

Chapter 10

Conclusion, Recommendations, and Master Plan

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As discussed in Chapter 9, this study used the PCM (project cycle management) technique. With this technique, a series of workshops was held with the participation of the related parties including the Team to design a project in accordance with specific procedures. The "project" related to this study is "the promotion of supporting industries." During the field survey, a total of four workshops were held; the participants included representatives of SECOFI and of the related organizations and associations, and the Team members. At the workshops, the participants identified major issues related to the "project" and discussed and agreed upon a general framework for solving problems. Also, critical issues identified by the Team, such as "the selection of priority promotion areas," were presented by the Team and agreed upon after discussion.

Based on the results of the PCM workshops, this chapter presents the conclusions drawn from the study, proposes projects, and develops a master plan for implementation.

10.1 Basic Framework of the Study

The basic framework of the study is presented below. It was agreed upon at the workshops through discussions among the participants and based upon proposals by the Team.

10.1.1 Target Group and Core Problem Identified

(1) Target group

The target group is SMEs (Small- and Medium-scale enterprises) that manufacture OEM (Original Equipment Manufacturing) parts and components for automotive and electrical/electronic products and that are further classified as secondary-tier suppliers or lower, especially companies with Mexican ownership. It should be noted, however, that primary suppliers, large enterprises, foreign-affiliated enterprises, and after-market parts suppliers are not necessarily to be excluded from the target group.

(2) Core problem facing the target group

The core problem for the target group is the difficulty in selling parts and

components manufactured by itself. In particular, the target group is unable to gain access to Maquiladora companies, which are largely electrical and electronic manufacturers, resulting in a low localization rate of 2-3%.

(3) Direct causes of core problem

- 1) Communication between buyers and suppliers is inadequate.
- 2) Suppliers' production capacity does not match the volume of orders.
- 3) Suppliers' production costs are high.
- 4) Suppliers' products are inferior in quality.
- 5) Suppliers' product-delivery are unstable.

(4) Overall goal of the master plan

Solving the above problems is expected to produce the following results, which are the overall goal of the master plan:

- 1) Increase local contents of parts and components in the automotive and electrical/electronic industries in Mexico.
- 2) Enable parts-supplying SMEs to establish a firm management foundation, increasing the parts sales of Mexico's supporting industries.

10.1.2 Priority Promotion Areas

(1) Metal stamping

Metal stamping of small automotive parts, as well as small/precision metal stamping of electrical and electronic parts.

(2) Plastics processing

Small electrical/electronic parts and precision parts. The target market is Maquiladora companies, although plastics processing for automotive parts is not necessarily excluded.

(3) Maintenance and making of metal molds and dies

Maintenance and manufacture of metal molds and dies for (1) and (2) above. There is a need for SMEs to learn design theory and machining techniques. This area should be promoted under a long-term strategy.

(4) Surface mounting technology (SMT)

This is technology for mounting electronic components on printed circuit boards (PCBs). Its potential as a substitute for imported products is great.

10.1.3 Basic Guidelines of Master Plan Development

The Team develops the master plan and its implementation plan on the basis of alternative approaches agreed at the PCM workshops and presents them in the following sections. In developing the master plan, the Team set the following basic guidelines.

- 1) Take into account the current trend toward economic liberalization, particularly NAFTA.
- 2) Propose a viable and effective plan taking local conditions into consideration.
- 3) Propose feasible projects under the master plan based on the results of the study; avoid abstract and overly inclusive proposals.
- 4) Develop a promotion plan which will produce measurable results within a five-year period.



10.2 Basic Strategy for Promotion of Supporting Industries

(1) Alternative approaches

In the PCM workshops, the participants classified the PCM cards in the objective tree into five groups, called alternative approaches. See 9.2.5 "Fourth Workshop (Objective Analysis and Alternatives Analysis)."

Alternative approaches

- 1) Technology (management) approach
- 2) Technology (production) approach
- 3) Manpower approach
- 4) Management/administration/financing approach
- 5) Subcontracting approach

(2) Conversion of alternative approaches to basic strategies

To facilitate the development of a viable master plan and its projects, the Team converted the five alternative approaches into six strategies on the basis of the results of the field survey. In the process, some PCM cards were added, reflecting the results of the survey, the Team members' experience with similar undertakings, the industrialization process in advanced countries, etc., but no PCM cards were removed. (see Figure 10.2-1)

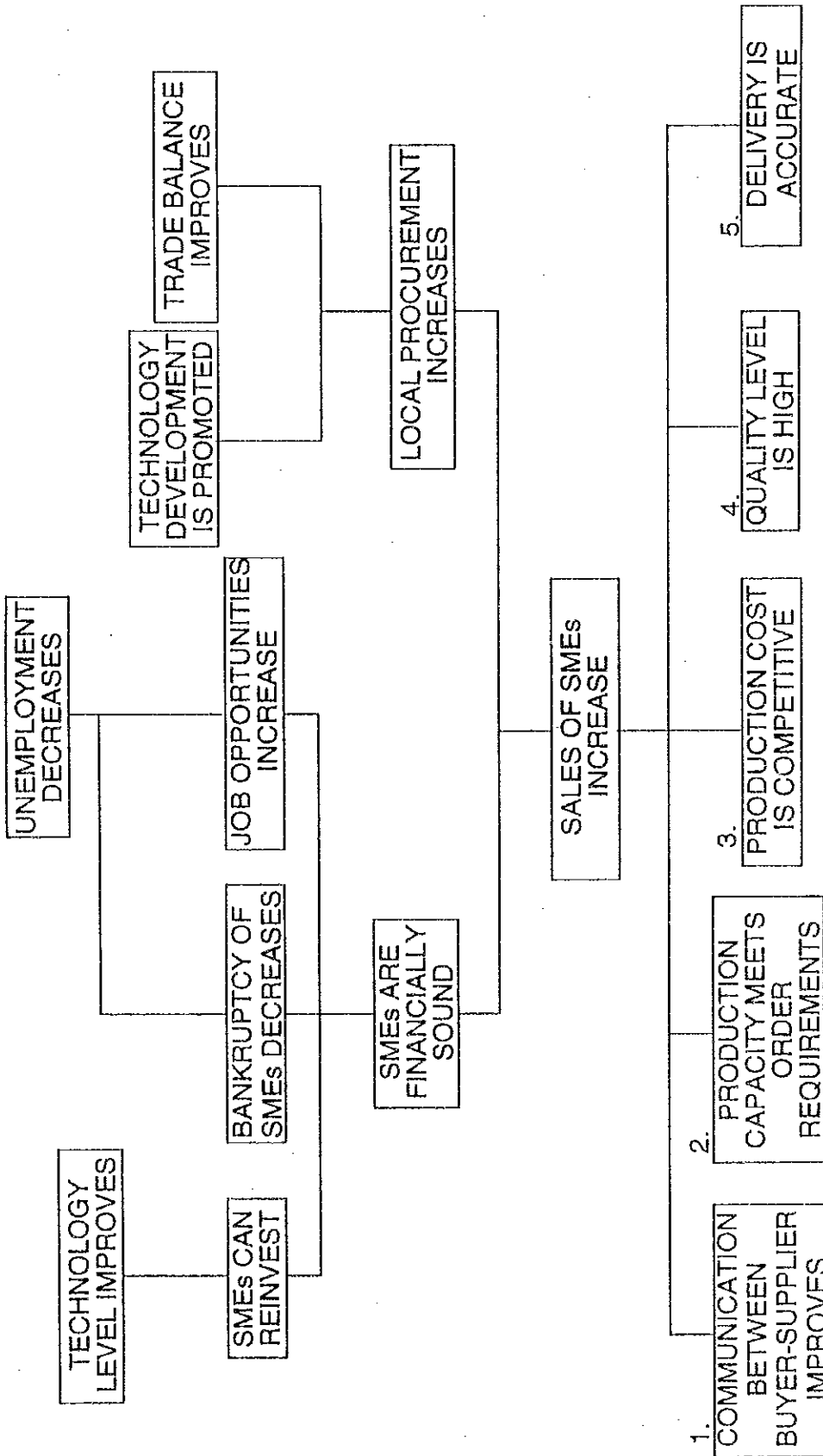
The five alternative approaches were converted to six strategies as follows:

- 1) Alternative approaches 1) and 2) were consolidated into a single strategy "technology upgrading."
- 2) Alternative approach 4) was divided into "entrepreneurship development" and "improvement of financial support."
- 3) Alternative approaches 3) and 5) were renamed to express strategic concepts.
- 4) "Laying the foundation for SMEs promotion" was added as a strategy for policies and institutional setups not clearly addressed in the objective tree.

(3) Six strategies

Thus, the five alternative approaches were converted into the following six strategies, which form the basis for formulating the master plan:

- Strategy 1: Technology upgrading
- Strategy 2: Subcontracting promotion
- Strategy 3: Entrepreneurship development
- Strategy 4: Manpower development
- Strategy 5: Improvement of financial support
- Strategy 6: Laying the foundation of SMEs promotion



AN OBJECTIVE TREE
of MEXICAN SUPPORTING INDUSTRIES

Figure 10.2-1 Six Strategies of the Proposed Master Plan (1/6)

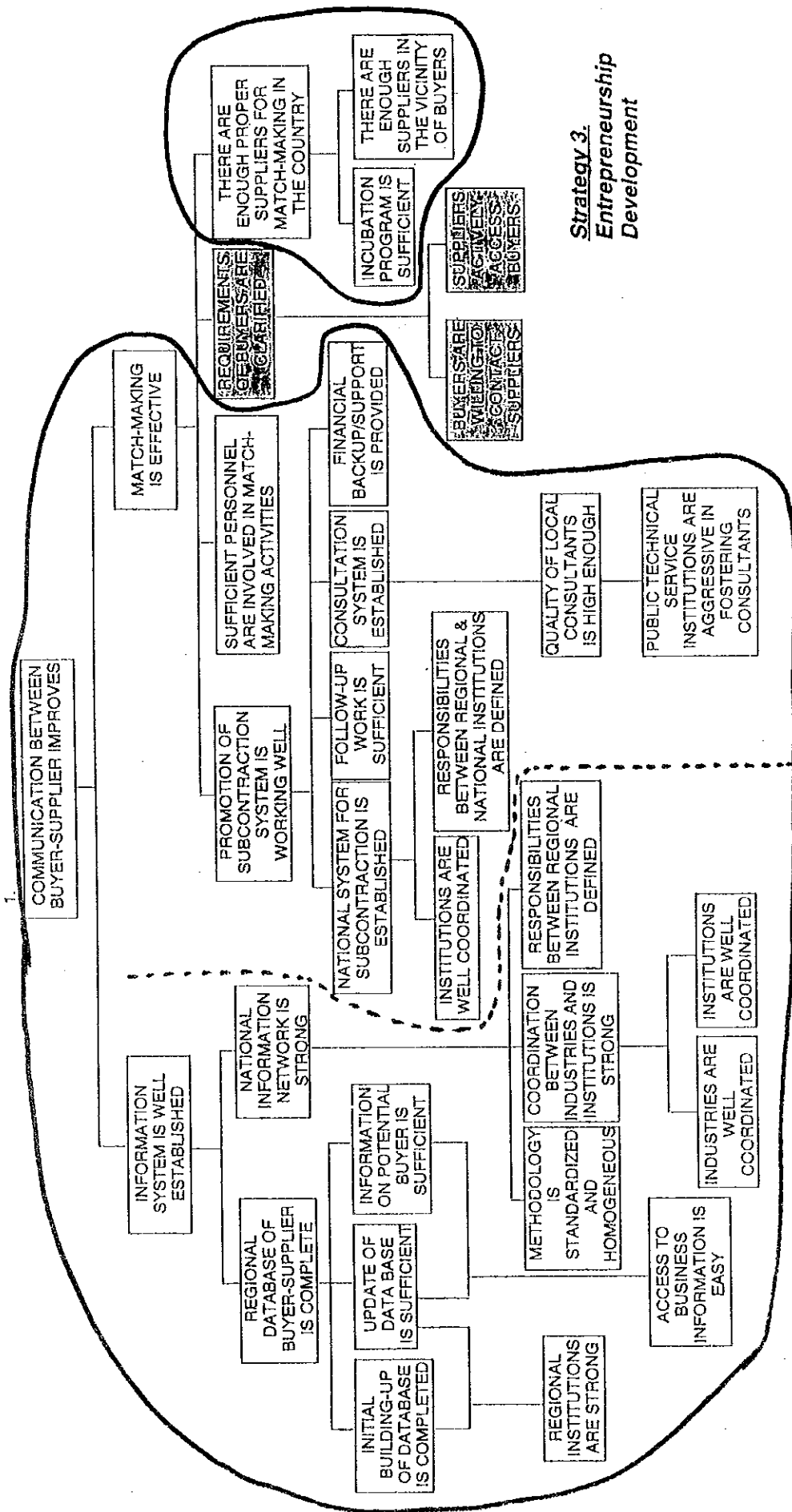


Figure 10.2-1 Six Strategies of the Proposed Master Plan (2/6)

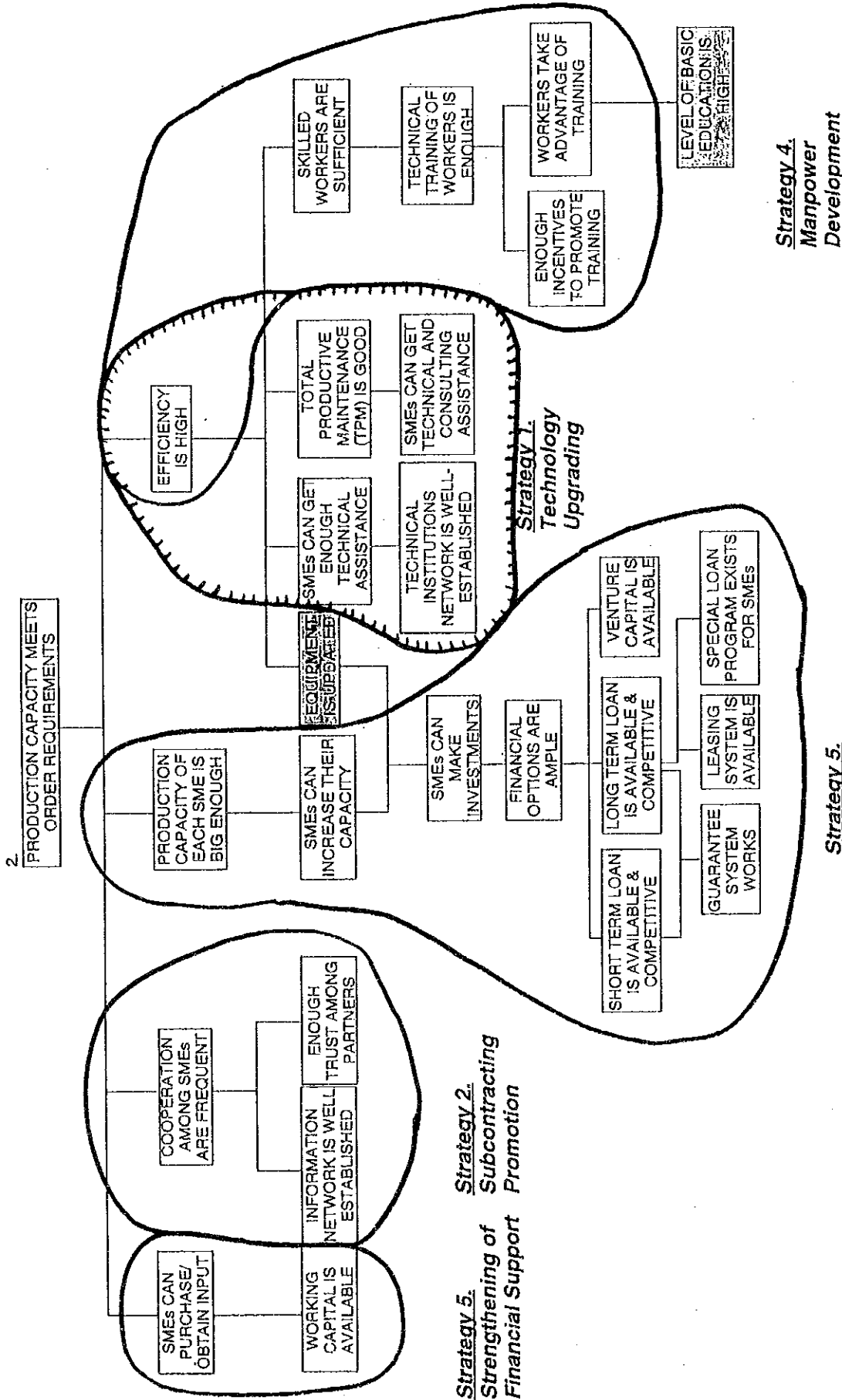


Figure 10.2-1 Six Strategies of the Proposed Master Plan (3/6)

