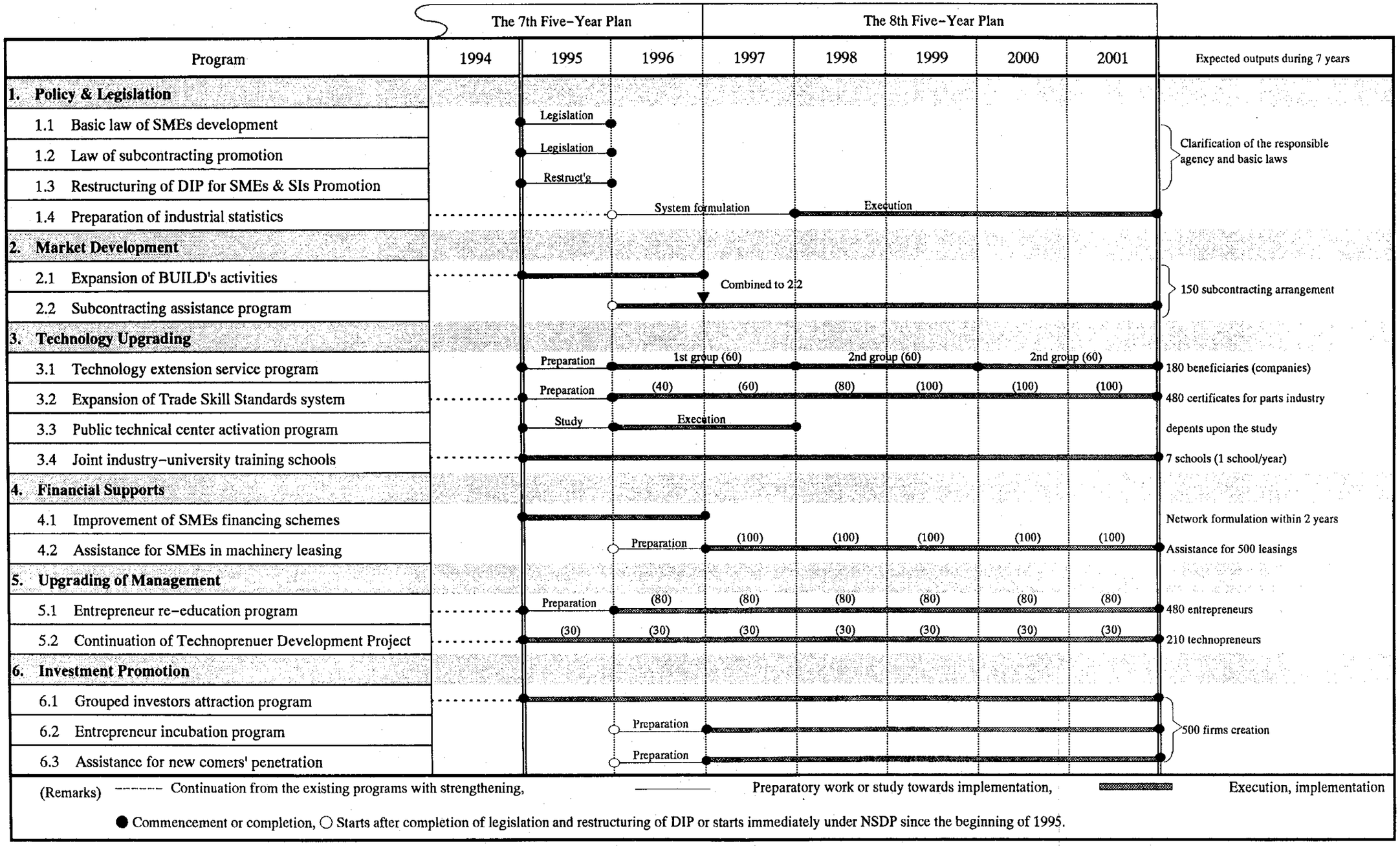

Figure VI-4 TIME TABLE FOR IMPLEMENTATION OF THE PROPOSED MASTER PLAN: 7-YEAR PLAN

ANNEX–I TABLE OF CONTENTS OF THE MAIN REPORT

ANNEX–II JICA Team Member List

The JICA Team members are as follows:

Team Leader	Mr. Shozo INAKAZU
Sub Leader, Industrial Development Plan	Mr. Yoji WATANABE
Supporting Industries System	Mr. Takenosuke KURODA
Factory Location, Infrastructure	Mr. Toshiyuki KUWAHARA
Market Research	Mr. Hiroshi HASEGAWA
Factory Management, Product Control	Mr. Naoyuki TAKEHARA
Technical Group Leader, Metalworking Engineering	Mr. Takeshi INOUE
Autoparts (Plastic/Gum/Glass)	Mr. Masanao HIROSE
Electronic & Electrical parts (Metalworking Engineering)	Mr. Shouhachi KURIHARA
Electronic & Electrical parts (Plastic Engineering)	Mr. Shiro SUZUKI
Investment Promotion Plan	Mr. Nobuo KOBAYASHI
Export Promotion Plan	Mr. Koichi ISHIKAWA

ANNEX–III Steering Committee for the Study

To the smooth implementation of the Study, the Department of Industrial Promotion (DIP) acted as a counterpart agency to the JICA Team as well as coordinating body in relation with other governmental and non–governmental organizations concerned. DIP organize the Steering Committee, the Chairman of the Committee is the Director–General of DIP and consist of the following members.

Chairman	Director–General of DIP
Vice–Chairman	Deputy Director–General of DIP
Committee	Director of Planning and Development Division, BOI
– ditto –	Director of Industrial Development Division
– ditto –	Director of Policy and Planning Division Office of Industrial Economics
– ditto –	Director of Metal–Working and Machinery Industries Development Institute
– ditto –	Director of Government and Private Cooperation Division, Office of the National Economic and Social Development Board
– ditto –	Director of External Cooperation Division I, Department of Technical and Economic Cooperation
– ditto –	Representative of Thai Industrial Standards Institute
– ditto –	Chairman of Auto–Parts Industry Club, The Federation of Thai Industries
– ditto –	Chairman of Electrical, Electronics and Allied Industry Club, The Federation of Thai Industries
– ditto –	Asst. Prof. Kovit Satavuthi Department of Industrial Engineering, Faculty of Engineering, Chulalongkorn University
– ditto –	Asst. Prof. Udomsak Yungyuen Head of Electrical Engineering Dept. King Mongkut's Institute of Technology Thonburi
– ditto –	Representative of Thai Tools & Die Industry Association
Committee and Secretary	Director of Planning Division DIP
Committee and Assistant Secretary	Chief of Development Studies Sub–Division, Planning Division, DIP