

Chapter 2 Wooden Products, Furniture, and Building Components

(1) Outline of the Industry

1) Outline

Situated in the semi-tropic zone and blessed with the vast tropical rain forests, the industries that use wood as the main material, such as wooden products furniture, building components, etc. are considered for the Philippines abundant in wood resources. These wood-related industries are fields that should be strategically promoted in the Ten Year Economic Development Plan, and the industry goals are set to double the growth rates in the ten year period because;

- a) these industries are of a local resource utilizing type and is in a favorable position in terms of location for international competition and will contribute to earning foreign exchange,
- b) these industries have labor intensive and employment generating structure,
- c) the industries will contribute to the activation of the regional economy based on the distribution of resources, and
- d) the industries, having linkages with the upstream and downstream industries, will have trickling effects on other industries.

Forests account for about 56% of the total area of the country or 16.7 million hectares, of which commercial areas occupy about one-half, or 8 million hectares, the major portion of the area concentrated on Mindanao Island.

Mindanao Island	Over 50%
Luzon Island	Over 20%
Visayas Island	Over 20%

The varieties of trees currently used are mostly lauan exclusive of rattan, and many other including white oak, mahogany are produced. Furthermore the utilization of coconut, mangrove, etc. is being studied.

Until the government formulated the Forest Development Plan in 1978 for protection of forests and aforestation, the depletion of the forests took place rapidly caused by burnt field farming, conversion of farmland for development, uncontrolled felling of trees for

export of logs, deficient afforestation, etc. Since then, the speed of eradication of forest land has decelerated, but still it is considered that around 100,000 hectares of forest are lost every year.

In 1986 the government banned the export of logs and in July, 1989 banned further the exports of lumber except for partly finished products such as plywood and veneer, thus strengthening the policy to increase the value added. It is needless to say that the aim is not only to protect resources but also to generate employment by promoting industrialization, to upgrade the living of the people by expanding the domestic demand, to earn foreign exchange, etc.

2) Transition of production and the goal

a) Wooden products

As shown in Table A5-2-1, the production of logs decreased rapidly from 7,870 thousand cubic meters in 1977 to 982 thousand cubic meters in 1985, a decrease to less than one eighth on accounts of the strong policy of the government to protect the forests. After the total ban on exports in 1986, it is presumed that there was further reduction. The sawed lumber decreased rapidly in 1985 because of the stagnant business conditions, but during the preceding three years, a level of 1,200 thousand cubic meters was maintained. The production capacities of plywood and veneer are still small.

According to the Ten Year Economic Development Plan, the target of the production of wooden products, as shown in Table A5-2-2, is set at 3,726 thousand cubic meters in the year 2000, more than double based on 1988, but on the other hand, a rapid increase of imports of logs to 5 times is also projected by the plan due to the short supply of domestic raw material.

b) Furniture

There is no accurate data on the production of furniture, but it is estimated that the domestic demand exceeds exports. While exports are centered on the 400 medium- and large-scale firms affiliated with the Chamber of Furniture Industries of the Philippines (CFIP), the domestic demand depends on cottage firms and household industries that deal with consumers in a small-scale business sphere. According to the ten year furniture export target of CFIP, an increase to 330-473.5 million U.S. dollars in 1977, or a 3 to 4 times of the amount of 130 million U.S. dollars in 1987. The reason for the wide range of the target is that two targets were set because the importation of rattan is strongly affected by the form of the ban of the exports of

Table A5-2-1 CHANGE IN PRODUCTION OF WOOD PRODUCTS

(Unit: 1,000 sq.meters)

	1977	1982	1983	1984	1985
Logs	7,870	4,510	4,430	3,873	982
Lumber	1,570	1,200	1,222	1,234	924
Plywood	489	422	459	438	333
Veneer	496	428	445	84	61

Source: Bureau of Forest Development

Table A5-2-2 PRODUCTION TARGET OF WOOD PRODUCTS
IN 10-YEAR PLAN

(Unit: 1,000 sq.meters)

	1988 (A)	2000 (B)	(B)/(A)
Lumber	1,133	2,794	
Plywood	500	784	
Veneer	86	148	
Total	1,719	3,726	217%
of which:			
Imported Logs	119	606	509%
(% of Total)	(7%)	(16%)	

Source: BOI

material rattan by Indonesia which has to be considered.

The characteristics of the Philippine furniture industry are;

1. There is a large production and exports of rattan furniture (73.6% of the total furniture exports in 1988).
2. Furniture manufacturers also make building materials such as doors, floor parquets, building components, etc. and there are few specialized manufacturers for such products.
3. In terms of the scale of the manufacturers, the small and medium-scale firms and household industries are dominant.
4. Characteristics are that carving is applied as design, and the skill of the handicraft worker is high in this respect.

c) Building materials

There are many cases in which the furniture manufacturers produce building materials as a side business. As statistics are not well organized, the actual situation can not be grasped accurately, but it is estimated that the domestic demand accounts for a major portion.

Exports, according to the Bureau of Forecast Development, comprised 13 million U.S. dollars of doors, 9 million U.S. dollars of building components and 7 million U.S. dollars of other building materials in 1986, and a major portion of the products is exported to U.S.A. and Europe.

(2) Characteristics of the Production Structure and the Market

Wood processing is an industry of a broad scope starting with sawing the lumber and includes plywood and veneer, door material, flooring material, and wall material classified as "building materials", wooden furniture classified as "furniture" and wooden toys and wooden carvings classified as "miscellaneous products", and there are more than 2,400 firms engaged in this industry.

The number of employment is composed of 94,000 persons in wooden products (1980) and 37,000 persons in furniture (1981), but as there are many cottage type companies, the number of establishments and the number of employees are said to reach several times these numbers.

As export of lumber except for partly finished goods such as plywood, veneers, etc. was banned since July 1, 1989, the importance of the "wood-working" field increased further.

1) Market and its characteristics

a) Export market

i) Wooden products

Table A5-2-3 shows the transition of the value of the exports of plywood and veneer for the period 1984-1988. As may be seen from the table, exports of plywood and veneer have leveled off. As already discussed, such is the manifestation of the fact that the Philippine government is guiding the industry to further increase the value added to ensure efficient utilization of the wood resource and that the industry is following the guidance striving for "high value added".

The export value by export markets show that the U.S.A. is at the top with a share of about 38% in 1987, followed by Hong Kong (about 28%), U.K. (about 17%), Japan (about 5%), etc.

As a quantitative target of the "high value added", the percentage of high value added products will be 10% of the total wooden products in 1988-89, gradually increasing to 60% in 1996-97.

At Consolidated Plywood Ind. in Davao which was visited for this survey, high order processing such as foot warmers, sides and panels of drawers, floorings, wall boards, etc. for Japan was being done. The value added by high order processing is said to be roughly 100% (raw materials/processing cost = 50/50).

ii) Furniture

As shown in Table A5-2-4, furniture accounts for no more than around 2% of the total exports of the Philippines and, as Table A5-2-5 shows, about 70% of the exports is rattan furniture. Also looking at the destinations by regions, about 67% is for North America including Canada, about 16% is for EC, and about 8% is for the adjacent countries including Japan.

DTI and the industry expect furniture to be one of the strategic export commodities and if successfully developed, the size of exports is projected to reach 300-500 million U.S. dollars in 1996.

Table A5-2-3 EXPORT TREND OF PLYWOOD AND VENEER, 1984-1988

(Unit: 1,000 US\$)

	Export Value, FOB	Growth Rate (%)
1984	70,290	-
1985	62,541	-11.0
1986	65,916	5.4
1987	82,138	24.6
1988	99,332	20.9
Average Growth Rate (% p.a.)	-	9.0

Sources: Direction of Philippine Trade and Export Performance 1986/1987, BETP, DTI
Philippine Export Performance, Report 1 Jan.-Dec., 1987-88, BETP, DTI

Table A5-2-4 TOP TEN PHILIPPINE EXPORTS, 1987-1988

(Unit: FOB, million US\$)

	1987	1988	Percent of Total		Growth Rate (%)
			1987	1988	
1. Electronic Equipment and Spare Parts	1,119	1,476	30.72	31.63	31.90
2. Garments	1,098	1,317	30.15	28.22	19.95
3. Coconut Oil, Crude	381	408	27.87	25.40	7.09
4. Fish, Fresh and Preserved	207	307	37.30	44.24	48.31
5. Copper Metal	162	295	4.45	6.32	82.10
6. Chemicals	245	256	6.73	5.49	4.49
7. Copper Concentrates	109	216	7.97	13.45	98.17
8. Furniture & Fixtures	130	184	2.27	2.60	41.54
9. Processed Food and Beverages	126	184	2.20	2.60	46.03
10. Lumber	154	157	11.27	9.78	1.95

Source: Central Bank of the Philippines

Table A5-2-5 EXPORT TREND OF FURNITURE, 1984-1988

(Unit: FOB, million US\$)

	1984	1985	1986	1987	1988	
Rattan Furniture	60,233	59,181	62,537	94,912	135,207	(73.6)
Wood Furniture	5,780	5,801	6,579	10,600	17,541	(9.6)
Parts of Furniture	4,433	3,733	3,575	4,847	6,127	(3.3)
Bamboo Furniture	677	627	859	881	1,334	(0.7)
Furnishing	225	170	142	236	718	(0.4)
Metal Furniture	175	78	59	167	395	(0.2)
Plastic Furniture	0	0	2	2	0	(-)
Furniture of Other Materials	16,775	14,128	15,601	18,735	22,295	(12.1)
Furniture Total	88,298	83,718	89,354	130,380	183,617	(100)
Growth Rate (%)	5.7	-5.2	6.7	45.9	40.8	

Sources: Direction of Philippine Trade and Export Performance 1986/1987,
BETP, DTI
Philippine Export Performance, Report 1 Jan.-Dec., 1987-88,
BETP, DTI

Note: Figures in the parentheses mean share of "Fixture Total", %.