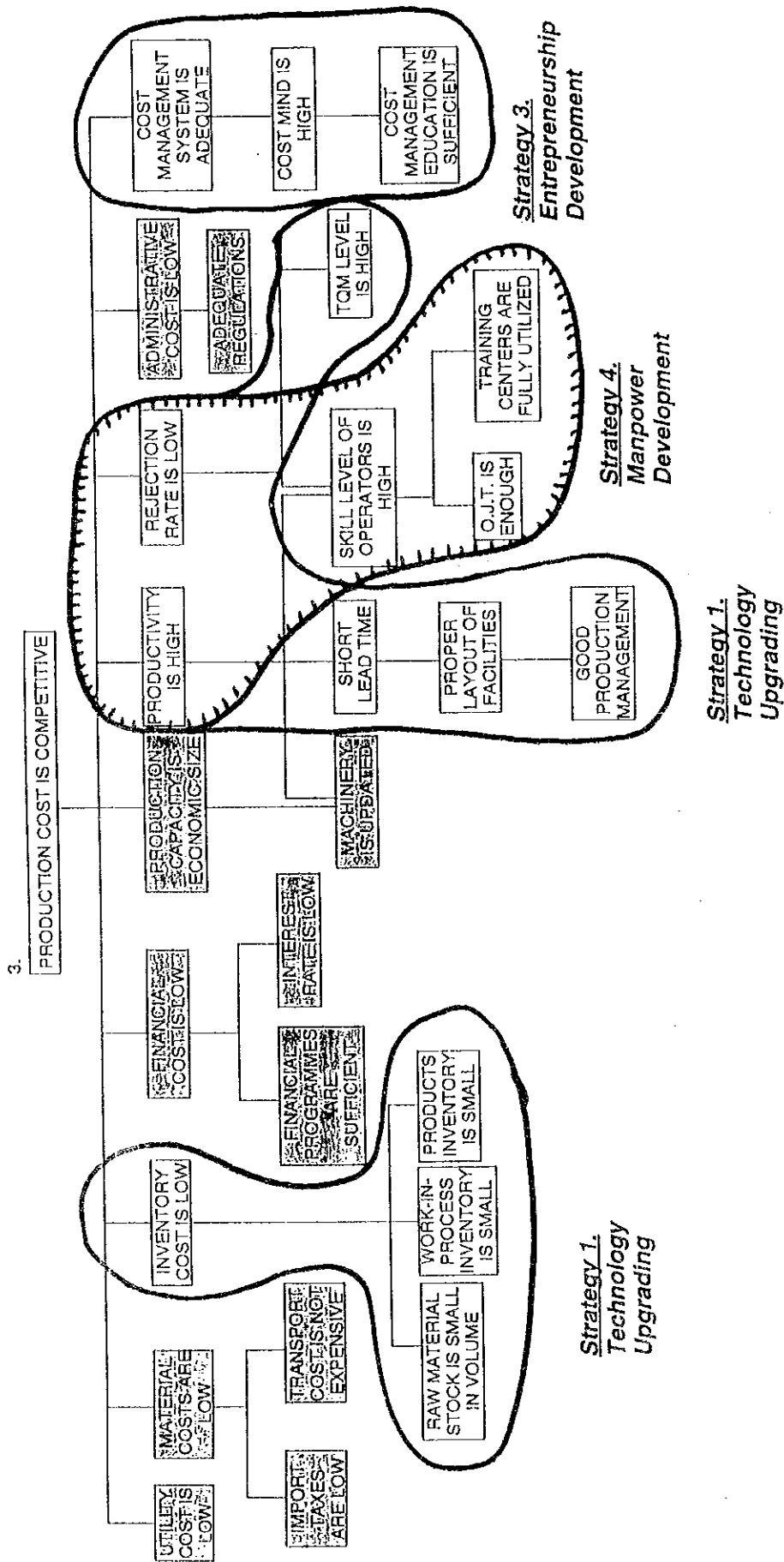


Figure 10.2-1 Six Strategies of the Proposed Master Plan (4/6)

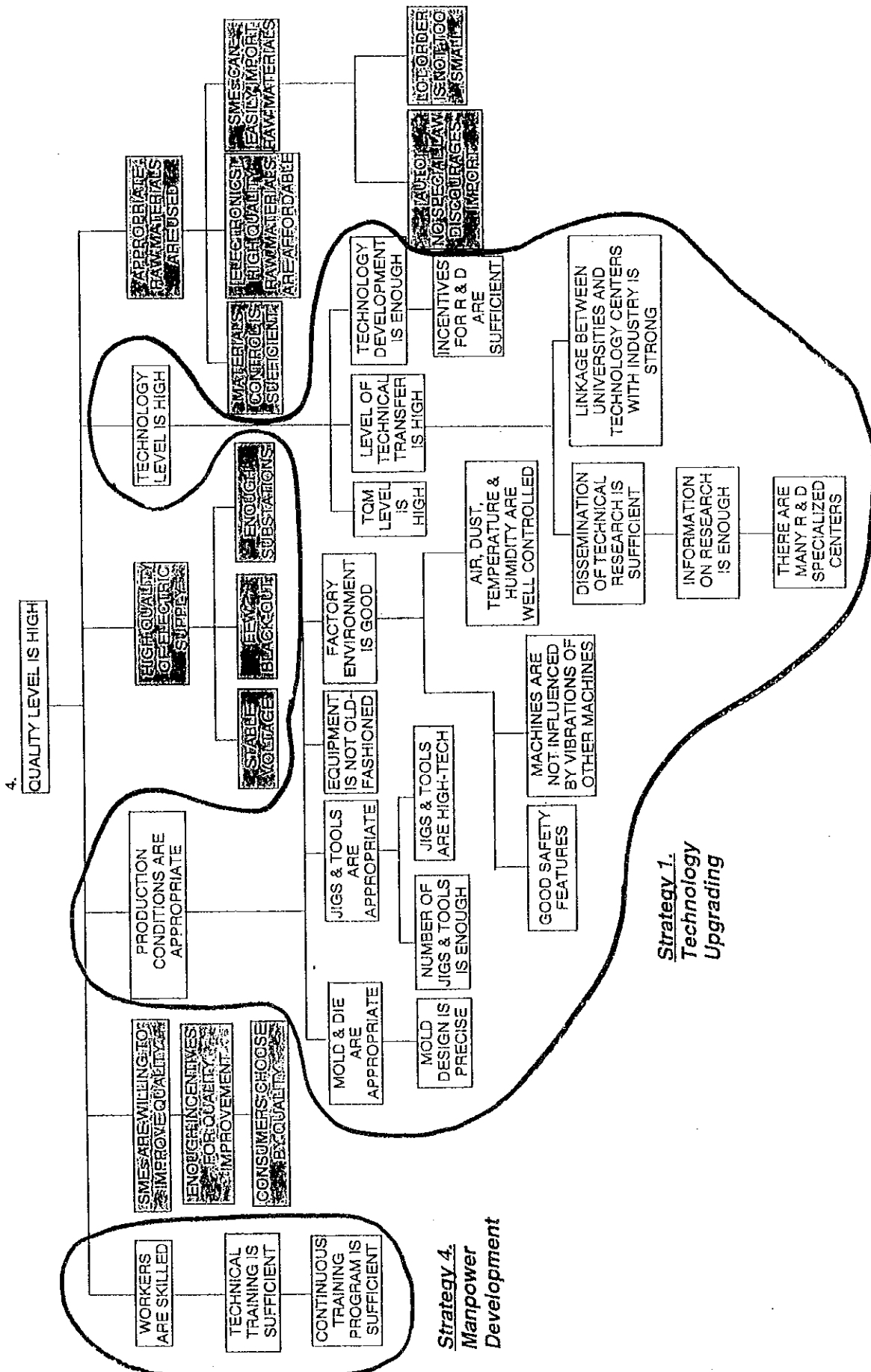


Figure 10.2-1 Six Strategies of the Proposed Master Plan (5/6)

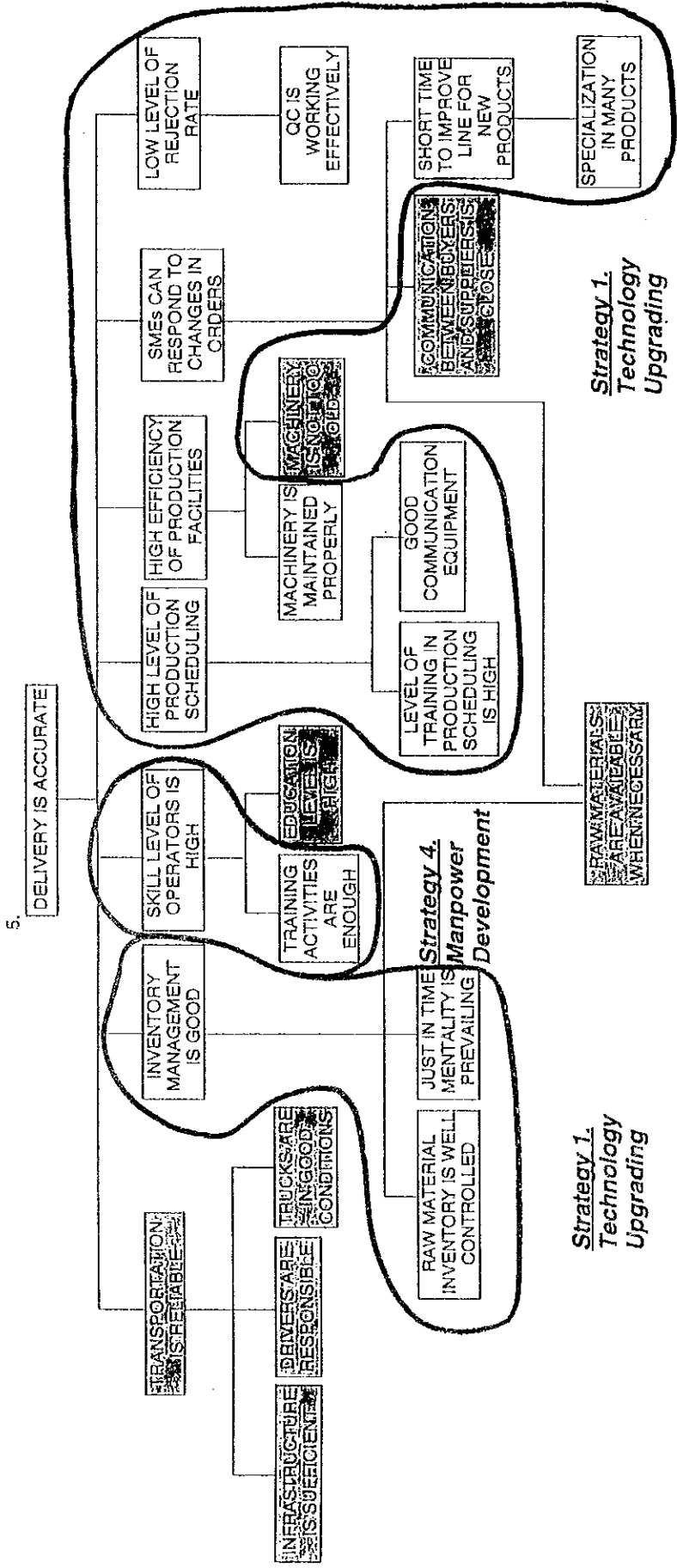


Figure 10.2-1 Six Strategies of the Proposed Master Plan (6/6)

10.3 Conclusion and Project Proposal

This section presents the study's conclusion about each of the six strategies for promoting supporting industries in Mexico, together with specific projects for achieving the strategies. The rationales for the projects are presented below. Detailed implementation plan of the projects is described in 10.4. The strategies and projects are enumerated in Table 10.3-1.

Table 10.3-1 Strategies and Projects

Strategy-1 : Technology Upgrading

- Project 1-1 Technology transfer through extension services
- Project 1-2 Development of SIs technical centers
- Project 1-3 Strengthening of institutions for testing and certification

Strategy-2 : Subcontracting Promotion

- Project 2-1 Enhancement of match-making activities
- Project 2-2 Assistance for relocation of SIs near to the market
- Project 2-3 Introduction of certification system for local consultants

Strategy-3 : Entrepreneurship Development

- Project 3-1 Entrepreneur re-education
- Project 3-2 Entrepreneur incubation

Strategy-4 : Manpower Development

- Project 4-1 A master plan study for manpower development

Strategy-5 : Strengthening of Financial Support

- Project 5-1 Improvement of financial guarantee system

Strategy-6 : Laying the Foundation for SMEs' Promotion

- Project 6-1 Formulation of a master plan for industrial standardization
 - Project 6-2 Preparation of industrial statistics
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10.3.1 (Strategy 1) Technology Upgrading

[Conclusion about technological issues]

In Mexican automotive industry, 78.1% of all cars sold are exported as assembled cars (as of early 1996). In the electrical and electronic industry, only small quantities of parts and components are supplied to Maquiladora companies, major exporting manufacturers with a local procurement rate of only 2-3%. This low rate results from the fact that secondary materials, such as packing materials, copper wire and chemicals, are what is mainly supplied locally. Thus, Mexican supporting industries must supply parts and components of exportable quality for increasing the local contents.

The current level of technology of the target group - SMEs and locally owned companies - was rated on a five-point scale as follows:

(Unit : Scores (Full mark = 5.0))

	Ownership (Mexico 100%)	Company size (Nos. of employees)	
		1 - 100	101 - 250
Autoparts	4.1	4.0	4.4
E/E parts	3.8	3.7	4.0
Average	3.9	3.8	4.2

Source : JICA Team field survey

In this scale; a rating of 4.5 or higher is considered rank A; a level of technology sufficient to manufacture products of exportable quality. Thus, the target group is not up to this level. Moreover, the electrical and electronic parts industry is far from it than the autoparts industry. Based on this analysis, the Team believes that technology upgrading is the most important issue to be dealt with in order to improve the prevailing difficulties that Mexico's supporting industries are having with selling their products.

The measures that public organizations and trade associations can take to support upgrading the technology of SMEs are basically as follows:

- 1) Transfer of modern technology from advanced countries
- 2) Improvement of technical guidance and consultation services
- 3) Strengthening of technical support institutions
- 4) Management education (to change awareness and mind-set)

- 5) Worker education and training
- 6) Equipment modernization
- 7) Technical information service

To achieve approach 1), Strategy 1 proposes Project 1-1 "Technology transfer through extension services"; and for approach 3), it proposes Project 1-2 "Development of SIs centers" and Project 1-3 "Strengthening of institutions for testing and certification".

Approach 2) will mainly be accomplished through the above three projects, and be partially through Project 2-3 "Introduction of certificate system for local consultants" being proposed in Strategy-2. Approaches 4) and 5) will be discussed by Strategies 3 and 4. Approach 6), equipment modernization, is essentially a financial issue and thus falls under Strategy 6. Finally, technical information services, approach 7), has only an indirect effect on technology upgrading; it thus has low priority and is not included in the master plan.

[Proposed projects for technology upgrading]

Project 1-1 Technology transfer through extension services

The Team proposes a long-term (3-4 years) technology transfer project. Foreign consultants and experts will be hired and stationed at the existing technology center, and provide extension or clinic services for SMEs on a periodic plant visits. In addition, this project also involves technology transfers to technical center staff and local consultants, and seminars and workshops. The aim of this project is to first achieve direct benefits of technology transfer for beneficiary firms. Second, this could then be expected to impacts and trickle-down effects on the supporting industries as a whole based on a model of success in the beneficiary firms. The rationale for the project is as follows.

The project is primarily designed to serve the purpose of approach 1), "transfer of technology from foreign countries"; and approach 2), "improvement of technical guidance and consultation services". Technology upgrading activities are generally conducted by the staff of technical support organizations and independent local consultants. However, such personnel with sufficient expertise are scarce in Mexico.

To the best knowledge of the Team, there are no technical support organizations that provides extensive technical assistance to SMEs. Moreover, there are few local consultants who have practical knowledge of modern production/production management technology and adequate experience (10 years or more) with essential technologies (see Project 2-3 for improvement of the skill levels of local consultants) and they are unorganized. Thus, from the perspective of the five-year master plan, the "transfer of modern technology from advanced countries" should be given of the highest priority.

The results of a questionnaire survey conducted on 316 enterprises indicate that approximately 40% of SMEs including micro enterprises are currently receiving technology transfers from foreign countries in some manner or other, and 38% want to do the same in the future. The most frequently desired methods of technology transfer are "seminars" and "workshops", which were chosen, respectively, by 27% and 26% of the respondents. "Technical guidance as required" ranked third (15%), and if "extension or periodic technical service" is added to it, the figure rises to 21%. The fourth most desired method was human resource development at vocational training centers.

The Team believes that seminars themselves tend to produce limited results; that they only achieve the indirect or general transfer of expertise; and that they do not necessarily meet the needs of SMEs owners and managers. SMEs' real desire is to learn the technologies and management skills that are readily applicable to their own factories. This can better be achieved by sending experts directly to factories to improve the technology and management skills for fostering SMEs to subcontractors. This project proposes technological transfers, by all three of these methods, that is "workshops", "technical guidance as required" and "extension services".

Project 1-2 Development of Sis technical centers

At present there is shortage of organizations specialized in technical assistance and R&D support for SMEs. Such organizations as exist should be strengthened, and regional centers that provide technical support for SMEs should be upgraded both quantitatively and qualitatively. Effort should also be made to establish a nationwide technical support network that provides technical support to supporting industries. Another possibility would be to give special status of "Supporting Industry Center" to

centers that provide adequate technical assistance - both hardware and software - to supporting industries. The major reasons for this project are as follows.

The Team surveyed organizations that actively provide technical services for supporting industries, particularly SMEs. From SECOFI it received a list containing 213 education/training institutes and 91 technical research institutes. The Team screened the list based on the organizations' names excluding those organizations that were apparently unrelated to the study's purpose, function, and targeted industrial fields. As a result, 51 organizations were selected as technical research organizations closely related to the manufacturing industry. Of these, the Team visited 25 including educational institutions, that seemed to be most directly related to supporting industries.

The conclusions reached from this field survey are as follows. First of all, universities such as ITESM and UNAM mainly provide R&D services to large enterprises, even if they provide technical services to private enterprises. Thus, they are not disposed to giving technical assistance to SMEs, nor do they have the facilities and equipment for doing so. Chambers of commerce and industry, such as CANIECE and CANACINTRA, provide technical services for private enterprises, but it is inevitably limited, as providing such services is not the purpose of such organizations. Among public institutions, CIDESI, a part of SEP-CONACYT (State of Querétaro), has shown willingness to offer technical assistance services to SMEs. Research institutes under SEP-CONACYT, such as CIMAV, are mainly engaged in academic research and are not capable of meeting the needs of SIs that want to obtain applied and essential technologies. CAST, a vocational training institute under SEP-CONALEP, opened nine facilities throughout the country in the last few years. CAST was established with the assistance of World Bank and has modern facilities and equipment; its main purpose is to provide training for workers employed by large Maquiladora companies. However, it can possibly be utilized as a technical support center for SIs.

This field survey revealed that Mexican SMEs have little opportunity to receive technical support. It is thus desirable to establish and expand technical service centers as an important step towards technology upgrading.

Project 1-3 Strengthening of institutions for testing and certification

There is a serious shortage of accredited testing and certification institutions. It is

recommended that existing institutions be quickly accredited as official accredited institutions by improving their hardware and software, in order to create a nationwide system of testing and certification services.

According to the questionnaire survey of 316 enterprises, the technical support service most often received was product testing and inspection, (101 enterprises). Education and training ranked second, with 48 enterprises or less than half of the first. These results seem to reflect the fact that many electrical and electronic parts must be certified according to the NOM standards for safety seasons. These parts cannot be sold without undergoing certain tests and inspection at an accredited laboratory and receiving certification from an accredited organization. The Team heard from micro-enterprises and SMEs in rural regions that certification requires considerable time and cost, often disturbing their business operations. Such complaints were most frequently heard in the electrical industry.

10.3.2 (Strategy 2) Subcontracting Promotion

[Conclusion about major issues related to subcontracting]

In Mexico, supporting industries (mainly SMEs) and buyers (mainly large enterprises) seem to operate in two mutually-exclusive worlds. Neither has knowledge and information about what the other thinks and wants. This lack of knowledge and communication result in dissatisfaction and distrust between the two sides, preventing promotion of the subcontracting business.

The Team concluded that the fundamental problem is "A lack of effort by suppliers to meet the demands of buyers." Suppliers still seem to rely on the business practices of the old protectionist economy, where they could be contented with suppliers' market. In particular, unstable delivery forces buyers to turn to imported parts. Procurement from a supplier who does not meet delivery dates can cause just-in-time inventory control to be impractical and can even stop assembly lines. In fact, several buyers visited by the Team have switched to imported parts due to delay in deliveries of domestic parts. This strategy's basic approach to promoting subcontracting is "to make things easy for buyers to purchase local parts." While promotional measures are often discussed from the supplier's perspective, the Team believes that subcontracting promotion should be addressed from the buyer's perspective.

The results of the questionnaire survey of 316 enterprises show that 83% of companies want to increase their OEM parts production or newly enter subcontracting business. As for the reasons of difficulties to promote subcontracting by themselves, the main one, given by 34% of the companies, was "the difficulty of entering into existing subcontracting networks." Second, with 30%, was "A lack of information on buyers", and the third, with 18%, was "An inability to meet buyers' order requirements due to small production capacity".

On the other hand, 73 Maquiladora companies were surveyed to discern buyers' needs. According to the results, 67% of respondents would like to increase their amount of local procurement. Maquiladora companies also answered a question about a desirable ratio of local procurement in the future. If this were achieved, the localization rate would rise, from the present 3.0% to 15.5% in the future. Clearly, the market has potential. The survey asked the reasons (multiple choice) why the Maquiladora

companies weren't enthusiastic about local procurement. The most common reason given by 54% of the companies, was that they could not choose their suppliers, which were instead chosen for them by the customer or the U.S. parent company. The second most common reason (50%) was that no suppliers, in Mexico, are producing the parts and components they need. Nevertheless, it is highly likely that Maquiladora companies and their U.S. parents would change to local suppliers if they could obtain quality parts near the production base, since local procurement would significantly facilitate delivery control, technical assistance, and modification of design and specifications.

Generally speaking, the following approaches can be employed for promoting subcontracting:

- 1) Collection and dissemination of information on both buyers and suppliers
- 2) Strengthening of match-making activities
- 3) Relocation of supporting industries near to the market
- 4) Improving of suppliers' competitiveness and technology;
- 5) Changing management's attitude from protectionist to customer-oriented
- 6) Expansion of production/supply capacity.

Approach 2) is addressed in Project 2-1 "Enhancement of match-making activities" and Project 2-3 "Introduction of certificate system for local consultants," which are described below. Approach 3) is followed in Project 2-2 "Assistance for relocation of SIs near to the market."

As for approach 1), no project has been proposed because the results from the national subcontracting promotion system (Sistema Nacional de Promoción para la Subcontratación), which has been just launched by SECOFI, are first being awaited. In addition, a project for match-making based on the existing Bolsa de Subcontratación of CANACINTRA is going to begin recently, so that it is necessary to watch the performance of those projects rather than introduction of another new project. Approach 4) was dealt with in Strategy 1, and approach 5) in Strategy 3. Approach 6), which is related to financial issues will be discussed in Strategy 5. As an alternative way to increase the supply capacity, joint production by SMEs is discussed below under Project 2-1.

(Project proposal for subcontracting promotion)

Project 2-1 Enhancement of match-making activities

Essentially, this project consists of the following two activities:

- 1) To create more opportunities for information exchange between buyers (predominantly large enterprises, including Maquiladora companies) and suppliers (led by SMEs), which currently have very few communication with each other.
- 2) To improve the methods for holding the parts trade fairs/events that are often held in the country, and establish a follow-up system for the fairs/events so as to increase the number of subcontracts through the events.

The major reasons for the project are as follows.

In Mexico, match-making activities frequently take the form of trade fairs (called the events) that combine products exhibitions with business negotiations. These events are usually organized by state governments and/or the chamber of commerce and industry, while federal agencies such as SECOFI and SEP often bear some portions of the expenses as co-sponsors. They are usually last 2-3 days, and attract a large number of visitors, often more than 1,000 in some cases. At each event, buyers (mainly Maquiladora companies) display parts and components they procure, and if suppliers find any parts that they themselves can make, they seek to enter into negotiations with the corresponding buyers. Some events are held by a single Maquiladora company or a group of Maquiladora companies. However, at present, the organizations in charge of the events do not have enough follow-up information to objectively assess the efficiency of match-making events.

There are various reasons for the low rate of subcontracting:

- 1) SECOFI has established a follow-up system in coordination with development banks (NAFIN and BANCOMEXT), to support and assist SMEs in their negotiation with possible buyers. Besides, the follow-up system for those events is still incomplete and far from achieving the necessary results. This

implies that there have been more successful negotiations if more assistance or support had been provided for following up the events.

- 2) There is the lack of enthusiasm among buyers. Buyers, usually large enterprises, often exhibit parts in order to get along with the federal and state governments, but are not so willing to make an effort to procure local parts.
- 3) The lack of trust between the both sides prevents negotiations toward contracts. In the interviews conducted by the Team, certain suppliers and buyers criticized each other after events for the lack of enthusiasm as well as untrustworthiness.
- 4) There is no company or public agency serving as a bridge between the buyers and the suppliers. Buyers, mainly large enterprises, place volume orders, these cannot be filled by a single SMEs supplier. An agency or middleman could bring the two sides together by dividing an order among several suppliers to meet the volume orders.

(Note) Joint production by suppliers is another solution for meeting a volume order, but a majority of opinions, including those heard at the PCM workshops, indicate that it may not be feasible in light of the general temperament of Mexicans.

- 5) Trade fairs need to be improved in terms of operation and management. First, it is not necessarily appropriate to exhibit parts and components procured by large enterprises (mainly assemblers) directly to SMEs as SMEs usually don't sell their products directly to large enterprises. It would make more sense to display products of primary subcontractors (medium- and large-scale enterprises) who are positioned between assemblers and SMEs (second-tiered suppliers). A logical step would be for suppliers to exhibit their products to buyers, and for buyers to initiate negotiations, but there has been almost no exhibition of SMEs' products or parts and components in those events.

Project 2-2 Assistance for relocation of SIs near to the market

This project is designed to provide financial assistance for SMEs to relocate their factories near to their markets; for example in the Mexican-U.S. border area for Maquiladora or in Guadalajara where for the electronic industry. The major reasons for this project are discussed below taking the State of Chihuahua as an example.

Ciudad Juárez, located in a northern part of Chihuahua, near the Mexican-U.S. border, is the site of one of major concentrations of Maquiladora companies in the electronics industry. Chihuahua City, the state capital, is located 370 km south of Ciudad Juárez, about 4 hours away by car. Chihuahua City is a major industrial center where many SMEs are located. There are also Maquiladora companies there, but Ciudad Juárez represents a larger potential market for suppliers. One might assume that it would be possible to develop the SMEs in Chihuahua City into a supply base for Ciudad Juárez, but the distance between the two cities is a problem.

Motorola constructed a large pager plant in Ciudad Juárez. It invited suppliers to Ciudad Juárez from all over the world, including Asia, and held a meeting to explain the company's procurement policy and procedures. At the meeting, it offered the suppliers a long-term contract on condition that they build factories for themselves near the Motorola plant - specifically, within 2-hours driving distance. Apparently, this is Motorola's basic subcontracting policy. Parenthetically, Motorola invited only a few Mexican companies to the meeting; these were suppliers of sub-materials such as packaging materials. All of the suppliers of functional components, such as PCBs, who were invited were foreign companies.

Similarly, Honeywell, also located in Ciudad Juárez, believes that local suppliers should be located as close as possible, 30 km - 40 km at maximum. In fact, both companies refuse to consider companies in Chihuahua City as possible suppliers on account of the distance. It can easily be imagined that the same problem exists between, say, Mexico City and Guadalajara, or the border region.

Many buyers want suppliers to be located near their production facilities regarding cases that technical trouble occurs, modifications are necessary, or to ensure stable delivery, and they make it a condition for subcontracts. The major reason for this is the widespread use of just-in-time inventory control. There are quality suppliers in and around Mexico City and in Monterey, but the above condition makes it difficult for them to gain access to the Maquiladora companies in the border area. This project is expected to encourage supporting industries to move near to their markets by reducing the cost burdens related to relocation.

Project 2-3 Introduction of certification system for local consultants

To promote subcontracting, it is necessary to expeditiously modernize the technology and techniques related to production management and business administration. Local consultants should play a leading role in this area. This project aims to establish a certification system for local consultants in order to assure quality consulting services for supporting industries. The major reasons for this project are as described below.

(Note) This project is closely associated with Strategy 1 "Technology Upgrading" and thus can also be classified as a project under that strategy.

In October 1995, the Mexican government announced a productivity center concept based on APRE, and SECOFI has already started to work towards its realization. The productivity center's primary purpose will be to utilize local consultants to evaluate and assist enterprises. This consulting service is expected to be effective for promoting the technology upgrading of SMEs, for financial institutions to investigate credit standing of local applicants, and for conducting follow-up activities for match-making. In addition, consultants play an important role in promoting quality control practice, serving as instructors in seminars related to TQM, ISO9000 and QC circles, or providing guidance to companies as quality control facilitators.

Nevertheless, local consultants, in some cases, are not highly regarded by users. And in fact, their quality varies greatly. While highly knowledgeable and experienced consultants exist, there are also ones who have little experience or training. Some of them do consulting business just after finishing a short course training as trainees. The less-experienced consultants may provide mistaken advice or would have less knowledge or experience than the client.

During the field survey, the Team heard of many cases where hiring an unqualified consultant ended up adversely affecting business. Thus, the proposed certification system for consultants (with grading) is expected to help reduce the disparity in the quality of the consulting services in Mexico, where consulting continues to play a critical role in many fields.

10.3.3

(Strategy 3) Entrepreneurship development

(Conclusion about entrepreneurs and SMEs owners)

As pointed out in Strategy 2, many SMEs owners seem to still use the management style developed under the old protectionist economic system, or supplier's market. The approach commonly employed in market economies, "to manage one's company according to the buyer's requirement," has yet to take firm root in Mexico. Until the SMEs owners who follow this competitive approach grow in number and until they form the majority of the business community, buyers probably will not procure locally made parts and components, and the localization rate will thus remain low.

The results of the questionnaire survey indicate four reasons why buyers don't use of local parts, namely cost, quality, delivery, and production capacity. These reasons were also cited in the questionnaire survey of Maquiladora companies, although the reasons most frequently given by Maquiladora companies that there were no companies in Mexico who produced the desired parts. On the other hand, the interview survey suggested the presence of a fundamental reason that was not appeared in the responses on the questionnaire surveys; a wide-spread sense of distrust among Maquiladora companies regarding the management of SMEs suppliers. Some Maquiladora companies have lost interest in buying parts from local suppliers, who often fail to make deliveries on time and do not care about the consequences; the stoppage of the buyer's line. Most Maquiladora companies seem to feel that there is no need to actively buy domestic parts if it's going to mean taking a risk.

Nevertheless, some new local suppliers are emerging and succeeding in the subcontracting business. These are companies that have studied buyers' requirements carefully, and shifted their operations and improved their management to meet these requirements. They include such companies as KOKOPELI, EUROTEC, Cía General de Electrónica, and PHOENIX International. They clearly demonstrate that local companies have the potential to grow significantly, even in the troubled economy and under high interest rates, if management adopts to the market.

To increase entrepreneurs capable of managing their companies in response to market needs, the following approaches are available:

- 1) Education of young managers and owners of existing enterprises in supporting industries (including people who have inherited management of a company)
- 2) Support for potential entrepreneurs who intend to spin off from large enterprises and start their own companies (people who know skills of modern management but do not have financial backup)
- 3) Education of new entrants into OEM production from other industries or from the after-market parts industry
- 4) Attraction of foreign investment

Approaches, 1) and 3) are addressed in Project 3-1 "Entrepreneur re-education"; and approach 2), in Project 3-2 "Entrepreneur incubation." These projects are described in the following sections.

Approach 4) is considered to be outside the scope of the study and was not discussed at the PCM workshops. Thus, it is not included in the master plan.

(Project proposal for entrepreneurship development)

Project 3-1 Entrepreneur re-education

This project is designed to teach the management techniques and skills of the modern subcontracting business to the owners of SMEs in supporting industries. The content of the education falls into two areas:

- 1) To make them aware of the procurement policies of buyers, particularly Maquiladora companies and foreign-affiliated companies, and the basic requirements in subcontracting.
- 2) To educate them on methods of improving production processes and management techniques so that they accord with the requirements of buyers.

The primary purpose of this project is to create an environment where buyers can rely on subcontractors with confidence. To do this, it is necessary to train SMEs owners and managers who can flexibly respond to buyers' requirements. As one means towards this end, it is necessary to re-educate the managers, especially the ambitious young managers, of companies that are now manufacturing parts and components. At present, buyers are not obliged to give priority to locally made parts and can freely

choose imported products. In fact, the electronic industry in particular widely uses imported parts and components. Maquiladora companies tend to avoid local suppliers especially those who are less reliable in delivery dates. In general, most Maquiladora companies seem not to have faith in local suppliers.

In the automotive parts industry, assemblers are required to use local products by the automotive decree, which bolsters demand for locally made parts. Nevertheless, if the decree is abolished, as it is scheduled to be, at the end of 2003 the market may well become dominated by imported parts, as has happened in the electrical and electronic parts industry. Accordingly it is urgently necessary to establish a system for re-educating SMEs owners, so that they can become modern entrepreneurs capable of coping with the imminent threat.

Project 3-2 Entrepreneur incubation

Project 3-1 dealt with re-educating the entrepreneurs of company that are currently in operation. By contrast, this project aims to help people, such as engineers at large enterprises, who want to become independent and enter the parts industry. It targets new entrepreneurs or new players who have worked in large enterprises and are thus familiar with buyers' requirements and the importance of just-in-time inventory control. This project shares with Project 3-1 the objective of increasing SMEs owners who can meet buyers' requirements in a flexible and effective manner.

According to the results of the questionnaire survey of 316 enterprises indicates that the highest 53.5% of SMEs owners has obtained their position through inheritance or promotion, while 25.7% of the owners of SMEs including micro enterprises previously worked with different companies and then started their own businesses. Those who started their own businesses in 1980 or after were more numerous than those who started theirs earlier. This trend was corroborated in the interview surveys: start-up of new parts factories in such way in Querétaro and elsewhere have been increasing. It is conjectured that there are also many potential entrepreneurs who cannot start up their own business due to financial reasons. Modernization of the parts industry can be promoted by finding these potential entrepreneurs and providing them with financial assistance.

10.3.4 (Strategy 4) Manpower Development

[Conclusion about manpower development]

According to the results of the questionnaire survey of 316 enterprises, a relatively small number of SMEs including micro-enterprises consider developing the skills of their employees a matter of urgent importance. This item ranked seventh (14.9%) out of the nine choices on the survey. In the interview survey to non-Maquiladora companies, employee skills ranked again seventh (15.4%) among nine choices. These results suggest that supporting industries in Mexico be generally satisfied with the technical levels of their employees. And, technical experts of the Team rated the technical levels of the enterprises they visited remarkably higher than those in, say, the ASEAN countries.

On the other hand, at the PCM workshops it was repeatedly pointed by Mexican participants that one reason that technical levels of Mexico's supporting industries failed to reach international levels is that the workers and technicians are inadequate in terms of both their quality and quantity. The Team thus concluded that the technical levels of the Mexico's supporting industries should be given a B ranking, which is higher than those in the ASEAN countries (C ranking). But, the potential market of Mexico demands exportable grade products with an A ranking. This means workers and technicians must upgrade their skills by one rank. The supporting industries' relatively high evaluation of their employees indicates that they are content with current technical levels, or a B ranking.

For manpower development as regards technology and technical skills, the following approaches are generally taken:

- 1) Producing of engineers by high education such as technical colleges
- 2) Fostering of technicians at technical high schools, technical junior colleges, and vocational schools
- 3) Re-training of workers at vocational training centers
- 4) Education of technical instructors
- 5) Provision of incentives to companies for vocational training
- 6) Provision of incentives to individuals by a skill standard certification

Approaches 1) and 2) are outside the scope of this study and will be left to other studies.

Approach 3) is being effectively undertaken by CIMO and CAST, with extensive assistance from the World Bank, under the Ministry of Education and the Ministry of Labor. With a view towards reducing unemployment and eradicating poverty, the World Bank considers manpower development an important part of its support for Mexico's SMEs. Approach 4) is addressed in a new initiative for re-educating teachers of technical high school, that is being jointly promoted by JICA and DGETI under the auspices of Ministry of Education. Approach 5) is provided by CIMO, which is attempting to reduce the financial burdens of enterprises and individuals by using World Bank's funds. For approach 6), a pilot certification program for the skill standard has been initiated by CNCCL with assistance from the World Bank.

It is still too early to evaluate the various projects and programs, and thus the time has not yet come to propose any measures for improving or strengthening them. Nevertheless, believing that an overall review and drawing up a master plan are necessary for technically-related manpower development, Project 4-1 "A Master plan study for manpower development" is proposed below.

Project 4-1 A master plan study for manpower development

Under the previous administration, CONALEP established a plan for the future demand and supply of manpower in technical fields. However, given the drastic changes that have occurred since then, a detailed review of the plan is needed. At the same time, it is necessary to conduct a master plan study for manpower development in technical fields.

At present, various projects and programs related to the establishment of vocational training centers and manpower development are being implemented under the leadership of the Ministry of Education and the Ministry of Labor, with assistance from World Bank and other organizations. There are also other projects and programs that have begun in recent years and there seems to be some duplication in terms of implementing organization and contents. Minor duplication may have the effect of compensating for some shortcoming or omission and does not present a serious problem. Moreover, there is no need to integrate all of the manpower projects and programs. Nevertheless, an attempt should be made to improve their overall efficiency from a cost/benefit standpoint. This project aims to facilitate such an effort.

10.3.5 (Strategy 5) Improvement of Financial Support

[Conclusion about the financial issues]

Financial support is considered complementary to the various projects proposed in this report for promotion of supporting industries. A financial support is one the most important tools for promoting SMEs like the woof of fabric, if the proposed projects were the warp of the promotion fabric. At present, SMEs financing in Mexico is not necessarily going well. The SMEs loan program is managed by the national development bank, NAFIN. However, 90% of NAFIN's SMEs loans are executed through commercial banks, which thus have actual control over the loan program, including the evaluation of loan applications. NAFIN argues that "although sufficient funds are available, commercial banks are reluctant to issue SMEs loans because of high risks". The Team believes that the root cause of the loan program's problems is that the unclear role of government, particularly as regards institutional credit facilities and credit guarantee, has not been made clear.