According to the trial calculation by the Chamber of Furniture Industries of the Philippines (CFIP), the average export price of sawed lumber (saw mill) is 0.75 dollars/BF, while the average export price of furniture (chairs, sandpaper finished products) is 3.50 dollars/BF and the average export price of furniture (chair-varnish/lacquer finished products) is 7.50 dollars/BF, a high value added of 4.7-10 times for furniture compared to sawed lumber.

Note: BF = 1 inch x 12 inches x 12 inches, volume
= 2,250 c.c. = 0.00225 cubic meter

In the case of rattan furniture manufacture which is the nucleus of this industry, there is a strong consciousness of quality such as determining the specifications with the buyers of Europe and U.S.A. and inducting the technical assistance of Japanese manufacturers. The consciousness is particularly notable among the manufacturers of the Cebu region. In the case of furniture other than rattan, however, it is said that manufacturers with awareness of quality are no more than 5-6 firms. At CFIP, the Association of Furniture Manufacturers of the Philippines is promoting the education of the industry through organs, study classics, etc., and is striving to grasp the trends overseas by such means as the dispatch of an inspection group to Sweden, the advanced country in furniture, and other parts of Europe which took place in May, 1989.

Also, at the pioneering manufacturers, there is expectation to make a "post rattan mainstream" out of labor intensive products such as tables, chairs, bookshelves, etc. with reliefs on Philippine wood which are considered to be the merits of the Philippines furniture. Because of such reason, CFIP is studying the induction of training facilities for relief technology called "Cruving".

b) Domestic market

The Philippine government plans to reverse the supply rate of the total wooden products to the domestic market from the current 45% (exports 55%), to 55% (exports 45%) in the ten year period to 1998.

The saw mill industry had neglected the domestic market in the past, but as the exports of lumber except partly finished commodities such as plywood, veneer, etc. has been banned since July 1, 1989, they are changing the strategy to diversify into such products as building material, building components and furniture for the domestic market.

Furniture is a representative livelihood good and is an industry that belongs to the locally-based type. The furniture manufactured by the small- and medium-scale manufacturers with 10-100 employees located in the regions centered around the regions Nos. 3, 4, and 7 in general are shipped to the sales outlets and showrooms in the Metro Manila region or the same region or the neighboring region and sold to the consumers by the manufacturers themselves. There are some imported furniture on display at the outlets, but there is a price differential of more than three times and accompanied by the differences in quality and appearance, they do not offer competition to the domestic products.

The managements of the firms are more interested in expanding the domestic market, or the reduction of prices and reduction of cost required for it, and are not very enthusiastic about quality.

(3) Problems in Raw Material Supply

As the policy was enforced to ban exports of raw lumber of white oak, lauan, mahogany, etc., the main raw materials of "wood-working" from the producing areas such as Mindanao, etc. and to encourage exports of processed products, there is no uneasiness on the supply side.

On the other hand, the problem of exhaustion of the raw rattan wood, the main raw material for rattan furniture, particularly the shortage of the thick material for the frame and the outer structure is serious for the industry, and efforts are made to secure the supply by importing the raw wood from neighboring countries such as Malaysia (Sabah) and Vietnam and from as far away as Myanma.

(4) Approach and Problems of Standardization and Quality Control

1) Approach to Quality Control

The biggest subject of product quality is "to present the variation in dimensions due to drying of the moisture in the wood", for which kiln dryers need to be installed. But for the installation, the type developed by the Forest Products Research and Development Institute (DOST) (volume of 22 cubic meters) requires an investment of 0.45 million pesos and the large type such as owned by the saw mills require an investment of a million pesos, which makes it difficult for individual firms to own in this wood-working industry consisting of numerous cottage industries, and in reality drying is done by solar heat in a short period of time. There are cases recently where several firms from a group to install the equipment or contract the large-scale saw mills to do the processing for a fee

in their idle time.

The quality inspection of furniture at present is centered on appearance such as scars, evenness of the legs, the finish by lacquer and varnish, resorting to visual inspection. There is hardly any manufacturer that has the testing equipment to perform strength tests.

The packaging and crating of rattan furniture and wood furniture are by wrapping with paper to protect the surface and adequate attention is given to prevent damages and scratches by means of container transportation, etc.

2) Standardization in furniture and wooden products

The field of "wood-working" is a field relatively advanced in standardization among the industries of the Philippines, and there are already about 21 standards established for "wooden products", "building materials", "furniture", etc. and in the PS Mark Certification, 18 firms for "Plywood and Veneer", 9 firms for "Rattan and Wicker Furniture", 2 firms for "Wood Molding and Wooden Furniture Components", and one firm each for "Density board, Hardboard and Medium", "Lumber, Kiln Dried and Air Dried", and "Panel Door and Component Parts" have been accredited certification.

Two organizations, the Technical Committee for "Logs and Wooden Products" (TC22) and the Technical Committee for "Plywood and Veneer" (TC36) have been organized for the formulation of the standards relating to wood-working.

The problem of industrial standards for exports at the present time lies in the difference of the measurement in the importing countries (in this case the unit for length). It is said that the main importing country, U.S.A. issues orders in the foot inch unit, Taiwan in the "Taiwan sun", and the exporters convert the unit to the metric system at each order for their production at the factory. As may be seen from this case, the problem of measurement is not a problem only for the Philippines but is a problem to be studied at a worldwide level such as the ISO.

CFIP is ambitious on establishing industrial standards and are studying Raw Materials Tests (tests to determine the dryness of wood), Finishing Tests (tests to determine the finish of coatings, etc.) and Packing Materials Tests (tests on materials for packaging and crating).

3) Problems of quality of the raw materials

The problem of the quality of wood as the main material is, as previously discussed, the inadequate drying removal of moisture, which causes dimensional changes after it is made

into products and adequate drying (to moisture of 8 - 9 %) by installation of kiln drier is required.

The problems of other materials of wooden products and furniture are the defects in the finishing agents such as varnish, coatings, etc. When indigenous finishes were used, such defects as cracks and fading of the coatings and uneven coating, etc. are observed. Such occurred mainly in products that were made by compounding imported materials in the Philippines. Thus the large manufacturers of rattan and wooden furniture use products imported from Taiwan, etc.

The large-scale coatings manufacturers were more enthusiastic of the development of products for the domestic furniture market because of the less than a lot. As demand are now paying attention to the growth of furniture, there are moves to manufacture and market furniture grade urethan coatings locally. Establishment of the quality standards and the quality certification system for varnish, coatings, etc. for furniture will be increasingly demanded, and the installation of accelerated testing equipment to check the change in coatings over lapse of time in the public testing organizations is necessary.

4) System for testing, research and technical assistance as an industry

Philippine Wood Products Association (PWPS), an association of saw mills, responding to the recent ban of exports of lumber is studying the installation of a kiln dryers in the main lumber producing areas for a total cost of 2 billion pesos. CFIP, the association of furniture manufacturers is, as discussed above, studying the installation of facilities for education and training of the industry and is actively engaged in the establishment of industrial standards, etc. The testing, research and technical assistance relating to wooden products and performed by FRRDI (DOST). FRRDI is also engaged in the development of finishes based on indigenous materials and wood grain cement boards. Testing, research, and technical assistance for furniture and wooden products are performed by Cottage Industry Technology Center (CITC) and PTTC. CITC conducts drying of the wood using the FRRD type kiln drier which it owns for the small- and medium-scale furniture manufacturers under contracts, while conducting also technical assistance on the other hand. PTTC and CITC hold seminars and workshops relating to quality control and processing technology, etc., striving to improve the level of the industry relating to exports.