The Mexican government expects the promotion of SMEs to produce national benefits to create employment, reduce income and regional disparity, improve the trade balance, increase national income, and enable the effective use of resources. On the other hand, a consensus has not yet been reached on sharing of the costs spent for creating the benefits. Clearly, the government should bear the costs by means of financing and taxation. The extent of the costs undertaken by the government will be the main factor determining whether SMEs become invigorated or lose in their competition with imported products.

According to the questionnaire survey of 316 enterprises, the most urgent issue facing SMEs including micro-enterprises is "financial assistance through institutional financing" (45.1%), next is "equipment modernization" (38.2%). This second issue is in fact also a financial issue, as the inability to invest in equipment modernization is caused by a lack of access to loans, or even if it can be secured, the high interest rates will burden company operations. The plant diagnoses made in the field surveys revealed that equipment owned by SMEs is generally outdated. Thus, the current situation is that SMEs have an enormous need for capital, but it is not being satisfied due to their lack of access to financial services.

Generally, there are three means of providing SMEs with financial assistance:

- 1) Institutional credit facilities
- 2) Venture capital
- 3) Credit guarantee

There are currently no institutional credit facilities, exclusively applied to SMEs in the country. There are two reasons for this: 1) historically, official support for SMEs has not been part of the government's policy; and 2) IMF/IBRD, which has a considerable influence over the Mexican financial institutions, opposes preferential loans of other than market interest rates. Given this situation, there has occasionally been talk about creating institutional credit facilities for SMEs. However, with the economy beset by an unstable currency, financial and budget crises, and a high inflation rate, the prospects for introduction of such facilities are not bright.

Meanwhile, a new SMEs loan program will be started in January 1997 by using a \$250 million loan provided by the Japan Export Bank to NAFIN. This program's loan will be long-term, but they will not be low-interest. For the time being, it will be time to watch how the new program develops. This report, therefore, does not propose another new institutional credit facilities for SMEs to avoid duplication. Nevertheless, the introduction of institutional credit facilities should be seriously studied in the near future.

As for venture capital, there is a system under which NAFIN can provide less than 24.5% of an investment by itself or up to 49% in cooperation a commercial bank. The Team sees no need for proposing a new project in this area.

Finally, NAFIN guarantees up to 50% of the total amount of a loan, with the remaining risk being borne by the lending institution, namely the commercial bank. However, the current guarantee system requires some improvements, which are proposed in Project 5-1 "Improvement of financial guarantee system."

(Project proposal on financial system)

Project 5-1 Improvement of financial guarantee system

At present, the guarantee system is not functioning well. This is one reason why funds do not flow smoothly from commercial banks, which handle 90% of NAFIN's SMEs loans, to SMEs. This project aims to improve the guarantee system. The rationale for it is as follows.

Since commercial banks are for-profit organizations, they are reluctant to provide SMEs loans because of the high risks and costs involved. This is true of the commercial banks in every country, and they cannot necessarily be faulted for it.

At present, there is talk about using some of the profits of commercial banks as source funds for a guarantee system. However, this raises a number of questions. Will it be right to bear the costs of guarantee system just within a closed system of "financing?" Should commercial banks bear the "costs" for producing the "national benefits" obtained from promoting of SMEs? Is NAFIN's 50% ceiling on the amount of a loan that it will guarantee adequate? Or is it even rational for the lending institution (NAFIN) to provide credit guarantee? There are a number of areas that need to be studied, which is the purpose of this project.

10.3.6

(Strategy 6) Laying the Foundation for SMEs Promotion

[Conclusion about this issue]

Since the inauguration of the Zedillo administration on December 1, 1994, a series of economic development and industrial policies have been announced, including the Emergency Economic Plan (AUSEE, January 1995), and an implementation plan for it (March 1995), the National Development Plan (PND, May 1995), and the Confederation for Economic Recovery (APRE, October 1995). Each touches upon the promotion of SMEs, but only part of the whole issue or a future framework is discussed. A well-defined policy framework, however, was proposed by National Council on Micro-enterprises and SMEs which was established by government decree on May 23, 1995. The Council is composed of members of the public and private sectors, and its executive offices are located SECOFI's Directorate General for SMEs and Regional Promotion.

The Council consists of the following eight work groups by subject. These eight subjects for SMEs promotion well reflect the overall framework usually undertaken as government's policy and institutional support:

- 1) Finance
- 2) Taxation
- 3) Savings and investment
- 4) Technology
- 5) Training
- 6) Deregulation
- 7) Quality assurance
- 8) Government procurement

This study has, more or less, been conducted in line with this framework in developing the master plan for promoting SMEs. Moreover, future SMEs promotion should be conducted within this framework and with reference to this report.

SECOFI, the body that implements SMEs promotion, is a government agency responsible for planning and coordination for the public and private sectors. To a certain extent, NAFIN, BANCOMEXT, etc. are in charge of actual policy

implementation except for financing. The centers of SMEs promotional activity in the private sector are the various state chambers of commerce and industry.

Below are two projects that would serve the purpose of laying the foundation for SMEs promotion and that complement the projects in Strategies 1 through 5. Annex 10-1 lists laws to SMEs promotion in Japan for reference, which are arranged the most in the world.

[Project related to the foundation for SMEs promotion]

Project 6-1 Formulation of a master plan for industrial standardization

This project is designed to analyze the current state of industrial standardization in Mexico and to formulate a master plan for strengthening standardization in the future. The master plan should cover the following areas:

- 1) Industrial standards (mandatory and voluntary)
- 2) Testing and inspection
- 3) Accreditation and certification
- 4) Calibration
- 5) QC and TQM

The above items cover areas that need to be studied; the improvement and adaptation of laws/institutions of facilities, and of operations/activities.

Industrial standardization in Mexico is faced with the following problems:

- 1) In industrial standardization process, the perspectives of supporting industries and SMEs are little being taken into account.
- 2) There is a shortage of calibration centers and accreditation organizations, particularly in rural regions.
- 3) There is no clearly defined long-term plan for the establishment of standards.
- 4) Industrial standards and quality control activities are not linked.
- 5) Activities for spreading industrial standardization nationwide are inadequate.

Industrial standardization is part of the infrastructure necessary for industrial

development. Accordingly, the Team believes that a master plan is needed for the nation's industrial standardization.

Project 6-2 Preparation of industrial statistics

An industrial development plan should be based on past trends statistically analyzed and targets set utilizing statistical data. In Mexico, however, industrial statistics are limited in scope and accuracy. This project thus proposes the construction of a comprehensive system for obtaining industrial statistics and the development of a plan for the system's continuous operation.

The best way to understand the reason for this project is to list the items for which the Team failed to obtain accurate and detailed data, despite much time and effort being spent in looking.

- 1) The number of enterprises in each sector of the parts industry
- 2) Production and consumption of each type of raw materials and parts
- 3) Exports and imports of each type of parts and components
- 4) Employment in each subsector of the parts industry
- 5) Value added in each industrial subsector (sales, intermediate products, labor costs, etc.)
- 6) Directory of SMEs classified by industrial sector

In this study, almost no industrial statistics could be obtained about the parts industry or SMEs in particular. Moreover, certain statistical problems are peculiar to Mexico. These include: 1) data from the states of Nuevo León and Jalisco which have their own chambers of commerce and industry instead of nationwide CANACINTRA, are not included in CANACINTRA's national statistics; and 2) in trade statistics, all parts and components imported by assemblers are classified in a single statistical category, without further sub-categorization which prevents analysis of the trade balance on an item by item basis.

10.4 Project Implementation Plan and PDM

This section presents the outline, implementation plan, and PDM (project design matrix) for each of twelve (12) projects proposed in 10.3. PDM is essentially a table, as shown in Table 10.4-1, which identifies a summary of a project (overall goal, project purpose, output, and activities), and input required, the important assumptions required to accomplish the project's purpose, verifiable indicators to measure the level of accomplishment upon completion of the project, and means of verification.

Table 10.4-1 PDM (Project Design Matrix)

Narrative Summary	Verifiable Indicators	Means of Verification	Important Assumption
Overall Goal			
Project Purpose			
Output			
Activities	Input		

Table 10.4-2 shows the PDM for the entire master plan itself, taking the "core problem" as the "project purpose", the six strategies as "Output", and the twelve (12) projects as "activities" in PDM. In other words, these fourteen projects, being shown in the following sections from 10.4.1 to 10.4.12, are independently derived from the fourteen "activities" of the PDM for the master plan.

The twelve (12) projects vary in nature and scope, including proposals of concrete projects, policy recommendation, and needs for further studies following up the results of the master plan study. On the other hand, some PDMs are presented in a simplified form, consisting merely of "Narrative Summaries" (see the above Table 10.4-1). Note that major reasons (rationales) for the proposed projects were presented in the previous section, 10.3.

Table 10.4-2 Project Design Matrix (PDM) for Master Plan

Narrative Summary	Verifiable Indicators	Means of Verification	Important Assumption
<p>Overall Goal Local supply of parts and components in Mexico increases. SIs in Mexico become financially sound.</p>	<p>Local content in Mexico</p>	<p>Statistics of SECOFI</p>	<p>Macroeconomic situation does not change drastically.</p>
<p>Project Purpose Parts and components suppliers in automotive and electrical & electronic industry access to the market easily.</p>	<p>Sales of SIs</p>	<p>Statistics of SECOFI</p>	<p>SMEs promotion policy remains as one of national priorities.</p>
<p>Output</p> <ol style="list-style-type: none"> 1 Technology of SIs is upgraded. 2 Subcontracting of SIs accelerates. 3 Management of SIs is improved. 4 Manpower of SIs is well-developed. 5 Financial support for SIs/SMEs is strengthened. 6 The foundation of SMEs promotion is laid. 	<ol style="list-style-type: none"> 1 Quality of the products of SIs 2 Number of subcontracts 3 Quality of management of SIs 4 Quality of manpower of SIs 5 Amount of financial support 6 SMEs promotion policy 	<ol style="list-style-type: none"> 1 Annual survey by SECOFI 2 Annual survey by SECOFI 3 Annual survey by SECOFI 4 Annual survey by SECOFI 5 Statistics of SECOFI 6 Evaluation of SMEs promotion policy 	<p>SMEs promotion policy remains as one of national priorities.</p>
<p>Activities</p> <ol style="list-style-type: none"> 1-1 Extend modern essential technologies to SIs in Mexico through model firms. 1-2 Provide better technical services from existing technical institutions. 1-3 Strengthen credited institutions and laboratories to provide prompt services of testing and certification. 	<ol style="list-style-type: none"> 1-1 Number of SIs using modern essential technologies 1-2 Quality of the technical services from technical institutions 1-3 Number of testing and certification given 	<ol style="list-style-type: none"> 1-1 Annual survey by SECOFI 1-2 Annual reports of the technical institutions 1-3 Annual reports of the credited institutions and laboratories 	<p>1-2 SIs are aggressive to improve their technologies.</p>
<ol style="list-style-type: none"> 2-1 Make match-making activities more effective. 2-2 Relocate SIs near to the market so that they can deliver parts and components punctually. 2-3 Introduce a certification system for local consultants to assist match-making promotion and technology upgrading. 	<ol style="list-style-type: none"> 2-1 Number of match-making made 2-2 Number of plants relocated 2-3 Number of local consultants certified 	<ol style="list-style-type: none"> 2-1 Follow-up study by SECOFI 2-2 Follow-up study by SECOFI 2-3 Follow-up study by SECOFI 	<p>3-1 Other entrepreneurs are stimulated by the success of re-educated enterprises.</p>
<ol style="list-style-type: none"> 3-1 Re-educate entrepreneurs of SIs to have innovative manners and attitudes. 	<ol style="list-style-type: none"> 3-1 i) Sales of SIs whose entrepreneurs are re-educated 2) Quality of the products of SIs whose entrepreneurs are re-educated 	<ol style="list-style-type: none"> 3-1 Follow-up study by SECOFI 	<p>3-2 Entrepreneurs are stimulated by the success of new players.</p>
<ol style="list-style-type: none"> 3-2 Incubate new players in parts and components industry 	<ol style="list-style-type: none"> 3-2 Number of incubated SIs operating 	<ol style="list-style-type: none"> 3-2 Follow-up study by SECOFI 	<p>3-2 Entrepreneurs are stimulated by the success of new players.</p>
<ol style="list-style-type: none"> 4-1 Formulate a master plan for manpower development 	<ol style="list-style-type: none"> 4-1 Master plan for manpower development 	<ol style="list-style-type: none"> 4-1 Evaluation of the plan for manpower development 	<p>3-2 Entrepreneurs are stimulated by the success of new players.</p>
<ol style="list-style-type: none"> 5-1 Improve financial guarantee system. 	<ol style="list-style-type: none"> 5-1 Amount of guarantee given 	<ol style="list-style-type: none"> 5-1 Statistics of SECOFI 	<p>3-2 Entrepreneurs are stimulated by the success of new players.</p>
<ol style="list-style-type: none"> 6-1 Formulate a master plan for industrial standardization. 6-2 Prepare industrial statistics. 	<ol style="list-style-type: none"> 6-1 Master plan for industrial standardization 6-2 Industrial statistics 	<ol style="list-style-type: none"> 6-1 Evaluation of the plan for industrial standardization 6-2 Evaluation of industrial statistics 	<p>3-2 Entrepreneurs are stimulated by the success of new players.</p>

10.4.1
(Project 1-1)
Technology transfer through extension services

(1) Project purpose

To transfer modern essential technologies of industrialized countries to model firms through extension or clinic services, and give impact the entire SIs for technology upgrading through ripple effects.

(2) Target group

Model firms and staff of technical centers

(3) Execution body

SECOFI, SEP-CONACYT; and candidate technical centers serving as extension service centers such as CAST, CIDESI, CIQA, CIATEQ, and CEMYT

(Note) There may be other qualified centers not known to the Team.

(4) Output

Direct technology upgrading of model firms, indirect technology transfer to technical center staff, and ripple effects on SIs as a whole

(5) Activities

A team of foreign consultants will be stationed at technical centers and visit selected model firms to provide technical assistance. The project will proceed as follows:

- 1) To select regions and industries to be covered by the project;
- 2) To select a technical center;
- 3) To select model firms;
- 4) To organize a consulting team; and
- 5) To provide extension or periodic clinic services.

(6) Input

1) Manpower

Consulting team members and technical center staff

2) Facilities and equipment

Those required for workshop (existing ones will be used as far as possible)

3) Finance

The project will be financed by a combination of technical assistance from foreign countries, government budget, contributions by private organizations, and fees collected from beneficiaries. In particular, beneficiaries (the selected model firms) must bear part of the costs, because transfer effects tend to be smaller when it is free of charge.

(7) Example of project implementation

The following case shows one way to implement the proposed project assuming that a donor nation or an agency will provide a Mexico's executing body with technical and financial assistance.

1) The Basic Premises of the Project

The project basically involves technical advisory services through extension or clinic services given by a foreign consulting team for technology guidance. For the purpose, the consulting team periodically visits SME's plants. The project's direct purpose is the technical upgrading of beneficiary firms, but the project is not limited to technology transfer but covers a wide range of activities to reach the overall goal, i.e. to increase local contents of automotive and electrical/electronic industries.

Upon the selection of the beneficiary firms, choose those enterprises that should be able to enter the subcontracting business once quality of their products would be, to a certain extent, improved. In the course of the project, the consulting team in cooperation with SECOFI will negotiate with potential buyers as well; for instance, ask them to cooperate with the project. At the same time the consulting team will provide the beneficiary firms with assistance to improve product quality, impose strict delivery schedules, and present sample products. It is expected for the potential buyers to engage in a long-term subcontract (say, 5 years) and give advice on the specifications of

parts and components they want to buy.

(Note) It should be remembered that there are some buyers who wish to purchase domestic parts, and large enterprises which are actually assisting subcontractors.

During the plant visits by the consulting team, some firms will need modernization of production facilities, which requires loans. In some cases, they cannot provide enough collateral for it. In such cases, the direct financing portion of NAFIN may be applied without a collateral, or the results of diagnoses by the consulting team may be possibly utilized as an intangible collateral to secure loans. In addition, the financing systems of Triple-A and Credit Union might be available from NAFIN. The new SMEs loan scheme promoted by the Export-Import Bank of Japan might also be helpful in some cases.

These "coupling" activities for match-making and financing are performed in cooperation between SECOFI and the leader of the consulting team. The team leader's role is crucial, in that the success of the project is likely to depend on his/her maneuvering. Since the base of the consulting team should be stationed at an existing technical center, SEP and NAFIN's cooperation will be vital. Technical center staff may be subject to technology transfer from the foreign consulting team.

2) Number of model firms

15 - 20 firms per batch, belonging to the same industry subsector

3) Service frequency

The team consisting of 3-4 foreign consultants will identify major problems at each plant they visited, provide advice on possible solutions, explain the logic behind countermeasures, and check the results at the next visit. A 4-member team, for example, may consist of a team leader, an processing technology specialist, a mold- and die-making engineer, and a quality-control/production-management specialist. The frequency of visit to each plant will be once or twice a month, and 1.5 years to 2 years per batch.

(Note) 2) and 3) above can be offered in various packages.

4) Lecture and workshop

Scheduled lectures and workshops will be offered in between extension services to teach essential technologies and management skills on the basis of theory.

5) Estimate of the number of beneficiary firms

Assuming that 1 batch = 1.5 years, 2 batches shall amount to 3.0 years.

Assuming that 15 - 20 beneficiaries per batch.

Around 30-40 companies will be able to receive technological guidance for two batches or 3.0 years.

6) Continuation of extension service

A foreign consulting team which would continue the extension services over 2 batches (3 years) may be taken over by local consultants to continue the project, provided that the local consultants would join the project from the early stages and receive technology transfer by the foreign consultants. It is necessary to discuss who is going to pay the expenditure including salaries and wages for the local consultants during the period of two batches or 3 years.

Table 10.4-3 PDM : (Project 1-1) Technology Transfer through Extension Services

Narrative Summary	Verifiable Indicators	Means of Verification	Important Assumption
<p>Overall Goal Technology of SIs upgraded.</p>	<p>Quality of the products of SIs</p>	<p>Annual survey by SECOFI</p>	
<p>Project Purpose Modern essential technologies are transferred to SIs in Mexico through model firms.</p>	<p>Number of SIs using modern essential technologies</p>	<p>Annual survey by SECOFI</p>	
<p>Output</p> <ol style="list-style-type: none"> 1 Project executing system is established. 2 A detailed action program of the project is developed. 3 Essential technologies of 40 model firms are upgraded during 3 years. 4 SIs have opportunities to know modern essential technologies. 	<ol style="list-style-type: none"> 1 1) Number of staff, 2) Budget, 3) Capacity of the managing staff 2 1) Quality of curriculums 2) Number of visits by consultants 3 Essential technologies of 40 firms 4 1) Number of published materials 2) Number of seminars/ participants 	<ol style="list-style-type: none"> 1 Annual report of the project 2 1) Curriculums 2) Annual report of the project 3 Evaluation by consultants/experts 4 Annual report of the project 	<ul style="list-style-type: none"> • Model firms remain successful in business. • SIs are stimulated by the success of model firms.
<p>Activities</p> <ol style="list-style-type: none"> 1-1 Determine an executing body. 1-2 Choose regions for the services and setup logistics. 1-3 Select recipients of the services from SIs as models. 1-4 Formulate an annual plan of operation. 2-1 Hire consultants/experts for the services. 2-2 Prepare checklist for trouble shooting of plants. 2-3 Prepare curriculums for periodical workshops. 2-4 Schedule plant visits for clinic services. 3-1 Periodically visit the model firms for trouble shooting and advice on their improvement 3-2 Open workshops and classrooms for instruction theory and practice of processing technology 3-3 Executives of SIs get overseas training. 4-1 Publish performance and Output of the project. 4-2 Give seminars on case studies. 	<p>Input</p> <p>Manpower:</p> <ol style="list-style-type: none"> 1) Personnel for the project. 2) Consultants/Experts : 4 persons x 12 mos. x 3 years = 144 man/months <p>Finance:</p> <ol style="list-style-type: none"> 1) Operating costs for the project <p>Facilities:</p> <ol style="list-style-type: none"> 1) Machinery & equipment for the project 		

10.4.2
(Project 1-2)
Development of SIs technical centers

(1) Project purpose

To develop technical centers for SIs to be able to receive better technical services including technical consultation and R&D assistance in areas with clusters of SIs.

(2) Target group

Existing technical centers, such as CAST, CIDESI, CIQA, CIATEQ, and others cited as candidates in Project 1-1

(3) Executing body

SECOFI, SEP-CONACYT or centers listed above as a target group

(4) Output

The existing technical centers located in areas with clusters of SIs will be equipped by well-trained staff and adequate equipment to provide technical consultation and R&D assistance to SIs.

The following 10 cities accommodate the largest number of supporting industries for which SIs centers should be established. As for, Mexico-U.S. border areas where many SIs Maquiladora firms concentrate, there are still few SIs so that demands for the SIs centers in those areas will be small for the time being. Priority subsectors to be served by the centers were specified in Chapter 8 in this report. (Refer to Figure 10.4-1 in section 10.4)

- | | |
|--------------------|-----------------|
| 1) Aguascalientes | 2) Chihuahua |
| 3) Guadalajara | 4) México, D.F. |
| 5) Monterrey | 6) Puebla |
| 7) Querétaro | 8) Saltillo |
| 9) San Luis Potosí | 10) Toluca |

(5) Activities

- 1) To study the existing technical centers across the country.
- 2) To identify existing technical centers, by region, suitable for serving SIs.
- 3) To identify services to be rendered by SIs technical centers.
- 4) To identify hardware and software necessary for reinforcing the centers.
- 5) To improve and strengthen hardware.
- 6) To give education and training to technical center staff.

(6) Input

1) Manpower

- Staff and consultants to prepare a blueprint for networking SIs technical centers
- Technical center staff capable of providing technical assistance
- Foreign consultants responsible for technology transfer to technical center staff

2) Equipment and facilities

Complete the centers' facilities adequate for technical services to SIs.

3) Finance

Foreign aids will be required for the costs involved in: hiring foreign consultants; sending technical center staff to undergo training in a foreign country; and installing equipment in centers.

(7) Project Outline

Assuming that a donor country or an agency would give the centers technical and financial assistance, some details of and notices to this project are described below.

Basic Premises of the Project

The aim of this project is to construct an overall plan and a nationwide network of the SIs technical centers that serve SIs for the priority essential technologies selected in this report. The method to achieve this end is a combination of: "reinforcement of facilities", to make the existing centers actually function as SIs centers; and "technology transfer" to technical center staff.

This project shall enable technical center staff (who have been subjected to technology transfer) to provide R&D assistance, technical consultation/guidance

services to local SIs and/or SMEs, with the use upgraded equipment and facilities.

Following the completion of technology transfer made by foreign consultants, technical center staff should be able to render, services, by themselves, as expected to the SIs technical centers. In short, this project is an education/training program for SIs center staff.

The Team listed such existing centers as CAST, CIDESI, CIQA, CIATEQ and CEMYT as candidates. Considering the distribution and the present state of local parts industries, at least one SIs center should be established in each of the aforementioned 10 cities. Hence, the first thing that needs to be done under the project is to thoroughly scrutinize the existing centers in the cities, before formulating a blueprint for a nationwide network. If findings indicate that difficulties would be involved in establishing SIs centers in the 10 cities all at once due to the scarcity of resources, they should be constructed in priority cities to start with, or in cities where few obstacles seem to exist.

Input

The following is an example of a SIs center for metal stamping process and dies for it, showing the input required.

(Center)

- Land, buildings (The existing center will be used but extensions will be made if necessary)
- Machinery and equipment (referring to those already installed and the rest to be introduced, excluding units to be financed by the donor)
- Appointment of a full-time counterpart
- Appointment of staff members to engage in the project
- Running costs of the project (excluding the portion to be rendered by the donor)

(Donor)

- Long- and short-term dispatch specialists (long-term : 3-4 years, short-term : less than 1 year)
 - a. Team leader
 - b. Training Planner

- c. Stamping machine engineer
 - d. Stamping-die design
 - e. Machining
 - f. Material analysis
 - g. Heat treatment
-
- Overseas training of SIs center staff (3-4 persons per year)
 - Machinery and equipment (partial)

Table 10.4-4 PDM : (Project 1-2) Development of SIs Technical Centers

Narrative Summary	Verifiable Indicators	Means of Verification	Important Assumption
<p>Overall Goal Technology of SIs is upgraded</p>	Quality of the products of SIs	Annual survey by SECOFI	SMEs promotion policy remains as one of national priorities.
<p>Project Purpose SIs receive better technical services from existing technical institutions.</p>	Quality of the technical services from the technical institutions	Annual reports of the technical institutions	SIs are aggressive to improve their technologies.
<p>Output</p> <ol style="list-style-type: none"> 1 A network of SIs centers is planned. 2 Functions and activities of centers are defined. 3 Facilities of centers are strengthened. 4 Technology is transferred to staff of centers. 	<ol style="list-style-type: none"> 1 Quality of the plan 2 Quality of the program 3 Quality of equipment and machinery 4 Capacity of professional and technical staff 	<ol style="list-style-type: none"> 1 Annual report of the project 2 Mid-term evaluation 3 Annual report of the project 4 Evaluation by consultants/experts 	The staff of the center remain.
<p>Activities</p> <ol style="list-style-type: none"> 1-1 Scrutinize the existing technical centers all over the country. 1-2 Identify technical centers good for SIs. 2-1 Hire consultants and experts. 2-2 Clarify needs of SIs for technical assistance. 2-3 Identify software and hardware necessary for strengthening centers. 2-4 Prepare program for technology transfer to the staff of centers. 3-1 Determine specification of equipment and machinery to purchase. 3-2 Purchase and install equipment and machinery. 4-1 Execute program for technology transfer to the staff of centers. 4-2 Train the staff of the center in foreign countries. 	<p>Input</p> <p>Manpower:</p> <ol style="list-style-type: none"> 1) Personnel for the project 2) Consultants/Experts 3) Overseas training <p>Finance:</p> <ol style="list-style-type: none"> 1) Operating costs for the project 2) Costs for purchasing facilities of centers 		

10.4.3
(Project 1-3)

Strengthening of institutions for testing and certification

(1) Project purpose

To increase accredited institutions and laboratories which provide prompt testing and certification services for SIs.

(2) Target group

All the organizations to be accredited, including research institutes, laboratories, and calibration centers.

(Note) In Mexico, private organizations and companies can officially provide testing service and issue certificates by obtaining accreditation. However, actual accreditation does not progress much.

(3) Executing body

SECOFI (DGN and CENAM)

(4) Output

A master plan for establishing a nationwide network of technical support organizations to serve SIs, in the area of inspection, testing, certification, and calibration, will be established and clarified. An implementation plan will be made on the basis of the master plan, and an actual network will be built up in line with the proposed master plan.

(5) Activities

- 1) To identify and determine the needs, quantitatively and qualitatively, for certification organizations and laboratories at a national level;
- 2) To establish a time schedule for strengthening the candidate organizations and allocate budget;
- 3) To expedite the processing of applications for accreditation submitted by various organizations and laboratories;
- 4) To provide necessary assistance in adding or upgrading of equipment at existing organizations; and
- 5) To construct or establish new organizations or laboratories as required.

The priority cities where the network should be established is the 10 cities mentioned in the previous section (10.4.2 Project 1-2).

(6) Input

1) Manpower

Some of the above activities are currently carried out but don't make significant progress until now. To accelerate the process, necessary manpower should be added to set up a unified and effective system capable of producing results. As required, foreign consultants and experts will be hired to formulate the overall plan.

2) Finance

Foreign assistance may be partially required for costs related to the expansion or construction of laboratory facilities and the hiring of foreign consultants for making the master plan.

Table 10.4-5 PDM : (Project 1-3) Strengthening of Accredited Institutions and Laboratories

Narrative Summary	Verifiable Indicators	Means of Verification	Important Assumption
<p>Overall Goal Technology of SIs is upgraded.</p>	Quality of the products of SIs	Annual survey by SECOFI	SMEs promotion policy remains as one of national priorities.
<p>Project Purpose SIs receive prompt services of testing and certification from accredited institutions and laboratories.</p>	Amount of testing and certification given	Annual report of the accredited institutions and laboratories	
<p>Output</p> <ol style="list-style-type: none"> 1 An executing system for the project is established. 2 An action program is firmly formulated. 3 A network of accredited institutions and laboratories is composed. 	<ol style="list-style-type: none"> 1 1) Number of staff, 2) Budget, 3) Capacity of the managing staff 2 Quality of the action program 3 Number of accredited institutions and laboratories 	<ol style="list-style-type: none"> 1 Annual report of the project 2 Mid-term evaluation of the project 3 Terminal evaluation of the project 	Buyers require more certification.
<p>Activities</p> <ol style="list-style-type: none"> 1-1 Determine a responsible executing body for the project. 1-2 Provide staff for the project 1-3 Hire consultants for formulation of the action program. 2-1 Analyze problems faced by SIs in getting industrial certification. 2-2 Determine number of accredited institutions and laboratories and by region and by function. 2-3 Determine by region whether the existing organizations are strengthened or new ones are constructed as accredited institutions and laboratories. 2-4 Fix a timetable, budget and financing sources. 3-1 Promptly accredit the existing organizations as accredited institutions and laboratories. 3-2 Assist the existing organization to strengthen laboratory equipment. 3-3 Construct new accredited laboratories for industrial certification. 	<p>Input</p> <p><u>Manpower:</u></p> <ol style="list-style-type: none"> 1) Staff of the executing body 2) Consultants for formulation of the action program <p><u>Finance:</u></p> <ol style="list-style-type: none"> 1) Credit to the existing organizations for laboratory strengthening 2) Budget for construction of new laboratories <p>Some part of equipment and machinery for laboratory financing may be donated by international assistance institutions</p>		

10.4.4
(Project 2-1)
Enhancement of match-making activities

(1) Project purpose

To modify and strengthen activities, mainly events for parts exhibition, being currently carried out for the subcontracting promotion so as to increase the rate of success in subcontracting.

(2) Target group

The direct target group consists of organizations engaged in match-making activity for SIs. Final beneficiaries are buyers and suppliers who enter into subcontract.

(3) Executing body

The principal executing body is SECOFI, under the support and collaboration of the state government, the chamber of commerce and industry, NAFIN, BANCOMEXT, and commercial banks.

(4) Output

- 1) More efficient methodology for match-making activities is established to invigorate the activities nationwide.
- 2) Events and seminars for match-making are conducted to meet the actual needs, resulting in a higher rate of successful match-making.
- 3) Suppliers can obtain full support after events for successful subcontracting.

(5) Activities

- 1) To study the results of previous events and redesign the future events to meet actual needs of buyers and suppliers;
- 2) To utilize the database on suppliers and buyers (for which SECOFI recently started to collect and compile data) to disseminate event information effectively;
- 3) To hold seminars and forums periodically to ensure effective and close communication between buyers (mainly large enterprises) and suppliers (mainly SMEs);

- 4) To hold events on a continuous and periodical basis under financial assistance of SECOFI and other related organizations, and conduct follow-up survey;
- 5) To ensure that the executing body serves as an intermediary for subcontracts between buyers and suppliers, while fostering professional brokers; and
- 6) To provide financial and technical assistance for suppliers in order to facilitate subcontracting negotiations and finalization.

(Considerations)

- 1) To invite foreign primary suppliers or primary subcontractors to events and exhibitions held by assemblers including Maquiladora companies, because promotion of Mexico's primary suppliers (large and medium-scale enterprises) shall be conducted by attraction of a foreign direct investment. The productive chain especially in electrical and electronic industry is broken at this tier;
- 2) To hold exhibitions of parts and components by domestic primary suppliers to look for secondary suppliers, together with those manufactured by secondary suppliers;
- 3) To hold seminars and forums periodically to enhance communication between buyers and suppliers, including plant visits each other, thereby encouraging mutual understanding and confidence building; and
- 4) To make continuous efforts to improve seminars and events to the actual needs of the both sides, as they do not necessarily produce the remarkable results from the beginning.

(6) Input

- 1) Manpower
 - Full-time staff of the executing body
 - Consultants and experts to follow up events
- 2) Finance
 - Financial assistance for events, seminars, and forums as well as costs related to consultants
- 3) Facilities
 - Facilities to accommodate events, seminars, and forums, and technical centers for consultation

Table 10.4-6 PDM : (Project 2-1) Enhancement of Match-making Activities

Narrative Summary	Verifiable Indicators	Means of Verification	Important Assumption
<p>Overall Goal Subcontracting of SIs accelerates.</p>	<p>Number of subcontracts Number of matches made by match-making</p>	<p>Annual survey by SECOFI Follow-up study by SECOFI</p>	<p>SMEs promotion policy remains as one of national priorities. SIs product quality is acceptable for buyers.</p>
<p>Project Purpose Match-making activities become more fruitful for SIs and buyers.</p> <p>Output</p> <ol style="list-style-type: none"> 1 National coordination system of match-making activities is established. 2 Events and seminars for match-making promotion become much effective. 3 Potential suppliers get full support for subcontracting. 	<ol style="list-style-type: none"> 1 1) Number of staff, 2) Budget, 3) Capacity of the managing staff 2 Number of matches made per event 3 Number of supported SIs 	<ol style="list-style-type: none"> 1 Annual report of the project 2 Annual report of the project 3 Annual report of the project 	<p>SIs are aggressive to get subcontracts.</p>
<p>Activities</p> <ol style="list-style-type: none"> 1-1 Establish coordination system between federal and regional institutions for opening events. (SECOFI, Regional institutions) 1-2 Scrutinize requirements of potential suppliers/buyers for OEM subcontracting business. (SECOFI) 1-3 Design a variety of events to meet the requirements and needs. (SECOFI, Regional institutions, Industries) 1-4 Sponsor or assist regional institutions to open events of potential suppliers/buyers. (SECOFI) 2-1 Fully utilize the database of potential suppliers/buyers. (SECOFI, Regional institutions) 2-2 Open forums and seminars for mutual understanding between potential suppliers/buyers. (SECOFI) 2-3 Periodically hold exhibitions of parts and components. (SECOFI, Regional institutions, Industries) 2-4 Follow-up the progress of the events. (SECOFI, Regional institutions) 3-1 Mediate between potential suppliers/buyers individually. (SECOFI, NAFIN, Regional institutions) 3-2 Give potential suppliers technical consultation. (SECOFI, NAFIN) 3-3 Financially support potential suppliers for subcontract acceleration. (NAFIN) 	<p>Input</p> <p>Manpower:</p> <ol style="list-style-type: none"> 1) Staff of the related organizations, who are exclusively charged in the project 2) Technical consultants/experts for following up the event <p>Finance:</p> <ol style="list-style-type: none"> 1) Sharing the costs of events by potential buyers 2) Sharing the costs of events by the related organizations <p>Facilities:</p> <ol style="list-style-type: none"> 1) Facilities for events and seminars 2) Facilities for technical consultation 		<p>Staff of the related organizations remain active in the project.</p>

10.4.5
(Project 2-2)
Assistance for relocation of SIs near to the market

(1) Project purpose

To facilitate relocation and construction of plants of SIs near the market (particularly, the border area).

(2) Target group

Supporting industries, particularly SMEs

(3) Executing body

SECOFI, under the assistance and collaboration of the state government, the chamber of commerce and industry, Maquiladora association, NAFIN, BANCOMEXT and commercial banks

(4) Output

- 1) Suppliers can obtain information on parts procurement by buyers as required (through one-stop service).
- 2) Suppliers who intend to relocate their plants near the market can obtain primary information on prospective sites (through one-stop service).
- 3) Suppliers, after relocation of their plants near the market, are financially supported until their operations are well under way , e.g., for three years from a commencement of operation.

(5) Activities

- 1) To collect and publish information on parts and components buyers intend to outsource, under cooperation of the chamber of commerce and industry and the Maquiladora association;
- 2) To establish a system for suppliers to gain access to information on plant sites near buyers including industrial parks, infrastructure, and industrial costs (a system about how to access to information sources is enough);
- 3) To provide a long-term loan program for plant relocation with a grace period of three or so years after relocation.

(Note) Activity 3) is the focal point of the project.