5) Opinions on the projects to upgrade technology and improve quality

- a) Establishment of quality standards and quality assurance standards for wooden products, domestic varnish for furniture and coatings

b) Cooperative installation of finishing facilities for furniture

The export-oriented large-scale furniture manufacturers may be able to install such facilities on their own, but it is desirable for the small and medium scale firms to cooperatively install such facilities as in the case of kiln dryers. Even for the large scale firms, a major investment of 5 - 10 million pesos is needed and such means as institutional financing need to be taken. Also, as the production lines use a great deal of solvents, consideration for fire prevention and environmental problems is necessary.

(5) Assignments of the Furniture and Wooden Products Industry

1) Securing wood resources

By the governmental Forest Development Plan, the depletion of the forest land has been decelerated, but the trend is toward unavoidable increase of imports of logs and sawed lumber brought about by the expanded demand. There is a strong request submitted by the industry for reduced tariff rates on imported lumber from the viewpoint of export competitiveness, but not only measures on the price aspect but also on the import aspect, Indonesia and Malaysia have already banned exports of logs and other log exporting countries such as Sabah, Sarawak, Papua New Guinea have strongly possibility to move toward restricting exports of logs.

Securing of domestic wood resources by planned implementation of afforestation and cultivation, strengthening of Industrial Tree Planting (ITP), development of substitute resources, etc. are long range assignments. Furthermore, the environmental problem has been closed-up by various groups and a harmonized development is required in this respect too.

2) Exports of rattan furniture

Rattan furniture that account for a major share of the exports of furniture is viewed as the base of the promotion of furniture exports. Although it is considered possible to supply the rattan raw wood with the domestic resources quantitatively, the thick wood for the frame and outer structure is beginning to be exhausted and becoming dependent on imports. As Indonesia, (producer of 85% of the raw rattan of the world), the main exporter of the thick wood, decided to ban the export of raw rattan wood since 1988, the conversion at the importing country and cultivation of the thick rattan have become assignments. (There is a view that as Taiwan which is the strongest competitor of the exports of rattan furniture produces little raw rattan, depending solely on imports from Indonesia, and the rattan furniture exports of Taiwan would receive the strongest impact, it may be a favorable opportunity for the exports of rattan furniture of the Philippines).

3) Modernization of equipment

The equipment of the saw mills and the plywood factories are worn out and there is concern of deterioration of quality and productivity. The renovation and modernization of equipment are assignments, for which support from the financial aspect is also needed. With respect to the sawing of lumber for material to manufacture furniture, problems of quality such as warping and cracks on the export products caused by insufficient drying has been pointed out.

Among the small- and medium-scale factories and the household industry, there are many that depend on air drying, but not only does air drying require long periods of time and the drying tend to be insufficient, it also becomes a financial suppressing factor caused by the inventory burden. On the other hand, kiln dryers are expensive and the installation by individual firm may be not only difficult but also inefficient. Cooperative installation, etc. by cooperatives and other organizations is a subject to be studied.

4) Division of labor and specialization

The reduction of transportation costs is an assignment in the production and distribution of furniture, and the extension of the knock-down system practiced in the advanced countries is also a subject for study, and for the upgrading of the accuracy of the parts, standardization of metal joints which are the basis for this and for the promotion of standardization the collective procurement, etc. by unions and other organizations are also subjects for study.

Also, to strengthen the supply system for metal joints, coatings, etc., their local production by the development and support by the related industries is also an assignment. Furthermore, the modernization of equipment to convert to mass production of standard products from the present single product production system which prevails in order to enhance the production efficiency and improve the quality, and the restructuring of the industry by specialization of production of the various products, are also long range assignments.

5) Development of the export market

Looking at the exports of the furniture of the Philippines by destinations, U.S.A. ranks first with a share of 65.4% (1986) and Japan ranks second with only 5.7%. As there many countries increasing imports of furniture such as Japan, efforts to develop new markets are necessary to improve the nature of depending excessively on a single market, U.S.A.

For example, the rattan furniture exports to the U.S.A. and Europe from the Philippines consists greatly of colored products, while in Japan which is increasing the imports of rattan furniture prefer no-color as glassy products, with large imports from Taiwan. For development of markets, strengthening of market research, improvement of finishing, etc. are demanded.

6) Others

There is concern that aspirations of the businessmen who exported sawed lumber in the past may have been lost by the sudden ban of exports of the sawed lumber products excluding such partly-finished products as plywood, veneer, etc., resulting in the decrease of international balance of payments and cut back in production. A resilient policy to increase production and promote industry while increasing exports of processed products and ensuring harmony with the increase of domestic demand.

Chapter 3 Plastics Processing

(1) Production Structure and Market Characteristics

As shown in Table A5-3-1, the value added of chemicals in 1985 amounted to 1,704 million pesos, 1.9% of the GDP and 7.9% of the total manufacturing sector. Of this amount, the value added of the plastics processed products was estimated to be 172 million pesos.

The domestic market of plastics processed products in 1986 was estimated to be 85,000 MT of polyesters, 51,000 MT of polypropylene, 27,000 MT of polyvinyl chloride, 7,000 MT of polystyrenes, totaling 170,000 MT (4,200 million pesos in value) (Table A5-3-2).

Looking at the fields of demand, film bags with 85,000 MT was dominant, accounting for 50% of the total market. Calendered products follows film bags in the field of demand, followed by 11,500 MT of housewares, 10,000 MT of woven sacks, 8,500 MT of industrial products, 8,500 MT of packages and containers.

Looking at the fields of demand, with respect to polyethylene, film bags accounted for 70% or more and other than film bags, and it is used in industrial products, netting, and housewares. With respect to polypropylene too, roughly one-half of 25,000 MT is used for film bags, followed by woven sacks, housewares, and sheets. With respect to polyvinyl chloride, calendered products account for 56% of the demand and widely used in pipes and packaging and containers. The three uses accounting for 93%. The major field of demand for polystyrene are vacuum formed products, and packaging and containers accounting for 57% and 29% respectively. (Table A5-3-4)

Looking, nextly, at the supply side of the resins, 80% of the total domestic demand including exports is met by imported resins from Japan, U.S.A., Korea, Hong Kong, Taiwan, etc. Polyethylene and polypropylene are not produced in the country, depending on imports for the entire demand. Polyvinyl chloride and polystyrene are produced in the country, and with respect to polyvinyl chloride, approximately one-half of the total demand is satisfied. These domestic resins, however, are inferior in quality compared to the imported resins and their uses are restricted to the domestic market and imported resins are used for plastics processed products for exports. (Tables A5-3-5 and A5-3-6)

The exports of plastics processed products are shown in Table A5-3-7. The exports in 1985 amounts to 8,623 MT, or 10,537,000 U.S. dollars based on the FOB prices. Of the export value, 67% is accounted for by polyvinyl chloride products and 32% by polypropylene products. The exports to Hong Kong is overwhelming, accounting for 71% of the total

Table A5-3-1 GROSS VALUE ADDED IN CHEMICALS AND CHEMICAL PRODUCTS INDUSTRY

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Chemicals and Chemical Products	2,165	2,462	2,787	2,162	2,321	2,365	2,317	2,273	2,315	1,797	1,704
All Manufacturing	16,537	17,481	19,532	21,108	22,239	23,175	23,959	24,585	25,108	23,319	21,541
GDP	68,361	72,962	77,990	82,797	88,346	92,076	96,207	98,999	99,920	93,927	89,803

Source: Philippine Statistical Yearbook

Table A5-3-2 DOMESTIC MARKET FOR PLASTICS BY MATERIAL IN 1986

	Tons	Share (%)
Polyethylene	85,000	50.0
Polypropylene	51,000	30.0
Polyvinyl Chloride	27,000	15.9
Polystyrene	7,000	4.1
Total	170,000	100.0

Source: Final Report on Plastic Processing,
Long-term Sectoral Plan 1988-2000

Table A5-3-3 MAJOR PLASTIC PRODUCTS IN
THE DOMESTIC MARKET IN 1986

Products	Tons	Share (%)
Film Bags	85,000	50.0
Calendered Products/Films	15,000	8.8
Houseware	11,500	6.8
Woven Sacks	10,000	5.9
Industrial Products	8,500	5.0
Packaging Containers	8,500	5.0
Pipes	6,000	3.5
Nettings and Ropes	5,500	3.2
Sheets	5,000	2.9
Vacuum Formed Products	4,000	2.4
Wires and Cables	3,000	1.8
Others	8,000	4.7
Total	170,000	100.0

Source: Final Report on Plastic Processing,
Long-term Sectoral Plan 1988-2000

Table A5-3-4 DEMAND FIELDS OF EACH MATERIAL IN 1986

Material	Demand Fields	Tons	Share (%)
Polyethylene	Film Bags	60,000	70.6
	Industrial Products	7,500	8.8
	Nettings	5,000	5.9
	Houseware	4,000	4.7
	Others	8,500	10.0
Polypropylene	Film Bags	25,000	49.0
	Woven Sacks	10,000	19.6
	Houseware	7,000	13.7
	Sheets	5,000	9.8
	Others	4,000	7.9
Polyvinyl Chloride	Calendered Products/Films	15,000	55.6
	Pipes	6,000	22.2
	Packaging Containers	4,000	14.8
	Others	2,000	7.4
Polystyrene	Vacuum Formed Products	4,000	57.2
	Packaging Containers	2,000	28.6
	Industrial Products	500	7.1
	Others	500	7.2