**Table 10.4-7 PDM :
(Project 2-2) Assistance for Relocation of SIs near to the Market**

Narrative Summary
<p>Overall Goal Subcontracting of SIs accelerates/</p>
<p>Project Purpose It becomes easier for SIs to relocate their plants closer to the market.</p>
<p>Output</p> <ol style="list-style-type: none"> 1 Information about purchase orders of buyers including Maquiladoras are always available for SIs. 2 SIs can promptly get information about new plant sites for relocation in the vicinity of potential 3 Relocation costs are financially supported.
<p>Activities</p> <ol style="list-style-type: none"> 1.1 Systematically collect information about purchase orders of potential buyers 1.2 Open the information to the public 2.1 Establish an information supply system on plant sites near to the market 3.1 Finance relocation costs by long-term loans with a certain grace period

10.4.6 (Project 2-3)

Introduction of certification system for local consultants

(1) Project purpose

To establish a certification system for local consultants to allow selective hiring of qualified consultants who have real expertise and experience; and mobilize competent consultants required for technical assistance in match-making activity, technology upgrading of SIs, and plant diagnoses on behalf of financial institutions and so on.

(2) Target group

Mexican consultants

(3) Executing body

SECOFI under cooperation of NAFIN and BANCOMEXT

(4) Output

- 1) The certification system is established as authoritative one.
- 2) A fair and objective examination system is established.
- 3) Consultants are rated according to their skill and technological levels.

(5) Activities

- 1) To build a consensus among related agencies and organizations on introduction of the certification system;
- 2) To incorporate the system into the "Competitive Center" program;
- 3) To study comparative systems in foreign countries and design the system which reflects local conditions; and
- 4) To conduct the examination for local consultants under the certification system.

(Note) The qualification examination is to be held once a year. Types of occupation for the examination must include SIs-related technical fields in any case.

For the Japanese certification system of Small and Medium Business Consultant, and Consultant Engineer, refer to Annex 10-2.

**Table 10.4-8 PDM :
(Project 2-3) Introduction of Certificate System for Local Consultants**

Narrative Summary
<p>Overall Goal Subcontracting of SIs accelerates.</p>
<p>Project Purpose Quality technical assistance is available for SIs for match-making promotion and technology upgrading.</p>
<p>Output</p> <ol style="list-style-type: none"> 1 An executing body and an institutional certificate system are determined. 2 Methodologies for testing and certification for consultants are established. 3 Local consultants are certified by grade.
<p>Activities</p> <ol style="list-style-type: none"> 1.1 Authorize introduction of a certification system. 1.2 Incorporate the system into the "Productive Center" program. 2.1 Study the prevailing systems in foreign countries. 2.2 Establish a certification system appropriate to Mexico. 2.2 Evaluate local consultants by their professional career in the specific field. 2.2 Test local consultants using a written examination about their specialties.

10.4.7
(Project 3-1)
Entrepreneur re-education

(1) Project purpose

To empower entrepreneurs of SIs with modern management techniques required for OEM subcontracting business, leading to international competitiveness in management techniques too.

(2) Target group

Owners and managers of enterprises that are currently manufacturing OEM parts and components, and those who intend to enter OEM business from REM (Replacement Equipment Manufacturing) or other industries

(3) Executing body

STPS and SEP, under cooperation of NAFIN (PRODEM) and CIMO which are currently conducting management education

(4) Output

- 1) An official re-education system/courses for entrepreneurs of OEMs is established.
- 2) The gap in perception of subcontract business between buyers (mainly large enterprises) and suppliers (mainly SMEs) is filled up.
- 3) Suppliers learn the ways to improve their management spontaneously.

(5) Activities

- 1) To develop an educational program/courses on business practice required for entrepreneurs of manufacturers of OEM parts and components;
- 2) To recruit participants, who should preferably be young and enthusiastic entrepreneurs;
- 3) To conduct a series of lectures by procurement managers of large enterprises for participants to teach basic requirements for purchase of OEM parts and components;

- 4) To conduct on-the-job training at plants of Maquiladora or other foreign-affiliated companies (buyers) in Mexico to transform knowledge learned in 3) into practical experience;
- 5) To conduct on-the-job training at plants of foreign suppliers in order to learn how they meet buyers' requirements in OEM business; and
- 6) To learn about modern management theories to supplement the series of on-the-job training.

(Duration of the re-education)

It is proposed to set up an intensive educational program for around ten young entrepreneurs (including would-be second-generation owners) The basic curriculum is as follows:

- 1) Lectures by procurement managers of OEM buyers: Five days (half-day each)
- 2) On-the-job-training at assemblers and large manufacturers in Mexico (to learn about actual needs and their reasons of buyers for procurement of parts and components): One month
- 3) On-the-job-training at foreign OEM suppliers (to learn about what efforts OEM suppliers make to meet buyers' requirements): Three months

(Options)

The above activities may not be affordable for many entrepreneurs, while the project serves a limited number of beneficiaries. For many participants, it is difficult to leave from their companies for a long period of time. Thus, it is important to provide similar opportunities for many entrepreneurs who will not be able to participate in the proposed project.

At present, NAFIN and CIMO offer management education courses which cover general subjects. It is therefore proposed to establish a special course in the area of subcontracting business management for OEM suppliers as part of NAFIN's ongoing program, PRODEM. The course will concentrate on subcontracting business practice, consisting of the following:

- 1) Lectures by procurement managers of OEM buyers (large enterprises) on purchase requirements for OEM parts and components;
- 2) Costs and profits estimation methods for comparison between big- and small-lot orders; and

- 3) Profits derived from a strict delivery control, and also its effect on quality assurance.

(6) Input

- 1) Manpower (lecturers)

- Procurement managers of large enterprises
- Academician/consultant having expertise in actual business practice

- 2) Facilities

- Plants of large enterprises in Mexico
- Plants of SMEs in foreign countries
- Lecture facilities

- 3) Finance

The program in Mexico will be financed by beneficiaries themselves, while large enterprises provided participants with some support for OJT at their plants. Overseas training will require financial assistance from foreign sources.

Table 10.4-9 PDM : (Project 3-1) Entrepreneur Re-education

Narrative Summary	Verifiable Indicators	Means of Verification	Important Assumption
<p>Overall Goal Management of SIs is improved.</p>	<p>Quality of management of SIs Sales for SIs whose entrepreneurs are re-educated Quality of the products of SIs whose entrepreneurs are re-educated</p>	<p>Annual survey by SECOFI Follow-up study by SECOFI</p>	<p>SMEs promotion policy remains as one of national priorities. Other entrepreneurs are stimulated by the success of re-educated entrepreneurs.</p>
<p>Project Purpose Entrepreneurs of SIs are equipped with innovative manners and attitudes.</p>	<p>1) Number of staff, 2) Budget, 3) Capacity of the managing staff 2 Degree of understanding by the participants 3 Degree of understanding by the participants</p>	<p>1 Annual report of the project 2 Evaluation by the instructors 3 Evaluation at the companies where on-the-job training was given</p>	<p>Entrepreneurs are ready to accept improvement method.</p>
<p>Output 1 Project implementation system is established. 2 The gap in business manners between buyers (large companies) and suppliers (SMEs) becomes clear. 3 Entrepreneurs of SIs/SMEs become aware of modern management in subcontracting business and of methods for improvement.</p>	<p>Input Manpower: 1) Instructors from large companies 2) Consultant/expert 3) On-the-job training at large companies 4) On-the-job training at overseas companies Finance: 1) Operating costs for the project</p>		
<p>Activities 1-1 Determine an executing body for the project. 1-2 Develop re-education program or courses. 1-3 Provide facilities budget and staff for the project. 2-1 Recruit participants or entrepreneurs for the project. 2-2 Hold seminars on requirements of buyers (large companies). 3-1 Give on-the-job training to participants in large companies. 3-2 Give on-the-job training in overseas companies to participants. 3-3 Lecture participants on modern management skills.</p>			

10.4.8
(Project 3-2)
Entrepreneur incubation

(1) Project purpose

To support new players who begin their business in parts industry.

(2) Target group

Individuals or a group of individuals who intend to start OEM parts business

(3) Executing body

SECOFI under cooperation of NAFIN and BANCOMEXT

(4) Output

- 1) A program to support entrepreneurs is established.
- 2) Facilities to support entrepreneurs are established.
- 3) Entrepreneurs will be able to receive sufficient support upon entering into the OEM parts business.

(5) Activities

- 1) To develop the basic concept and implementation system for the project;
- 2) To arrange land and buildings for the project;
- 3) To lend working capital to entrepreneurs;
- 4) To invite entrepreneurs to participate in the project;
- 5) To lease land, buildings, and equipment to entrepreneurs; and
- 6) To provide advice for entrepreneurs in terms of marketing and technology, preferably under cooperation of potential buyers.

(6) Input

The project primarily supports engineers working with large enterprises (OEM parts buyers) when they start their own business. These entrepreneurs or new players are expected to have sufficient technical background to meet requirements of buyers and will be able to get orders from the enterprise they worked for. But they do not have financial resources to start up their own business. To illustrate

the typical process of the project, an example is presented below though it can take a variety of methods with the same project purpose.

1) Factory site and building

The government (SECOFI) provides factory sites and buildings, which may be developed in the form of a mini-industrial park (may be called "the incubation park"). For 10 entrepreneurs, for instance, in the same industry subsector (e.g., plastic processing), the following land and buildings will be required:

(Note) While the entrepreneurs do not necessarily belong to the same industry subsector, the arrangement is made for the effective use of a common service facilities.

Land	: 5ha
Factory buildings	: 10 units (3,000m ² each)
Common service facilities including a testing laboratory	: One building (3,000m ²)

The land and buildings are leased to entrepreneurs upon monthly payments. The new players, therefore, do not need to prepare sizable funds. The lease term might be more or less three years, after then entrepreneurs are required to acquire their own sites and buildings.

2) Machinery and equipment

Machinery and equipment are installed within the above factories under a lease of 8-10 years. They can transfer those machinery and equipment to the new buildings that they acquired after three years of leasing land and buildings. Upon completion of the lease term of machinery and equipment, properties of them are transferred to entrepreneurs. Alternatively, loans may be provided by using machinery and equipment as collateral. The amount of loan ranges between \$300,000 and \$1 million per case.

Table 10.4-10 PDM : (Project 3-2) Entrepreneur Incubation

Narrative Summary	Verifiable Indicators	Means of Verification	Important Assumption
<p>Overall Goal Management of SIs is improved.</p>	Quality of management of SIs	Annual survey by SECOFI	SMEs promotion policy remains as one of national priorities.
<p>Project Purpose New players are successful in participation in the parts and components industry.</p>	Number of incubated SIs operating	Follow-up study by SECOFI	Entrepreneurs are stimulated by the success of new players.
<p>Output</p> <ol style="list-style-type: none"> 1 Executing system for the project is established. 2 Tools for the project are prepared. 3 New players are fully supported to set-up in OEM business. 	<ol style="list-style-type: none"> 1 1) Number of staff, 2) Budget, 3) Capacity of the managing staff 2 Quantity and quality of tools 3 Number of incubated new players 	<ol style="list-style-type: none"> 1 Annual report of the project 2 Annual report of the project 3 Progress report of new players 	
<p>Activities</p> <ol style="list-style-type: none"> 1-1 Determine an executing body for the project. 1-2 Develop management system for the project. 1-3 Provide budget and staff for the project. 2-1 Provide land and factory buildings for new players. 2-2 Provide credit facilities for new players. 3-1 Selectively recruit new players to join the project. 3-2 Rent land and factory buildings to new players with special incentives for 3 years. 3-3 Lease machinery and equipment with special incentives for 3 years. 3-4 Financially support new players in working capital and operating cost. 3-5 Assist new players in marketing, technology and management in cooperation with potential buyers. 	<p>Input</p> <p>Manpower:</p> <ol style="list-style-type: none"> 1) Staff of the executing body 2) Consultants for assistance in marketing, technology and management <p>Finance:</p> <ol style="list-style-type: none"> 1) Supplement of financial costs to rent and lease fixed assets 2) Credit for working capital and operating costs <p>Facilities:</p> <p>An example :</p> <ol style="list-style-type: none"> (1) A functional incubation park (2) 10 companies of the same trade (e.g. plastic processing) (3) Land : 5ha (4) Factory Buildings = 10 bldgs. x 3,000 m²/bldg. A laboratory for common use = 3,000m² (5) Machinery & Equipment : <p>Factory (leasing) = US\$0.3~1.0 million/company Laboratory = US\$0.3~0.5 million</p>		

10.4.9
(Project 4-1)

A master plan study for manpower development

(1) Project purpose

To formulate a 10-year master plan for manpower development to enable a scheduled efforts for manpower supply in technical fields.

(2) Target group

Industrial workers and technicians.

(3) Executing body

SEP and STPS

(4) Output

- 1) Problems related to the ongoing manpower development programs are identified.
- 2) A 10-year target for manpower development in technical fields is established.
- 3) A 10-year implementation plan for manpower development is formulated.

(5) Activities

- 1) To evaluate the ongoing manpower development programs;
- 2) To estimate supply and demand situation in labor force in terms of quality and quantity;
- 3) To analyze hardware and software currently used for manpower development;
- 4) To estimate manpower supply and demand during the decade and identify hardware and software required for effective manpower development; and
- 5) To develop manpower development strategies, projects, input, and an action program.

**Table 10.4-11 PDM :
(Project 4-1) A Master Plan Study for Manpower Development**

Narrative Summary
<p>Overall Goal Manpower of SIs is well developed.</p>
<p>Project Purpose Manpower development become more effective.</p>
<p>Output</p> <ol style="list-style-type: none"> 1 Underlying problems of the current manpower development are clarified. 2 A manpower development goal for 10 years is set. 3 An action plan is formulated.
<p>Activities</p> <ol style="list-style-type: none"> 1.1 Scrutinize the performance of various manpower development programs. 1.3 Review the existing software and hardware including incentive systems. 1.2 Identify gaps between industries' requirements and manpower supply in terms of quality and quantity. 2.1 Forecast supply/demand of manpower in industries for 10 years in terms of quality and quantity. 2.2 Clarify necessity of additional software and hardware to satisfy the requirements for 10 years. 3.1 Illustrate required strategies, projects and inputs with a time table.

10.4.10
(Project 5-1)
Improvement of financial guarantee system

(1) Project purpose

To improve the financial guarantee system and make funds flow smoothly to SMEs.

(2) Target group

SMEs

(3) Executing body

Ministry of Finance (SHCP), NAFIN, BANCOMEXT, and commercial banks

(4) Output

- 1) It becomes clear who should bear the costs for credit guarantee, namely bad debts from SMEs loans.
- 2) The guarantee system will be formally established, and will function properly.

(5) Activities

- 1) To raise discussion among related agencies to a consensus, who will bear the SMEs promotion costs, and decide on financial sources for the costs;
- 2) To consider whether NAFIN should continue its guarantee service or whether a new system or organization is established;
- 3) To discuss introduction of an insurance system to insure the guarantor against bad debts; and
- 4) To consider the possibility of raising the guarantee coverage ratio (50% at present).

(Reference : The guarantee and insurance system in Japan)

The guarantee and insurance system for SMEs in Japan is described below for reference. Major differences of Japanese system from the guarantee system in Mexico are 1) the presence of an insurance system to cover a risk of guarantor, and 2) an organization for guarantee is completely separated from that for financing.

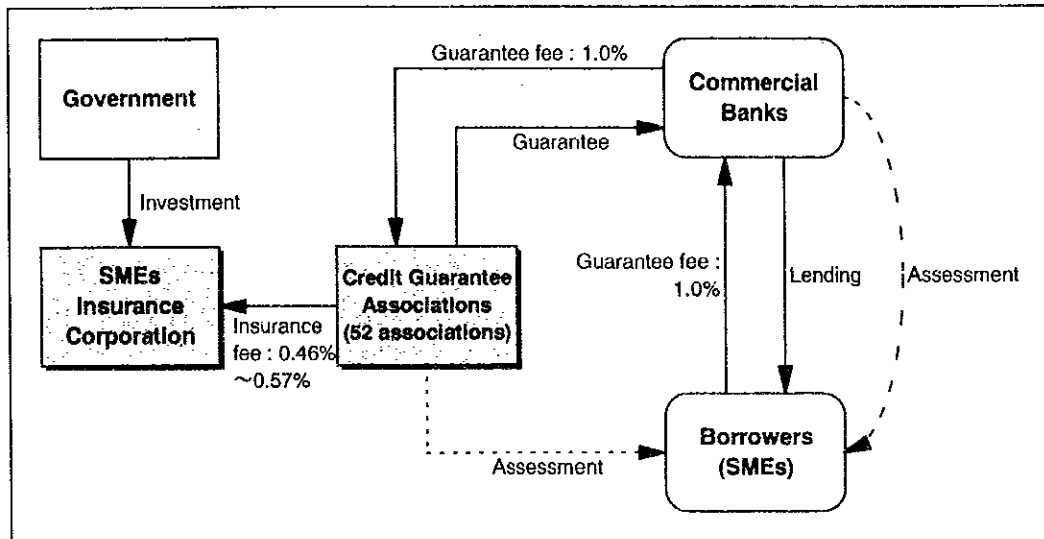


Figure 10.4-1 Schematic Diagram of Guarantee and Insurance System for SMEs in Japan (For Lending)

Loan guarantee procedures

- 1) A borrower (SMEs) requests a loan guarantee directly to Credit Guarantee Association, or via a commercial bank. There are 52 Credit Guarantee Associations throughout the country, at least one in each prefecture.
- 2) The Credit Guarantee Association evaluates the loan application for a guarantee, and so does the commercial bank for financing. The loan is available without a collateral up to 35 million yen, and the maximum amount is 200 million yen with a collateral.
- 3) The guarantee fee is 1.0% per annum and paid by the borrower, via the commercial bank to the Credit Guarantee Association. The guarantee should cover the entire amount of loan (100%).
- 4) The Credit Guarantee Association is insured by SMEs Insurance Corporation at an annual premium of 0.46% - 0.57%. The Credit Guarantee Associations are operated by revenues from the guarantee fee and an income from their assets management. The central and local governments also financially assist the associations.

- 5) SMEs Insurance Corporation is an organization wholly financed by the central government and specializes in providing insurance and loan services for the Credit Guarantee Associations. In FY1994, the corporation had the Insurance Fund amounting to 10 billion yen and a Loan Fund of 9.5 billion yen.