Source: Final Report on Plastic Processing,
Long-term Sectoral Plan 1988-2000

Table A5-3-5 PHILIPPINE IMPORTS OF RESINS

	1980	1982	1983	1984	1985
Quantity					
(kgs)					
PE	41,630,306	79,225,077	91,516,980	44,547,351	56,898,847
PP	39,643,883	47,528,221	70,466,318	29,873,072	34,137,942
PVC	9,403,009	16,520,247	16,202,925	8,004,326	7,845,651
PS	1,165,310	2,093,820	1,836,920	1,541,671	1,177,113
Total	91,842,508	145,367,365	180,023,143	83,966,420	98,882,440
Value					
(US\$)					
PE	38,860,718	52,566,265	60,989,292	33,869,062	35,489,139
PP	25,718,181	31,441,607	44,603,298	22,907,371	20,505,825
PVC	8,005,511	10,203,864	12,013,432	6,797,222	5,341,460
PS	1,477,927	1,770,268	2,131,745	1,895,073	1,107,958
Total	74,062,337	95,982,004	119,737,767	65,468,728	62,444,382

Source: Foreign Trade Statistics of the Philippines

Table A5-3-6 PHILIPPINE IMPORTS OF RESINS BY COUNTRY

	1983		1984		1985	
	Quantity	FOB Value	Quantity	FOB Value	Quantity	FOB Value
United States	44,037	30,410	20,474	16,422	17,937	12,666
Japan	46,252	37,711	23,592	19,698	16,461	11,666
Korea	7,130	5,676	8,008	6,535	12,746	8,602
Hong Kong	6,415	3,481	6,790	4,953	10,245	5,689
Taiwan	6,567	3,909	3,414	2,650	10,214	6,512
Singapore	468	419	3,208	2,660	7,916	4,966
Australia	14,877	10,089	4,778	3,910	5,237	2,974
F.R. Germany	5,258	3,486	1,267	1,038	3,161	1,622
Czechoslovakia	13,259	3,317	958	237	2,589	740
France	5,211	3,351	459	373	534	322
Canada	4,252	2,429	549	353	306	228
UK & N. Ireland	976	1,219	418	314	244	249
Netherlands	8,413	4,899	1,013	790	221	168
Belgium	4,018	2,692	486	347	121	91
Others	12,181	6,609	7,689	4,493	12,127	5,950
Total	179,314	119,697	83,103	64,773	100,059	62,445

Source: Foreign Trade Statistics of the Philippines

Table A5-3-7 PHILIPPINE EXPORTS OF PLASTIC PRODUCTS

		1980	1982	1983	1984	1985
Quantity (kgs)	PE Products	4,160,481	103,961	0	35,142	43,922
	PP Products	0	422,594	1,051,687	1,576,942	2,231,144
	Veneers & Films	0	351,474	680,500	1,424,460	2,166,738
	Sheets & Sheetings	0	61,516	23,120	112,704	8,218
	Forms	0	9,604	348,067	39,778	56,188
	PVC Products	2,166,215	3,847,003	4,231,130	3,024,196	6,346,260
	Adhesive Tapes	144,706	66,011	42,327	40,113	31,682
	Sheets & Sheetings	1,910,561	3,243,361	3,819,250	2,069,494	2,758,723
	Forms	96,960	535,079	368,046	910,065	3,547,953
	Others	30,780	52,400	2,850	1,500	2,075
	PS Products	6,357,476	4,425,958	5,284,160	4,637,780	8,623,401
	Total	14,867,179	13,118,961	15,851,137	13,872,174	25,816,304
Value (US\$)	PE Products	3,393,877	99,094	0	42,813	68,120
	PP Products	0	523,829	1,163,162	2,308,468	3,416,647
	Veneers & Films	0	422,900	739,310	2,041,800	3,347,717
	Sheets & Sheetings	0	76,611	21,623	210,769	8,164
	Forms	0	24,318	402,229	55,899	60,766
	PVC Products	2,294,869	4,230,405	4,414,891	3,329,081	7,050,885
	Adhesive Tapes	311,220	189,533	108,906	103,530	86,903
	Sheets & Sheetings	1,854,183	3,432,439	3,913,096	2,213,074	3,258,041
	Forms	126,152	595,518	383,619	1,001,924	3,684,342
	Others	42,890	41,920	4,790	555	964
	PS Products	5,731,636	4,895,248	5,573,573	5,680,917	10,536,616
	Total	13,754,827	14,531,815	16,725,199	16,988,830	31,519,165

Source: Foreign Trade Statistics of the Philippines

export amount during the three years covering 1983 to 1985 (Table A5-3-8). Looking at exports by type of commodity, polyvinyl chloride sheets, polyvinyl chloride molded products and polypropylene veneers and films constitute main exported products. The export values in FOB prices of 1985 reaching 3,260 thousand U.S. dollars, 3,680 thousand U.S. dollars, and 3,350 thousand U.S. dollars, respectively. Also, as prospective export commodities, OPP metallized wraps, CPP laminated films, PET bottles and polyvinyl chloride leatherette are listed.

The firms in the industry will be looked at next. It is said that there are close to 500 firms engaged in plastics processing including the cottage scale household industry, of which no more than 20 to 30 firms have adequate processing equipment. The cottage scale firms are found more in the fields of film bags and injection molded products. According to the 1980 statistics, the total employment by the plastics processing industry (including the production of resins) is estimated to be 50,000 people. Many of the firms are located in Metro Manila such as Valenzuela, Caloocan, etc.

The domestic market for plastics processed products is in a state of oligopoly. The three major firms control 75 to 80% of the market and when the three medium-scale firms are added, their combined market share reaches 90 to 95%.

(2) Problems of the Products and the Raw Materials

As problems for the plastics processed products, firstly, there is little aspiration for quality improvement as prices are more important than quality in the domestic market. To reduce costs, cases are generally seen in which a large volume of scrap resin is used or molding is done in molds of poor accuracy. On the other hand, the plastics products for export are molded by a few large firms using high quality materials and high accuracy molds, resulting in an extremely wide difference between the domestic products and the exported products.

As there is little demand for quality improvement and technological innovation in the domestic market, the local industry is undeveloped. As discussed before, there are close to 500 firms engaged in plastics processing but no more than 20 to 30 firms have modern processing equipment, one-half or more of the firms being engaged in only simple processing and assembly and the productivity is also low. Furthermore, there is a general deficiency in the knowledge relating to designs of products or new raw materials and the collection of the necessary information and data is not sufficient.

Secondly, resins of high quality can not be procured within the country. There is no production plant for polyethylene and polypropylene in the country. These resin plants, requiring high level of technology and large investments, are considered at the present

Table A5-3-8 PHILIPPINE EXPORTS OF PLASTIC PRODUCTS BY COUNTRY

(Unit: Quantity: tons
Value: 1,000 US\$)

	1983		1984		1985	
	Quantity	FOB Value	Quantity	FOB Value	Quantity	FOB Value
Hong Kong	4,031	4,114	3,339	4,165	6,518	7,088
United States	176	209	321	391	545	699
Netherlands	0	0	152	188	506	572
Canada	165	189	289	348	478	602
Pakistan	162	205	172	123	229	139
Bangladesh	108	103	33	0	134	134
Singapore	439	496	167	185	110	22
UK & N. Ireland	1	5	9	0	29	35
Thailand	2	4	0	0	18	0
Others	200	257	156	281	41	1,246
Total	5,284	5,582	4,638	5,681	8,608	10,537

Source: Foreign Trade Statistics of the Philippines

time to yield no merit in local production from the viewpoints of production cost and the safety of treating the monomers. With respect to polyvinyl chloride and polystyrene, although they are produced in the country, the quality of these domestic products are poor and the uses are limited, because the demand for quality in the processed products themselves is low. The demand for such low quality resins tends to be stagnant in recent years and the operating rate of the production plant is low. Among the firms that manufacture processed products for export, there are firms that find it impossible to secure the high quality resin within the country because of such characteristics of the market, although they have the intent to use polyvinyl chloride and polystyrene produced locally.

Thirdly, the supply of imported resins is unstable. As discussed before, approximately 80% of the total demand including exports is dependent on imports, and polyethylene and polypropylene, in particular, being totally dependent on imports. Consequently, the market is easily affected by the conditions of the overseas markets, causing fluctuation in supply and variation in quality. Furthermore, the import costs are relatively high because of the lack of reasonable source of information and procurement guides in the locality.