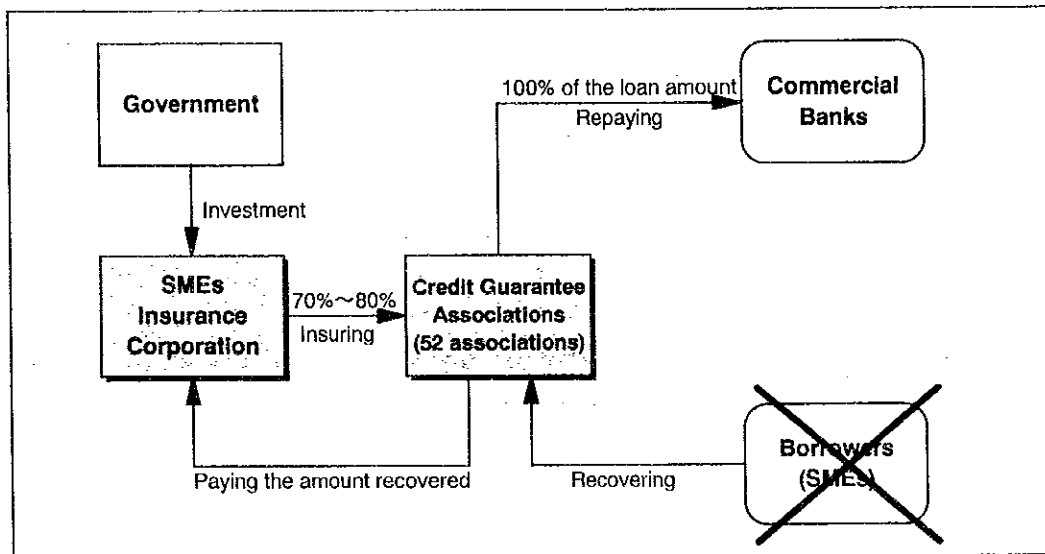


Figure 10.4-2 Action of Guarantee and Insurance System for Bad Debt in Japan

Against bad debt

- 1) When a borrower defaults, the Credit Guarantee Association pays back the loan in full the unrepaid amount to the commercial bank on behalf of the borrower.
- 2) SMEs Insurance Corporation pays 70% - 80% of the unrepaid amount to the Credit Guarantee Association. Therefore, the remaining 20% - 30% is a loss for the Association.
- 3) Once a Guarantee is invoked, a claim on the loan is moved from the commercial bank to the Credit Guarantee Association. The Association tries to recover it from the borrower and the recovered amount is paid to SMEs Insurance Corporation according to the percentage of the insurance payment.

**Table 10.4-12 PDM :
(Project 5-1) Improvement of Financial Guarantee System**

Narrative Summary
<p>Overall Goal Financial support for SMEs is strengthened.</p>
<p>Project Purpose Financial guarantee system for SMEs is improved.</p>
<p>Output</p> <ol style="list-style-type: none"> 1 It becomes clear who shall bear the costs of the guarantee system. 2 Total system for the financial guarantee for SMEs is established and works well.
<p>Activities</p> <ol style="list-style-type: none"> 1.1 Discuss cost/benefit of SMEs promotion in view of the national economy. 1.2 Determine financial sources or funds for the guarantee system. 1.3 Study guarantee systems of foreign countries. 2.1 Define the role of NAFIN in the guarantee system. 2.2 Study the introduction of insurance system against the guarantee. 2.3 Examine a higher coverage ratio of the guarantee.

10.4.11
(Project 6-1)

Formulation of a master plan for industrial standardization

(1) Project purpose

To study the current state of industrial standardization (including quality control activities) and formulate a master plan for systematic modernization.

(2) Target group

Final beneficiaries are all the industries including SMEs.

The subject of study is software including systems, regulation measures, and movements, as well as hardware related to laboratories:

- 1) Laws, systems, and organizations;
- 2) Formulation and revision of standards;
- 3) Accreditation and certification system;
- 4) Dissemination of standards;
- 5) Testing and inspection system and its organization;
- 6) Metrological and calibration system and organization; and
- 7) Quality control promotion movements.

(3) Executing body

SECOFI (DGN and CENAM); as the project is closely associated with Project 1-3, it is implemented before or in parallel to the project.

(4) Output

- 1) Current issues related to industrial standardization in Mexico are identified.
- 2) The target for industrial standardization is established.
- 3) Action and implementation plans for reaching the target are formulated.

(5) Activities

The project envisages that foreign consultants will assist in developing the master plan spending one to two years:

- 1) To identify the current state of industrial standardization in software and hardware;

- 2) To identify the gap between the required level of industrial standardization and the current state;
- 3) To make long-term forecasts (e.g., 10 years) on requirements and demand for industrial standardization;
- 4) To identify software and hardware requirements to meet the above requirements and demand; and
- 5) To propose strategies, projects, input, and implementation schedule to accomplish the purpose.

**Table 10.4-13 PDM :
(Project 6-1) Formulation of a Master Plan for Industrial Standardization**

Narrative Summary
<p>Overall Goal The foundation of SMEs promotion is laid.</p>
<p>Project Purpose Industrial standardization including quality control movements is systematically modernized.</p>
<p>Output</p> <ol style="list-style-type: none"> 1 Underlying problems of the standardization and QC movements are clarified. 2 A the standardization goal is set. 3 An action plan is formulated.
<p>Activities</p> <ol style="list-style-type: none"> 1-1 Review the existing software and hardware for standardization. 1-2 Identify gaps between requirements and the present state. 2-1 Forecast industry requirements for software and hardware over 10 years. 2-2 Clarify necessary of additional software and hardware to meet the requirements. 3-1 Illustrate strategies, projects and inputs required with a time table.

10.4.12
(Project 6-2)
Preparation of industrial statistics

(1) Project purpose

To develop and maintain industrial statistics to give the quantitative basis for industrial promotion policies for successful implementation.

(2) Target group

Mexican government. All industries will also ultimately be beneficiaries.

(3) Executing body

INEGI under cooperation of SECOFI

(4) Output

- 1) A total system for developing and updating industrial statistics is built up.
- 2) The system is tested and configured.
- 3) The follow-up system for initial configuration is established.

(5) Activities

The project may require technical assistance from foreign countries.

- 1) To identify data to be collected as the basis of industrial statistics and their sources;
- 2) To determine organizations responsible for data collection by subsector;
- 3) To create software programs for data processing;
- 4) To make a test-run of the system designed above and necessary modification, and once complete the system equipped with statistics for one-year; and
- 5) To prepare manuals for the responsible institutions required for system operation and deploy computers as necessary.

**Table 10.4-14 PDM :
(Project 6-2) Preparation of Industrial Statistics**

Narrative Summary
<p>Overall Goal The foundation of SMEs promotion is laid.</p>
<p>Project Purpose Industrial statistics make industrial promotion policies more practical.</p>
<p>Output</p> <ol style="list-style-type: none"> 1 A total system of industrial statistic is established. 2 Initial preparation of industrial statistics is completed. 3 Follow-up system is established.
<p>Activities</p> <ol style="list-style-type: none"> 1-1 Identify industrial data to be collected and their sources. 1-2 Determine responsible institutions by subsector for the data collection. 1-3 Develop software for data processing. 2-1 Run a test of the system established for the above. 2-2 Complete a system to keep the initial-year statistics 3-1 Prepare related manuals for the responsible institutions. 3-2 Equip the institutions with computers.

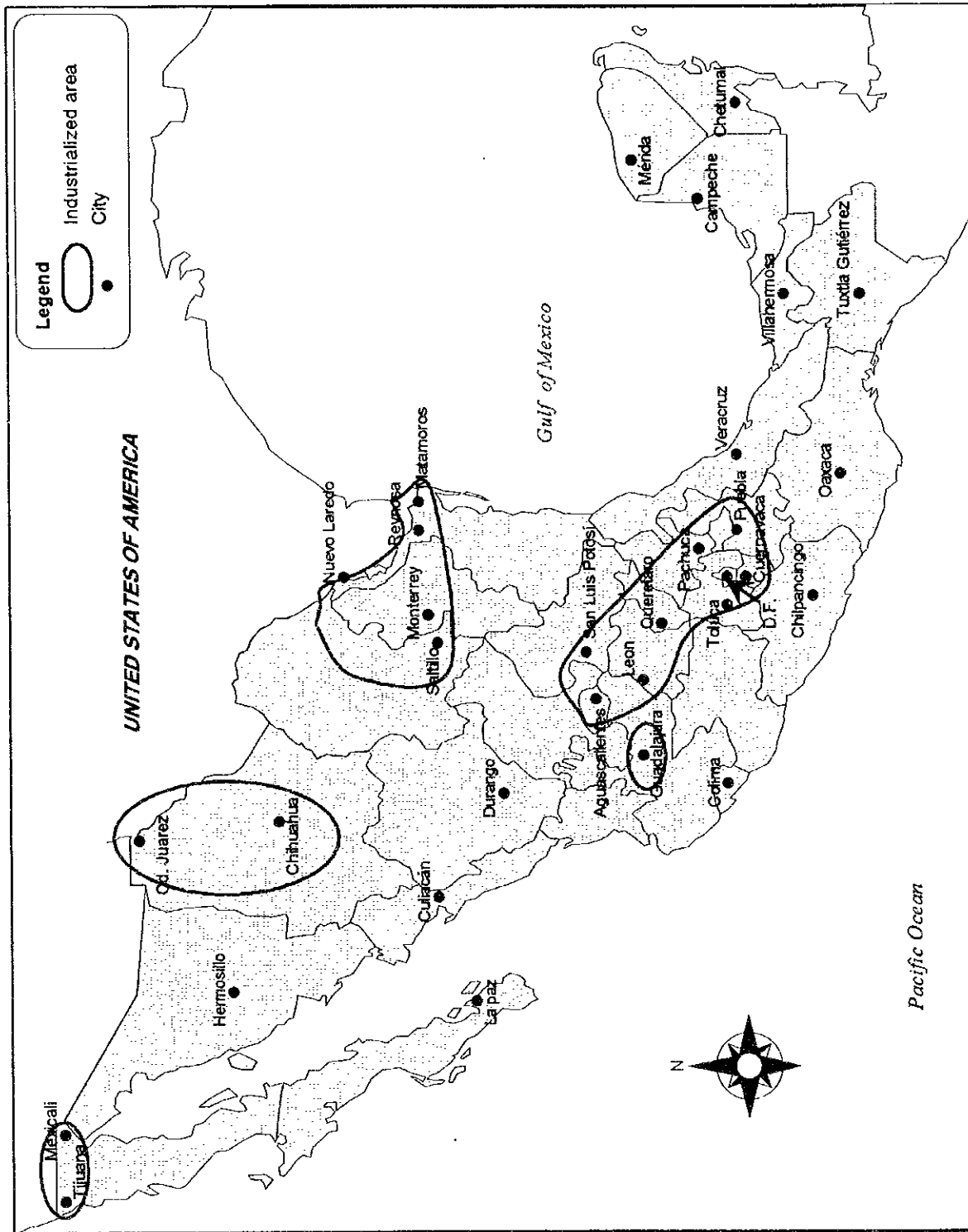
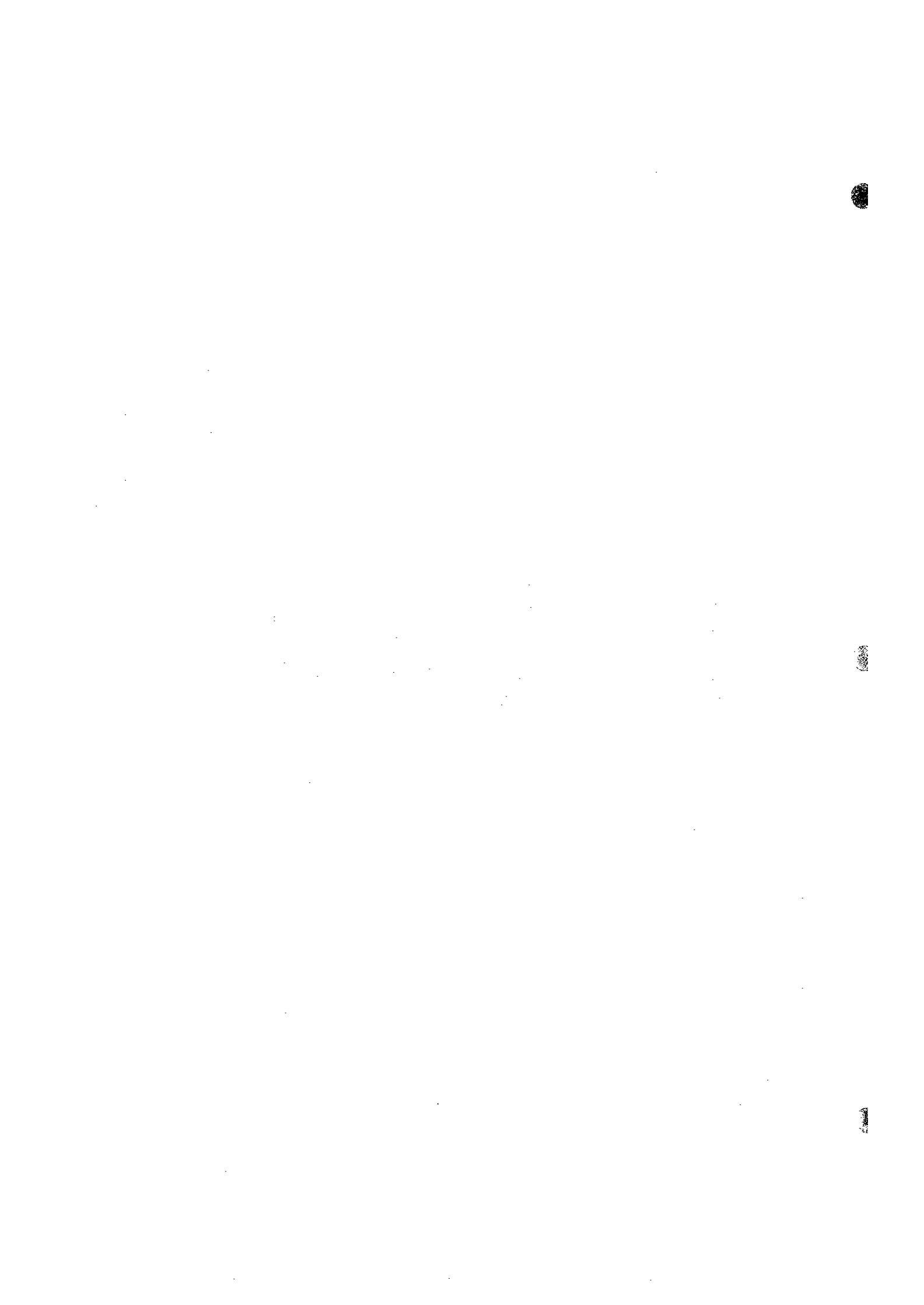


Figure 10.4-3 Areas with Clusters of Assemblers and Supporting Industries



10.5 Master Plan

10.5.1 Composition of Master Plan

(1) Enumeration and positioning of strategies and projects

Table 10.5-1 presents a summary of proposed projects in this study. It briefly describes each project which details are discussed in 10.4. Note that some projects have more than two executing bodies, which will be finalized with the progress of the projects.

Figure 10.5-1 illustrates how each strategy is positioned within the framework of an overall plan or a master plan. As seen in the figure, Strategies 1, 3, and 4 are designed to directly support "suppliers" who are the target group identified in this study. These strategies are supported by Strategy-6 as the institutional foundation serving as industrial infrastructure. Finally, Strategy-2 is concerned with both buyers and suppliers for the purpose of subcontracting promotion.

(2) Relations among projects

A project produces several outputs related to two or more strategies, and thus cannot always be categorized only in a particular strategy. Figure 10.5-2 shows relation between projects and strategies as to which project has close relationship with any strategy(-ies) other than the strategy the project is originally assigned to. In the figure, symbol of "●" represents a strategy to which a given project is assigned, while a symbol of "○" represents other strategy(-ies) which is closely related with the project.

The figure depicts the multi-faceted effect of each project. For instance, if Project 1-1 "Technology transfer through extension services" would be materialized, it supports and supplements those three strategies, from Strategy-2 through Strategy-4. There might be some projects which can be reasonably assigned to the other strategy than original one due to its relationship (e.g., Project 2-3 to Strategy-1). Reading the figure vertically indicates how each strategy is supported by individual projects in the proposed master plan. For instance, Strategy-1 "Technology Upgrading" is driven by five projects, adding to three projects marked by "●", two projects marked by "○", namely Projects 2-3 and 6-1.



Table 10.5-1 Summary of the Proposed Projects ¹⁾

Project Name (i.e. Project Purpose)	Target Group	Main Output	Main Activity	Main Executing Body
Strategy-1 : Technology Upgrading Project 1-1 Technology transfer through extension services	SMEs ²⁾ of SIs ³⁾	Clinic services are given to the model firms (40 firms/3 year).	Hire foreign consultants for the clinic services.	SECOFI, SEP-CONACYT
Project 1-2 Development of SIs technical centers	The existing technical institutions	A SIs network center is established.	Strengthen facilities and train staff of the existing centers.	SECOFI, SEP-CONACYT
Project 1-3 Strengthening of institutions for testing and certification	Technical institutions and laboratories to be accredited.	A network of accredited institutions and laboratories is composed.	Promptly accredit institutions and laboratories and construct new ones.	SECOFI - DGN, CENAM
Strategy-2 : Subcontracting Promotion Project 2-1 Enhancement of match-making activities	Potential suppliers and buyers	Potential suppliers get full support for subcontracting.	Intermediate potential suppliers/buyers individually.	SECOFI (NAFIN, BANCOMEXT, Cámara)
Project 2-2 Assistance for relocation of SIs near to the market	SMEs of SIs	Relocation is supported by information and finance.	Supply information useful for relocation and finance long-term loans with a grace period.	SECOFI (NAFIN, BANCOMEXT, Maquiladora associations)
Project 2-3 Introduction of certification system for local consultants	Local consultants	Local consultants are certified by grade.	Evaluate and examine local consultants.	SECOFI
Strategy-3 : Entrepreneurship Development Project 3-1 Entrepreneur re-education	Entrepreneurs of the operating SMEs of SIs	Entrepreneurs become aware of manners in subcontracting business.	Give on-the-job training and class-room-type lectures.	SEP, STPS
Project 3-2 Entrepreneur incubation	New players who join SIs	New players are supported for setting up in OEM business.	Reduce burdens of initial capital costs for starting business.	SECOFI (NAFIN, BANCOMEXT)
Strategy-4 : Manpower Development Project 4-1 A master plan study for manpower development	Workers for the manufacturing sector	A 10-year action plan for manpower development is formulated.	Forecast supply/demand of manpower in quality and quantity.	SEP, STPS
Strategy-5 : Strengthening of Financial Support Project 5-1 Improvement of financial guarantee system	SMEs	The financial guarantee system works well.	Determine financial sources/funds for guarantee.	SHCP (NAFIN, BANCOMEXT, Commercial banks)
Strategy-6 : Laying the Foundation of SMEs Promotion Project 6-1 Formulation of a master plan for industrial standardization	All industries	A goal of standardization is set.	Clarify necessity of additional software and hardware.	SECOFI (DGN, CENAM)
Project 6-2 Preparation of industrial statistics	Government	Procedures of data collection and processing are established.	Determine responsible institutions by subsectors.	INEGI (SECOFI)

Note : 1) This is just a one-line summary. Refer to Section 10.4 for details.