Fourthly, the rates of import duty on imported resins are high, becoming an obstacle to improvement of the price competitiveness of the processed products in the international markets. The tariff rates are 20% on polyethylene and polypropylene and 30% on polyvinyl chloride and polystyrene. To these is further added the value added tax of 10%. (The value added tax has been imposed since January, 1988, prior to which a 20% advanced sales tax of 20% was imposed.)

Because of the high tariff rate, smuggling prevails. In many cases, the exporters of CBW intervene. These producers are authorized by the government to process the resins imported tariff free in their plants for re-export, but among such producers, there are those who process only a portion of the imported resins and supply the rest of the resins to the domestic market at unfair low prices. The increase of smuggling will not only decrease government revenues but also obstruct the development of industry by the unfair competition.

Fifthly, the pay-back system of the tariff at re-export of the processed products of the imported resin is complicated and inefficient. Thus it has resulted in diminishing the aspiration of the firms to expand exports. The tendency is particularly noticeable among the small- and medium-scale firms.

Sixthly, the high cost of power and the poor supply condition of power are indicated. The cost of power accounts for approximately 10 to 20% of the production cost, and is at a

high level compared to other ASEAN nations. Furthermore, the supply condition is poor causing drop of voltage almost monthly. The drop of voltage affects the quality of the processed products, and the loss is particularly heavy in extruded products such as filaments, sheets, and films.

(3) Assignments and Measures for Improvements in the Plastics Processing Sector

Firstly, a state research and development center should be established. The research and development center should not only perform research and development of materials, processing technology, product designs, etc. but also conduct work such as inspection of the quality and performance of materials and products, technical consultation, technical training, collection of relevant information, etc. In the technical training programs should be included training in processing technology, molding, operation and maintenance of processing equipment, and control of quality and production process. It will be appropriate to establish the research and development center in Metro Manila where a majority of the main processing firms are located.

Secondly, the establishment of industrial standards and the certification system should be promoted with respect to products and parts. Standardization should be enforced from three aspects comprising the methods of testing and inspection, the quality and performance of products and sizes and interfaces. In order to set a firm footing in the industry, the establishment of the certification system is essential, and the significance of establishing the R&D center equipped with the testing and inspection equipment, as mentioned above, is great in this respect too.

Thirdly, financial aid to firms that invest in production equipment for quality improvement should be studied. As has been suggested above, respect for quality is an important factor in the restructuring of the plastics processing industry of the Philippines in the long range and should be encouraged from the viewpoint of the economic development of the nation.

Chapter 4 Packaging Materials

(1) Production System and Market Characteristics

In the Philippines there are 230 companies engaged in the production of packaging, leaving aside the cottage industry type companies. Classified according to the raw materials used, these comprise 6 companies using glass materials, 24 using metals, 44 using paper, 31 using hard plastics, and 125 using flexible plastics.

The total sales proceeds for package products in the Philippines in 1986 amounted to 16,143 million pesos (786 million US dollars). The breakdown of this total by raw material employed is 2,709 pesos for glass (16.8%), 3,816 million pesos for metals (23.6%), 6,496 million pesos for paper (40.2%), 1,687 million pesos for hard plastics (10.5%) and 1,435 million pesos for flexible plastics (8.9%). The annual growth in sales proceeds for the period from 1984 to 1986 was 9.6%. The following is a general outline by raw material of the market situation during the same period.

Domestic sales account for 94.2% of the sales proceeds for glass packaging, and main users are drink manufacturers such as beer or soft drink companies, and processed food manufacturers such as fruit or edible oil manufacturers, etc. The weakness of international competitive power is reflected in the extremely small amount of exports. Productive capacity is estimated at 594,000 MT for 1986 but the actual production output for that year was 415,800 MT, so that the operating rate was only at 70%. The total export value of glass packaging for 1986 was 24 million pesos, mostly consisting of medical use items such as intravenous injections, antibiotics, blood serum, etc.

Domestic sales account for 82.3% of the sales proceeds of metal packaging, and the main export use is for tin cans for pineapple and tuna. Main users are food processing manufacturers of such products as meat, fish, fruits, vegetables, etc. and paint manufacturers. Between 1984 and 1986 the production of metal packaging exceeded demand by almost 30% but packaging use cans were imported from America, Japan and Taiwan for the export of pineapple and tuna. The total import cost averages 160 million pesos annually.

The level of product quality demanded by the packaging manufacturers, given certain differences according to the raw materials used, is generally of a low level. In sectors such as glass or hard plastics which have a high ratio of domestic sales, priority is given to price contingencies. Demands put on product quality are low. As the cost of hard plastics is low the penetration into product sectors using other materials is advanced and competition between producers is strong. However, competition is concentrated on pricing strategies and the main focus of interest for the individual

manufacturers is to provide products cheaper than competitors. In sectors with comparatively high export values relative to total sales proceeds the demands put on product quality for domestic sale use output is low. For example the materials and processing methods differ for export use and domestic use cans. Thus the cans for the export of tuna and pineapple are imported while the tin plate used in the export of other products is imported and the production of the cans carried out using the imported tin plate. On the other hand, the production of cans for domestic use is done with tin plating of domestic origin. In other words, even in sectors which have a high proportion of export the demands put on product quality by the package manufacturers are intrinsically low, and the manufacturers distinguish between the markets for export use and for domestic sales.

The appearance after the 60s of supermarkets and convenience stores has increased the interest in marketing activities in the packaging industry and promoted the recognition of the need for these activities. In addition to its functions of sealing, protecting and preserving the packaged product the role of packaging as a means to effectively market the product itself has been established. This awareness is especially strong in the case of hard and flexible plastics which have come to replace other materials. However, as the manufacturers are slack in improvements of the product quality of the packaging itself it is not possible to fully realize such basic marketing activities as identification of consumer needs, choice of target markets, consideration of design particularization, etc.

(2) Problems with Finished Products and Materials

The first problem with product quality and standards is the low quality of the finished products. We have already touched upon the low level of the demands put on product quality by the package manufacturing industry in the Philippines in the previous section. In the following we will examine this in more detail according to the raw materials used.

The tin plate used for tin cans is thin, of uneven quality, lacking in elasticity, and unevenly coated. Moreover, the excessive content of lead in the solder used as sealing material has been specified as a hygienic problem. Further, there are frequently cases where the closure of the lid and can is imperfect so that the contents are not perfectly sealed, or where hygienic problems relating to the materials used for the liner or inner coating, or to production processing have been observed.

For hard plastics the market expansion experienced since 1970 for bottles, caps, boxes, etc. rather than promoting an increase in product quality have resulted in a reduction of quality. This is due to the efforts of the manufacturers to push down prices through reducing material quality or decreasing amounts used in order to further the penetration of the market. This tendency is most apparent in the case of small- and medium-scale

industries. In the last 10 years, there have been almost no technical improvements carried out and so users in such sectors as drink or processed food must either import these packaging materials or are forced to produce them from internal sources.

Corrugated cardboard is produced using domestically produced materials for products destined to the domestic market, and in the case of export use high quality material is imported duty free for processing.

The second main problem involved in the product quality and specifications of the finished products is the lack of industry wide standardization. The provision of industry wide approved and recognized standards for dimension, construction and performance is lacking in the Philippines. The individual manufacturers supply the finished products in accordance with the standards provided by the main users.

The third problem pointed out is the frequent occurrence of loss or damage to the contents dispatched in conveyance packaging. Further, in connection with these problems is the fact that use of high quality products is made impossible by the high duties imposed, and the low standard of product quality of materials used.

(3) Topics and Improvements for the Packaging Industry

The extreme lack of facilities for quality control and evaluation is responsible for the low level of product quality and the lack of standardization. The provision of these facilities is therefore needed first, and on the basis of such facilities quality control and standardization of packaging must be carried out by the raw materials. In particular, the problem of conveyance packaging quality results from the lack of testing and inspection facilities in this sector and so a Contract Packaging Center should be promptly established. Moreover, import restrictions on polyurethane and polypropylene should be loosened in order to permit manufacturers to use high quality raw material.

The root cause for the low quality of packaging, and for the inadequate provision for standardization is, as mentioned above, the extreme lack of recognition of the importance of packaging in the industrial sector. The following policies are therefore needed in order to improve the product quality of packaging.

Firstly, technical training relating to packaging must be carried out in the schools and training centers. At present, there is no provision for packaging in the curriculum of related educational institutions in the Philippines, and so quite naturally there is no provision of textbooks or study materials. Secondly, guidance in promoting the export of packaging by the individual manufacturers and a break away from the low price low quality nature of the industry as regards domestic sales must be carried out. Promotion of

exports will encourage technical improvements and consolidate the formation of local industries including those in the raw material sectors related. Thirdly, promotion of technology transfer from the advanced industrial countries is encouraged. Fourthly, the establishment or nurturing of specialist consulting institutions in the packaging sector should be carried out.

To date, programs for the promotion of non traditional products including packaging products, have been carried out by the government and various governmental institutes, and short-term technical training relating to packaging have been realized by the PIP, PAP, DDCP, etc.. The PIP, DDCP and PRDC provide free consulting services as necessary.

However, problems relating to the product quality and standards of packaging are caused by the present nature of the industry and so a long-term approach is necessary involving the provision of testing and inspection facilities and training institutes, the establishment of a program for the promotion of package exports, and other programs.

Chapter 5 Miscellaneous Goods

The category "miscellaneous goods" is extremely wide ranging, but for the purposes of the present report we have restricted this to the categories of "Gifts, Toys and Housewares", "Fashion Accessories and Travel Goods", and the listing for "Sporting Goods" under "Other Consumable Manufacturers".

(1) Market Concerned and Particularities of the Industry

Of course this range of products exists in the domestic market but it is difficult to verify actual quantities or the present situation regarding the manufacturers. According sources between 10 - 30% of the total output is channeled into the domestic market. The following is an outline report of the export market situation.

As can be seen from Table A5-5-1 (op. cit.), miscellaneous goods accounts for 6% of the export value of the Philippines. The breakdown of this is ; gloves (leather, cloth) about 27%, basket-work about 26%, shell processing about 8%, wood processing about 8%, and the remainder is made up by stones and jewelry, small woven objects, sports goods, toys, etc..

As regards the individual destinations 66% go to North America including Canada, 14% go to the Common Market, and about 12% is exported to surrounding Asian countries including Japan.

Handicraft goods are central to this product range and supply is via export enterprises which have a number of affiliated subsidiaries of a labor intensive type. Moreover, investment from foreign sources is quite active. An analysis of 13 miscellaneous goods manufacturers which are in four EPZ reveals the followings:

100% Philippine capital	1 company
Majority of Philippine capital	2 companies
Majority of Foreign capital	3 companies
100% Foreign capital	7 companies

Further, re-export of products exists in the case of clothing articles (about 30%) on consignment basis as the case of gloves, bags and jewelry. In the case of gloves for example since tanning technology lags behind, leather which has been tanned is imported from South America and Europe and is then subjected to sewing processing.

With miscellaneous goods the determination of specifications with the buyer is through the provision of samples from the exporting company and the declaration of specifications from

Table A5-5-1 EXPORT TREND OF SUNDRY IN 1984-1988 CALENDAR YEAR

Products	(Unit: FOB Value in 1,000 US\$, Share %)					% of Total
	1984	1985	1986	1987	1988	
Basket Work (Wickwork)	54,005	53,960	69,021	90,176	111,644	26.1
Shell Craft	23,368	21,400	21,012	29,444	35,135	8.2
Wood Craft	15,396	13,801	16,859	23,079	32,678	7.7
Articles of Textile Materials	5,538	5,262	9,013	12,785	20,647	4.8
Toys and Dolls	8,618	5,735	4,471	5,807	10,065	2.4
Gloves	81,413	90,629	90,938	101,092	114,659	26.9
Jewelry	12,483	14,098	12,483	17,763	20,124	4.7
Sports Goods	7,847	5,629	6,395	7,066	7,806	1.8
Other Sundry	29,991	36,115	46,030	55,842	74,206	17.4
Sundry Total	238,659	246,629	276,222	343,054	426,964	100.0
Growth Rate (%)	-	4.4	12.0	24.5	24.5	

Note: Sundry = "Gifts, Toys & Houseware" + "Fashion Accessories" + "Sports Goods"

Source: Bureau of Export Trade Promotion, DTI

the buyer. In either case, the testing and inspection standard set is largely by external inspection, as per sample. However, in the case of toys and dolls for export to America, it is required that the coloring and dyes meet the standards set by the FDA.

On the export market there is competition with China, Taiwan, Thailand and Hong Kong. The Confederation of Philippine Exporters, which is the organization for exporting companies, ensures that "there is sufficient competitive power in terms of product quality and pricing."

The raw materials for the miscellaneous export goods such as gloves, bags, jewelry, etc. are in some cases met through the import of materials, as outlined above, but for the most part are met by natural domestically produced resources.

(2) Product Quality

1) Set up for Product Quality Control

In the case of the miscellaneous goods industries the scale of individual companies is small and there is no integrated production of commodities. The exporting companies divide tasks between the various subsidiaries and place one party in charge of the various processes in the position of a leader, quality inspection of intermediate products. Numerous checks at delivery are carried out in order to prevent the occurrence of defective products. As a result, there are almost no complaints received from the buyers.

2) Expected impact of an Application of a Standardization System

At present, the only technical commission relating to the standardization of miscellaneous related goods is the Toy Safety Commission (TC 26). Further, the number of PS which have been limited to date are 8 cases relating to glass and ceramics, 7 cases relating to gifts and housewares, 3 cases relating to sports equipment and 2 cases relating to toys.

Because of the nature of the "production largely through handmade operations using natural resources" there are intrinsic difficulties involved in the standardization of goods in this sector. Even if standardization were to be realized for the sake of argument there would be many cases where standards would follow those of the destined country given the predominant factor of the buyer's market.

(3) Quality of Purchased Raw Materials

Almost the only type of inspection carried out on the natural materials which are purchased as raw materials is a visual inspection. Besides a number of claims relating to product defects of a part of the imported leather, and in the case of domestic wood materials, there are no special problems except distortion, warping or cracking of paint due to insufficient drying .

(4) Testing, Research and Technical Guidance for the Industrial Sector

Because of the differing characteristics involved by the wide range of commodities covered by the term miscellaneous goods there is no system for the undertaking of cooperative testing, research and technical guidance. On this point alone, overall industrial organization of the industry is worse than that in other sectors.

(5) Technological Improvements and Policies for the Improvement of the General Industry

- 1) The establishment of inspection standards for raw material

While employing the standardization of wood materials leather, textiles and fasteners, etc. the establishment of inspection standards for raw materials in the relevant industry is to be carried out.

- 2) The establishment of a design institute to meet foreign market needs.

Chapter 6 Metalworking

6-1 Outline of the Metal Products and Machinery Sector

The metal products and machinery sector of the Philippines is divided into the industrial categories shown in Table A5-6-1. The sectors referred to here are as follows;

1. Steel sector
(except for the casting sector included under subsector A1 of the same table).
2. Non ferrous sector
(except for the casting sector included under subsector A2 of the same table).
3. Metalworking and General Machinery sector
(the casting sector included under subsector A and subsector B1 and B2 of the same table).
4. Electrical Machinery sector
(the electrical appliances sector included under subsector B3 of the same table).
5. Electronics parts sector
(the electronics parts sector included under subsector B3 of the same table).
6. Transport and equipment sector
(subsector B4).
7. Other machinery sectors
(except for subsector B5).

Table A5-6-2 shows the position of the metal products and machinery industries in the economy of the Philippines.

Taking the metal products and machinery sector as a whole the total of value added production for 1986 (1972 constant price) amounted to 4,215 million pesos accounting for 19.8 % of the total value added production for all manufacturing industries. Further, between 1982 and 1986 the average annual growth rate was 7.0%.

Looking at the individual types of industry comprising the same sector, the total production value (based on constant prices) for basic metals and electrical machinery in 1986 was of the order of 1,018 million pesos, and 1,913 million pesos respectively. These were the highest figures for individual sectors. On the other hand, general machinery, metal processing,

Table A5-6-1 CLASSIFICATION OF METAL AND MACHINERY SECTOR

Class 1	Class 2	Industries Included
A. Basic metal industries	1. Iron and steel basic industries	Blast furnaces, steel making furnaces: steel works and rolling mills: foundries, etc.
	2. Non-ferrous metal basic industries	Non-ferrous metal refinings: rolling, drawing and extrusion mills: foundries, etc.
B. Manufacture of fabricated metal products, machinery and equipment	1. Fabricated metal products except machinery and equipment and furn and fixtures primarily of metal	Cutlery, hand tools, general hardware: structural metal products: metal containers: wire products: etc.
	2. Machinery except electrical	Engines, turbines except for transportation equipment: metal and wood-working machinery, etc.
	3. Electrical machinery, apparatus, appliances and supplies	
	4. Transport equipment	Ship building: motor vehicles: vehicle parts and accessories, etc.
	5. Professional and measuring and controlling equipment n.e.s. and of photographic and optical instruments	

Source: National Statistics Office, "Annual Survey of Establishments, Manufacturing 1986"

Table A5-6-2 GROSS VALUE ADDED (GVA) IN METAL AND MACHINERY INDUSTRY BY INDUSTRY GROUP, THE PHILIPPINES

(Unit: million pesos at 1972 constant prices)