2) SMEs : Small- and Medium-scale Enterprises.

3) SIs : Supporting Industry



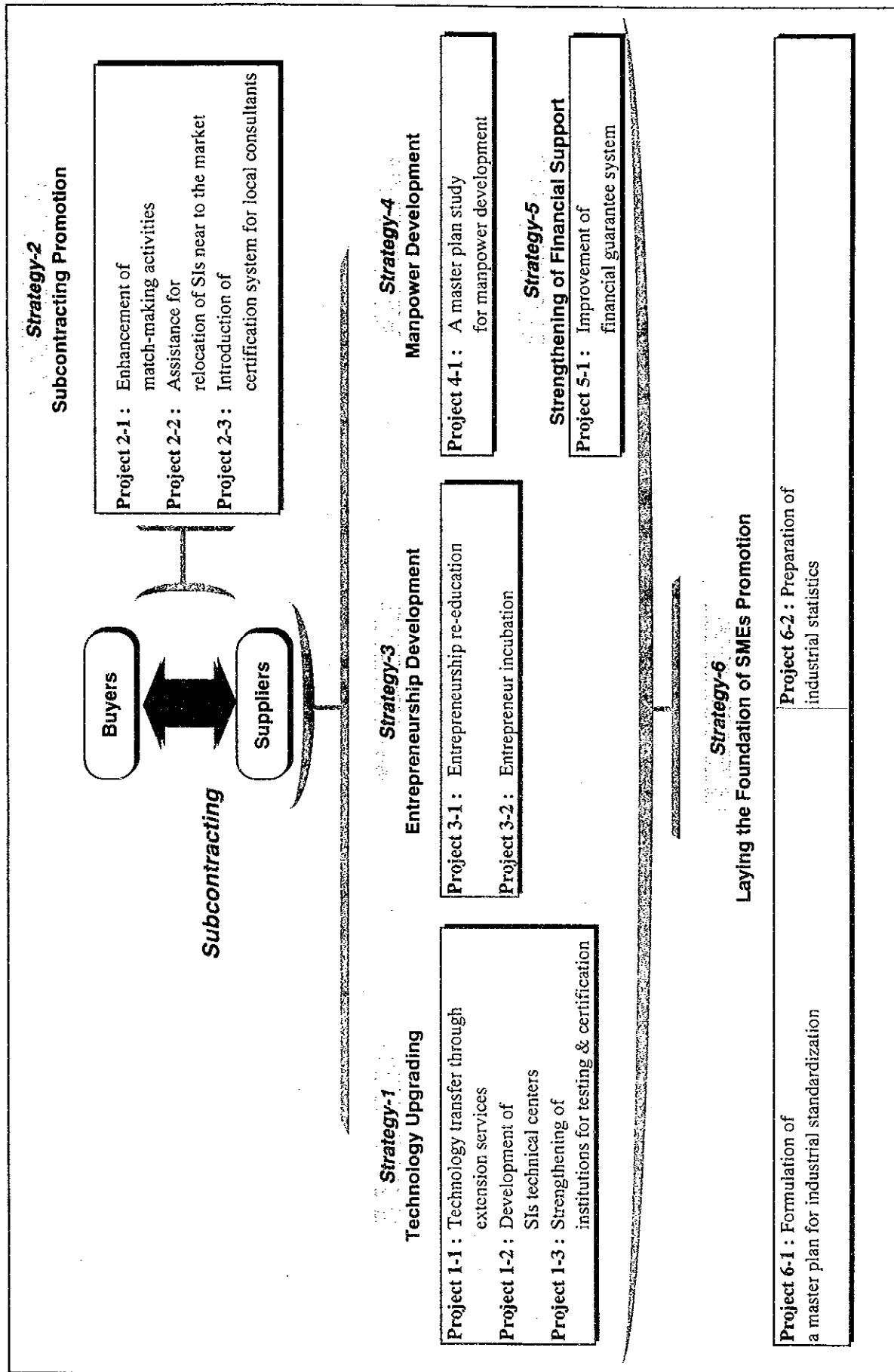


Figure 10.5-1 Schematic Diagram of the Proposed Master Plan

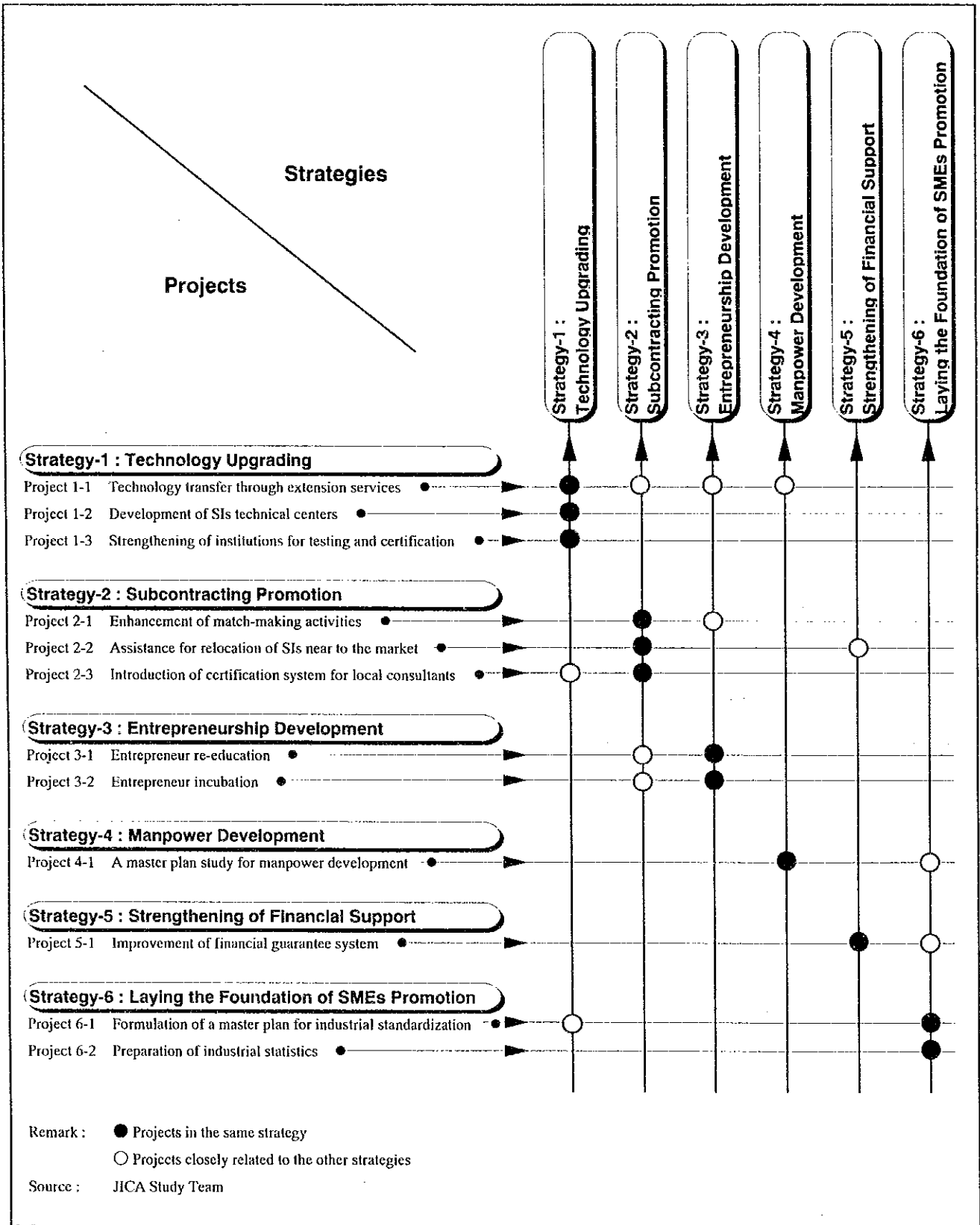


Figure 10.5-2 Interrelation between Proposed Projects and Strategies

10.5.2 Priority of Projects for Implementation

(1) Contribution to solution for the core problem

In the PCM objective tree, Strategies-1 and -2 are positioned nearest to the core objective, Strategies-3 and -4 in the second tier and Strategies-5 and -6 in the third tier. In other words, Strategies-1 and -2 can contribute most directly for achieving the core objective. In this report, it is assumed that the closer strategies to the core objective in the tree would be able to contribute more for the achievement of the core objective. Therefore those projects assigned to a strategy that is positioned closer to the core objective are to have higher contribution rate.

Note: It may actually happen that a project in a lower tier has higher contribution rate than one in a higher tier. In this regards, there is no quantitative criteria to measure contribution rate. In this report, however, it is assumed that a strategy or projects closer to the core objective in the tree would generally have higher contribution rate.

(2) Viability of projects

Another factor to determine the project priority is easiness to start and implement a project. Projects that require the government's budget allocation, require legislation or policy change, or involve large amounts of resources (manpower, funds, materials) are considered to take some time and big effort.

The proposed projects can be classified into three groups in order of big effort required for implementation, as follows.

1) Projects which require considerable time and effort for implementation

Project 2-2 Assistance in relocation of SIs near to the market

Project 3-2 Entrepreneur incubation

Project 5-1 Improvement of financial guarantee system

2) Projects which require fair amount of time and effort for implementation

Project 1-1 Technology transfer through extension services

Project 1-2 Development of SIs technical centers

Project 1-3 Strengthening of institutions for testing and certification

Project 6-2 Preparation of industrial statistics

3) Projects which can be easily implemented

Project 2-1 Enhancement of match-making activities

Project 2-3 Introduction of certificate system for local consultants

Project 3-1 Entrepreneur re-education

Project 4-1 A master plan study for manpower development

Project 6-1 Formation of a master plan for industrial standardization

(3) Overall evaluation

In setting priority for the proposed projects, "contribution" should be considered as the primary factor, and "viability" as a secondary factor. Each project was rated by weighting the two factors by 1.0 and 0.5, respectively, as follows:

Contribution		Viability	
Level 1	10 points	Easy	5 points
Level 2	8	Intermediate	4
Level 3	6	Difficult	3

In order of the overall score, the proposed projects were divided into three groups, Priority-1, Priority-2, and Priority-3. The result is shown in Table 10.5-2. The range of the overall score assigned to each group is as follows:

First priority : 14 - 15 points

Second priority : 11 - 13 points

Third priority : 10 points or less

Table 10.5-2 Priority of the Projects for Implementation

Projects	Priority
Strategy-1 : Technology Upgrading	
Project 1-1 Technology transfer through extension services	■■■■■
Project 1-2 Development of SIs technical centers	■■■■■
Project 1-3 Strengthening of institutions for testing and certification	■■■■■
Strategy-2 : Subcontracting Promotion	
Project 2-1 Enhancement of match-making activities	■■■■■
Project 2-2 Assistance for relocation of SIs near to the market	■■■
Project 2-3 Introduction of certification system for local consultants	■■■■■
Strategy-3 : Entrepreneurship Development	
Project 3-1 Entrepreneur re-education	■■■
Project 3-2 Entrepreneur incubation	■■■
Strategy-4 : Manpower Development	
Project 4-1 A master plan study for manpower development	■■■
Strategy-5 : Strengthening of Financial Support	
Project 5-1 Improvement of financial guarantee system	■
Strategy-6 : Laying the Foundation of SMEs Promotion	
Project 6-1 Formulation of a master plan for industrial standardization	■■■
Project 6-2 Preparation of industrial statistics	■

Note : ■■■■■ : the first priority
 ■■■ : the second priority
 ■ : the third priority

Source : JICA Study Team

10.5.3 Five-year Plan and Time Schedule

The implementation schedule for the twelve (12) projects contained in the proposed master plan is shown in Figure 10.5-3. The basic concept adopted for preparation of the schedule and important considerations are described below. Note that the figure also lists the outputs which are obtainable over five years of the master plan period. It also indicates a key for implementation for each project.

(1) Continuity after the five-year plan

Needless to say, efforts to promote supporting industries or SMEs need to be maintained for a fairly long period of time beyond the five-year period. Projects proposed under the study are assumed to continue in any of the following three ways (see "Onwards" column in Figure 10.5-3):

Projects marked by ▷ :

Continued on a regular basis after the implementation plan is established (example; Project 2-1 "Enhancement of match-making activities")

Projects marked by ► :

Continued repeatedly with a project as batches (example: Project 1-1 "Technology transfer through extension services")

Projects marked by ■ :

Completed within five years, provided that the proposed project is followed by new projects or activities on the basis of the output of the proposed project (example: Project 4-1 "A master plan study for manpower development")

(2) Sequentiality

There are projects which constitute sequential activities, as shown below.

Preceding project		Subsequent project	
Project 5-1	Improvement of financial guarantee system	Project 2-2	Assistance in relocation of SIs near to the market
Project 6-1	Formation of a master plan for industrial standardization	Project 1-3	Strengthening of institutions for testing and certification

The sequentiality suggests that the above projects produce better results if they are implemented after an institutional setup or master plan is established. Nevertheless, it does not indicate that a preceding project constitutes killer assumption, i.e., there is not so strong sequentiality that the subsequent project cannot be started until the preceding project is completed. Rather, the subsequent project alone can produce some outputs, so that the presence of sequentiality does not preclude the commencement of all the projects at the same time. Since a preceding project may not be implemented at all, sequentiality should not be overemphasized in the implementation plan.

(3) Relationship between priority and implementation schedule

Undoubtedly, it is desirable to start a priority project as early as possible. On the other hand, questions remain about a project with low priority, e.g., whether it can be started late, and if so, how long it can be delayed.

So far as the master plan is designed to present a schedule as a target, unless there is a killer assumption for a preceding project (sequentiality), it is not necessary to delay commencement of any project. This can be explained from the viewpoint of two criteria to determine priority, "contribution" and "viability."

Contribution

Under this study, a project which contributes indirectly to a solution for the core problem is assumed to have low priority. Therefore, projects related to policy and institutional setup are naturally given the lowest priority. However, projects in this category have broad impact on industries as a whole other than the target groups of the study. From the standpoint of contribution to the national economy, the low level of contribution to a solution for the core problem does not justify the delaying of these projects.

Viability

Priority setting based on viability represents the level of difficulty in implementation. While there are projects which may be delayed or are likely foregone eventually, it is not justified to assume "delay" in the schedule of a master plan. Actually, if the government selectively would use resources to such projects with lower viability, no delay occurs. It might be, however,

reasonable to provide those project with a longer preparation period in scheduling the master plan.

(4) Conclusion

Based on the viewpoints in (1) through (3), Figure 10.5-3 assumes all the projects to start simultaneously at the beginning of the initial year. Actual start time will be varied according to how "key for implementation" is solved for each project and how resources are allocated.

(5) Other considerations

The proposed projects can be divided into two types, those newly introduced in the country, and those representing the addition or improving of ongoing projects. In the latter case, the proposed projects do not conflict with ongoing projects, nor trade-off relationship. Either can be merged with its counterpart or both can be implemented concurrently.

Some projects can be consolidated into a single project. This is deliberately avoided in this report since the consolidation results in a comprehensive and big size project and can make implementation more difficult due to confusion caused by the involvement of several executing bodies or the increase in resource requirements. Projects which can be consolidated are shown below:

Group 1

- Project 1-1 Technology transfer through extension services
- Project 1-2 Development of SIs technical centers
- Project 2-1 Enhancement of match-making activities

Group 2

- Project 1-2 Development of SIs technical centers
- Project 1-3 Strengthening of institutions for testing and certification
- Project 6-1 Formation of a master plan for industrial standardization

	1st Year/1997	2nd Year/1998	3rd Year/1999	4th Year/2000	5th Year/2001	Onwards	Outputs in 5 years	Key for Implementation
Strategy-1 : Technology Upgrading								
Project 1-1 Technology transfer through extension services	Preparation	1st batch clinic	2nd batch clinic	3rd batch clinic		▶	60 beneficiaries	Possibility of foreign T/A
Project 1-2 Development of SIs technical centers	Identification	Action plan		Strengthening of facilities / staff		▷	A SIs center each in 10 cities	Possibility of foreign T/A & F/A
Project 1-3 Strengthening of institutions for testing and certification	Survey present status	Masterplan		Strengthening of facilities / staff / accreditation		▷	Distribution to 10 cities	Possibility of foreign T/A & F/A
Strategy-2 : Subcontracting Promotion								
Project 2-1 Enhancement of match-making activities	Review the past	events		Event / Follow-up / Consultation		▷	Effective events	Leadership of the project organizer
Project 2-2 Assistance for relocation of SIs near to the market	Information supply Sys.	Supporting sys.		Support for relocation		▷	Better circumstances for relocation	Introduction of financial incentives
Project 2-3 Introduction of certification system for local consultants	Study	Methodology		Testing and certification once a year		▷	4 times test & certification	Methodology for testing
Strategy-3 : Entrepreneurship Development								
Project 3-1 Entrepreneur re-education	Project design		8 batches of the re-education courses			▶	80 re-educated entrepreneurs	Cooperation of potential buyers
Project 3-2 Entrepreneur incubation	Preparation	Land / Buildings		1st batch incubation for 3 years		▶	10 new players	Leadership of the project organizer
Strategy-4 : Manpower Development								
Project 4-1 A master plan study for manpower development	Preparation	Masterplan study				■	Action plan for 10 years	Possibility of foreign T/A
Strategy-5 : Strengthening of Financial Support								
Project 5-1 Improvement of financial guarantee system	Study / Discussion	Organization building-up				■	Workable system	Source of funds
Strategy-6 : Laying the Foundation of SMEs Promotion								
Project 6-1 Formulation of a master plan for industrial standardization						■	Action plan for 10 years	Possibility of foreign T/A
Project 6-2 Preparation of industrial statistics	Preparation	System building-up		Trial run	Follow-up sys.	■	Workable system	Possibility of foreign T/A
(Remarks)	T/A : Technical Assistance F/A : Financial Assistance Sys. : System ▷ : The project shall routinely continue after the 5th year. ▶ : The project shall repeatedly continue in batches. ■ : The scope of the project will be completed within 5 years though the project should be followed by succeeding activities.							

Figure 10.5-3 Time Table for Implementation of the Proposed Master Plan in 5 Years