	1972	1975	1978	1981	1983	1984	1985	1986
	Value % of Total (a)	Value % of Total (a)	Value % of Total (a)	Value % of Total (a)	Value % of Total (a)	Value % of Total (a)	Value % of Total (a)	Value % of Total (a)
A. Basic Metal Industries	409 21.9	587 23.9	742 19.1	791 16.3	947 17.9	1,121 25.5	1,070 27.0	1,018 24.2
B. Metal Products and Machinery Ind.	1,456 78.1	1,873 76.1	3,146 80.9	4,052 83.7	4,347 82.1	3,270 74.5	2,891 73.0	3,197 75.8
1. Metal Products	401 21.5	388 16.2	932 24.0	977 20.2	1,091 20.6	740 16.9	746 18.8	725 17.2
2. Machinery except Electrical	184 9.9	190 7.7	618 15.9	764 15.8	797 15.1	442 10.1	409 10.3	429 10.2
3. Electrical Machinery	355 19.0	443 18.0	821 21.1	1,401 28.9	1,717 32.4	1,964 44.7	1,600 40.4	1,913 45.4
4. Transport Equipment	516 27.7	842 34.2	775 19.9	910 18.8	742 14.0	124 2.8	136 3.4	130 3.1
Total GVA in Metal and Machinery Industry (a=A+B)	1,865 100	2,460 100	3,888 100	4,843 100	5,294 100	4,391 100	3,961 100	4,215 100
(a/b: %)	13.9	14.9	18.4	20.2	21.1	18.8	18.4	19.4
(a/c: %)	3.3	3.6	4.7	5.0	5.3	4.7	4.4	4.6
Total GVA in Manufactur'g (b)	13,388	16,537	21,108	23,959	25,108	23,319	21,541	21,717
(b/c: %)	23.9	24.2	25.5	24.9	25.1	24.8	24.0	23.9
Gross Domestic Product (c)	56,075	68,361	82,797	96,207	99,920	93,927	89,803	90,770

Source: Philippine Statistical Yearbook 1987, NEDA

transport machinery were low with figures of 725 million pesos, 429 million pesos and 130 million pesos respectively. Moreover, a consideration of the annual average growth rates shows high growth rates for electrical machinery, basic metals, general machinery (excluding electrical machinery), and metal processing in that order with respective figures of 15.1%, 7.9%, 7.3% and 5.1%. However, despite the fact that the annual average rate of growth for manufacturing industries generally over the same period was 4.1%, the figure for transport machinery was much lower with only -10.9%.

The relative contributions of the various individual types of industry to the GDP in 1986 were 7.8% for basic metals and 5.7% for electrical machinery in the top group. In the lower bracket group the sectors only accounted for around 1% in the case of metal processing, general machinery and transport machinery.

Looking at export figures, the export value in 1988 for fabricated metal industries was 454 million pesos, quite a large figure when compared to that for machinery and transportation machinery of 54 million pesos, and of 20 million for non ferrous fabricated metal industries. The average annual growth rate in exports between 1983 and 1988 shows 20.1% for the fabricated metal industries as opposed to the 7% growth rate of the electronics related industries for the same period. This illustrates the rapid expansion of exports evident also if one compares with the 14.9% growth realized by the non ferrous fabricated metal industries and the 8.8% growth rate of transport machinery.

However, the metal products and machinery industries in the Philippines are still extremely small in scale. Not only in terms of the supply of metallic related products but also in terms of the production of die & jig domestic productive capacity remains on a very low level in both technical and quality aspects. Dependence on imports will continue in the future to be extremely great.

There is a possibility of an expansion in the export of metalworking products from the Philippines as the labor costs of neighboring countries such as Taiwan and South Korea increase in the coming future. It is therefore desirable to cultivate the domestic market which has been heretofore restricted while undertaking a thorough improvement of the metal products and machinery industries.

Table A5-6-3 shows the relations between the metal products and machinery sector and other industrial sectors. Since the metal products and machinery industries are in the position of supplying machinery and parts to all other industries, it has a very large influence on them. Considering the nature of the outlets for the capital and intermediate goods which are produced by the metal products and machinery sector in the Philippines, intermediate demand is seen to have accounted for 60.7% in 1983 and the remainder to have been accounted for by final demand. Manufacturing, construction and transportation account for 35.3%, 13.3% and 11.1% respectively

Table A5-6-3 TRANSACTIONS AMONG METAL & MACHINERY INDUSTRY AND OTHER INDUSTRIES, IN THE PHILIPPINES, 1983

(Unit: Million Pesos)

Output to:	Agriculture Forestry&Fishery		Mining		Manufacturing		Construction & Utilities		Transportation & Series		Total		Total Out- put
	% of (a)		% of (a)		% of (a)		% of (a)		% of (a)		Interm. Demand	Final Demand	
Input from:													
A. Basic Metal Industries	1.6	0.0	162.2	5.4	10171.9	5.0	3313.6	9.4	46.4	0.1	18695.8	-3371.6	10324.2
B. Metal Products and Machinery Ind.	306.9	1.0	233.1	7.8	2719.0	1.3	2881.6	8.2	757.0	1.1	6609.4	919.9	7529.3
1. Metal Products	89.8	0.3	162.2	5.4	1096.4	0.5	86.2	0.2	279.8	0.4	1604.9	7686.8	9291.7
2. Machinery except Electrical	84.8	0.3	56.7	1.9	3674.7	1.8	1403.4	4.0	1550.0	2.2	6696.5	5232.4	11928.9
3. Electrical Machinery	56.6	0.2	11.7	0.4	978.1	0.5	10.9	0.0	1594.3	2.3	2661.1	1723.5	4384.6
4. Transport Equipment	75.8	0.3	2.4	0.1	8468.2	4.2	4382.0	12.4	4180.8	5.9	17571.9	15562.6	33134.5
C. Other Industries	29033.9	99.0	2603.4	86.8	189374.9	93.6	29067.7	82.4	69761.2	98.9	2549.4	1224.5	3773.9
Total Product Inputs (a)	29402.4	100.0	2998.7	100.0	202265.8	100.0	35262.9	100.0	70564.6	100.0	341643.0	379749.2	721392.2

of the intermediate demand. These three sectors account together for almost all of the demand and there is little supply to the agricultural sector.

Looking at the flow of products from the metal products and machinery sector to the individual industries by sector, one notes that each of these industrial sectors depends no more than 1 to 12% of the total intake of investment equipment on the metal products and machinery industries. Because of this the mutual dependence between manufacturing sectors is still weak and transactions between industries are characterized by the small influence exerted by one sector on related forward sectors.

The following factors are seen as underlying this situation;

1. There is still a dependence on imports for important machinery and devices
2. The fixed capital investment activities of each industry are not very energetic, and so outdated or old machinery, etc. is used without sufficient repair
3. Except for the exporting industries the large majority of small- and medium-scale industries have a strong tendency to give priority to low pricing as a strategy in the domestic market, and so they do not promote improvements of technology and quality needed to realize the role of supporting industries to the key industries.

Table A5-6-4 indicates the number of factories, their scale, number of operatives, etc. for the metal products and machinery industries in 1986.

The metal products and machinery sector consists of the basic metals and metal processing sectors. There are 1,078 companies which are operating in the field of the industry as a whole. Of these, the number of companies engaged in the basic metals sector accounts for 2.6% of the total. Actually, the number of welding and press shops is great, and these largely belong to the category of small-scale industries. Further, the total production output value per company is in the region of 385,000 pesos. The basic metals sector represents a total value of 140 million pesos and the metalworking sector a total of 24 million pesos. With a total value of only 4 million pesos the casting sector in particular (both iron and non ferrous metals) is extremely low in comparison with other related types of industry. In terms of employment the industry overall employs approximately 103,000 which represents 16.3% of the total employment figures. Basic metals accounts for 2.9% of the total industry's employment.

The sectors, in which individual companies on average employ a large personnel, include all of the areas of basic metals, steel and non ferrous metallic industries (with the exception of the casting sectors), and the electrical appliances area in the metalworking and machinery sector. On the other hand, casting related and general machinery industries employ on average a small

Table A5-6-4 CHARACTERISTICS OF METAL AND MACHINERY INDUSTRY IN THE PHILIPPINES, 1986

	Number of Establishments	Employment of Total	Per Establishment	Compensation per Employment	Value of Output	Per Establishment
			#1	#1	#1	#1
A. Basic Metal Industries	138	18,284	132	612	19,272	140
1. Iron & Steel Basic Industries except Foundry	93	14,573	157	498	11,493	124
2. Iron & Steel Foundry	15	808	54	13	61	4
3. Non-ferrous Metal Basic Industries except Foundry	20	2,820	131	95	7,678	384
4. Non-ferrous Metal Foundry	10	283	28	6	40	4
B. Metal Products & Machinery Industries	940	85,204	91	2,472	22,201	24
1. Metal Products	266	16,732	63	371	3,595	14
2. Machinery except Electrical	316	12,667	40	19	1,553	5
3. Electrical Machinery	159	40,085	252	1,379	14,102	89
4. Transport Equipment	160	11,690	73	329	2,606	16
All Manufacturing Industries	5,294	636,219	120	17,558	247,461	47

Note: #1 Unit: Million Pesos

number of employees.

With regard to the total sum paid for an average wage to one employee, the overall figure for metal products and machinery industries only represents 18% of the average figure paid by the manufacturing industries generally. Wage conditions are thus comparatively bad. Moreover, wages in the metalworking and the machinery sectors only amount to one fourth of the average sum of the basic metals sector. Further, among metalworking and machinery industries, the electrical machine industries have effected an expansion of exports thanks to commissioned processing so that the wages are by far the highest among the metal products and machinery industries generally. It is therefore assumed that the gap between the various industries and in the scale of companies in the manufacturing industries in the Philippines is large. Average production figures per employee show that, aside from the non ferrous metal industries and steel industries, the production is generally lower than that of the other manufacturing industries. The explanation to this result would seem to be the obsolescence of technology and deterioration of production equipment in addition to the characteristically labor intensive nature of the industry.

Table A5-6-5 shows the rate of self sufficiency in supply of the metal products and machinery industries.

61% of the products manufactured within the metal products and machinery industries are internally used in the same industries for self supply. The remainder are supplied to other economic sectors. However, as regards the inflow of investment resources from the each sectors of the metal products and machinery industries taken separately, the rate of self supply of the various industrial sectors for the crude materials of metal related parts and for capital goods achieved via transactions between the different industries is generally very low. One exception is metalworking industries. Therefore, since mutual interdependence is insufficiently developed, there is a strong tendency for reliance on imports. Causes of the low rate of self sufficiency in supply are mainly as follows;

1. The tendency for companies demanding a high standard of product quality, and in particular of exporting companies, to rely on imports for investment and capital goods.
2. The insufficiency of efforts on the part of companies serving domestic demand to meet quality standards needed by the key industries. This is not only caused by the trend towards a strategy of low pricing by the small- and medium-scale industries in the domestic market. Other causes are deterioration of equipment and obsolescence of technology, restricted productive capacity and the difficulties involved in new investment.

Table A5-6-5 TRANSACTIONS AMONG SUBSECTORS IN METAL & MACHINERY INDUSTRY IN THE PHILIPPINES, 1983

	Basic Metal Ind.	% of Total Metal Prod. & Mach. Ind.	Metal Prod.	% of Total	Metal Prod.	% of Total	Machi. except Elec.	% of Total	Elec. Machi.	% of Total	Transp. Equipm't	% of Total
Input from:												
A. Basic Metal Industries	4288.2	56.8	5836.4	27.1	3176.8	62.6	1703.5	31.5	336.6	4.5	419.5	15.2
B. Metal Products and Machinery Ind.	35.1	0.5	7145.7	34.4	336.6	6.6	1745.0	32.3	3964.4	52.4	1099.7	39.9
1. Metal Products	24.5	0.3	1614.3	7.8	305.4	6.0	725.4	13.4	597.0	6.7	76.5	2.8
2. Machinery except Electrical	2.3	0.0	973.1	4.7	8.9	0.2	917.0	17.0	30.7	0.4	16.5	0.6
3. Electrical Machinery	7.9	0.1	3526.0	17.4	21.5	0.4	101.1	1.9	3422.8	45.3	80.6	2.9
4. Transport Equipment	0.5	0.0	932.1	4.5	0.7	0.0	1.5	0.0	3.9	0.1	926.0	33.6
C. Other Industries	3220.6	42.7	8685.3	38.5	1560.6	30.8	1952.1	36.1	3258.4	43.1	1234.2	44.8
Total Product Inputs (a)	7543.9	100.0	20787.4	100.0	5674.0	100.0	5400.6	100.0	7559.4	100.0	2753.4	100.0

3. The stagnation of the expansion of demand for intermediate goods on the domestic market as a result of item 2. above. Further, this results in a delay in the nurturing of contacts and relations between the key industries and the parts industries.

In order to improve the rate of self-sufficiency in supply it is necessary to improve the product quality of metal industry related products destined for the domestic market. These could then be supplied to the key industries in the place of imported products.

The Philippines is engaged at present in the active encouragement of foreign investment. However, given the present situation, as described above, in the metal products and machinery industries which form the foundation of the various industrial sectors, there is a danger that the only national resource which can be effectively used is the labor force. The advance into the machinery industries (especially assembly industries) and their related parts industries involve a number of supporting industries. It is therefore an urgent task hereafter to promptly undertake the development of the sectors of the metal products and machinery industries which support the secondary and tertiary parts industries relating to these.

6-2 Metalworking Industries

(1) Present Situation

The following six types of industry have been examined under the general heading of Metalworking in the present report;

- a) Casting
- b) Forging
- c) Press working (Sheet working; Welding included)
- d) Machining (Machine assembly included)
- e) Heat treatment
- f) Electro-plating

However, nearly all companies actually carry out several of the above processes side by side and so it is very difficult to categorize companies rigorously to one group.

In particular companies engaged primarily in the sectors of casting, forging and press working frequently also carry out such later processing as machining, heat treatment and electro-plating internally. Further, many of the companies involving press working or plastic processing also have a tool and die making shop in the same company. This is considered to be due to the fact that as yet there are not many reliable tool and die manufacturers developed in the Philippines.

The metalworking industries are responsible for the production and supply of the component elements, etc. of the equipment and devices which are used by all types of industry. It is therefore a sector intimately and vitally connected to the economic development of a country. As the development of the manufacturing industries relating to the main users lags behind in the Philippines, the scale of the metalworking industries relative to population is very small.

The market is largely domestic oriented and there is still only a very small amount of export. However, due to the recent surge in labor costs experienced in the NIES countries such as Taiwan or South Korea, and also due to the rapid changes occurring in the Chinese situation, the Philippines has attracted attention from the advanced countries and the NIES as a possible supply source for metalworking products. Therefore, if correctly

responded to, such an interest will result in a growth in exports in the future.

The metalworking industries are both labor-intensive and capital-intensive, and so require an intensive technological and technical input. In this regard, the metalworking industries of the Philippines are small in their industrial scale and in their production scale.

Moreover, production machinery and facilities are generally worn out or obsolete. During the visit to plants the use of second hand foreign machinery manufactured some 20 to 30 years ago was noticeable. This obviously creates problems with regard to dimensional accuracy and productivity.

There is still a strong tendency for the main users to give priority to cheapness of price over product quality, and this hinders efforts to improve product quality. The recognition of the importance of production technology and quality control is still generally insufficient. However, a genuine will to improve these aspects was felt in the shops visited.

(2) Production Structure and Market Characteristics

1) Number of Companies and Scale Distribution

According to the Metalworking Industries Association of the Philippines (MIAP), there are about 1,000 companies engaged in the metalworking sectors in the Philippines. Further, the 1989 edition of the Philippine Metal Products Directory, issued by the MIRDC lists 853 companies as Metal Product Manufacturers.

190 of these listed companies which are also members of the MIAP are regionally distributed as follows:

Metro Manila attached to	branch office	84 companies	
Pangasinan	"	16] 52.6%
Cebu	"	40	21.1%
Northern Mindanao	"	26	
Zamboanga	"	24] 26.3%
TOTAL		190	100%

a) Casting

According to the documents issued by the Philippine Foundry Society the number of foundries in 1987 totaled 140. However, this had fallen to 135 in March of 1989.*1)

Since formerly the figure had totaled 221 foundries it would seem that there has been a continuing tendency for the number of foundries to fall. Tables A5-6-6 and A5-6-7 show the number of foundries grouped separately according to the scale of personnel and also the distribution of foundries by region.

(*1) 30 of these 135 companies are members of the PES.)

Table A5-6-7 shows that 73% of the foundries are concentrated in the Metro Manila area. This is due to the fact that the main users are also gathered here and because of the easy access to raw materials in this area.

b) Forging

There is no specialized industrial association for the forging industry and so it was difficult to get an overall view of the situation for the industry. Actual Closed Die Forging is carried out only at the two companies*2) which happened to be part of the observation visits. Other forges are only of a black smith type. Also both the ACME Tools Mfg. Co., Ltd. which was founded in 1953, and the A.N.I. Philippine Forge Inc. founded in 1974 are relative newcomers and have very short company histories.

(*2) As a special case the ARMCO-MARSTEL ALLOY CORP. carries out the forging of the grinding balls used for mining.)

As to industrial scale, the production performance of ACME Co. in 1988 was 200 tons, and that of A.N.I. 4,000 tons for the same year (production capacity of 10,000 tons a year, operating rate 40%).

The location of forging in both cases was Metro Manila and surrounding region. This is judged due to the proximity of the market and the easy access to raw materials as in the case of foundries.

c) Press Working

There is no specialized industrial association in the press working sector, and so an overall picture of the industry was not possible. However, visits were made to such users as automobile manufacturers, motorbike manufacturers, and the press working companies so that the general outlines of the situation could be grasped.

This sector is divided into the two sections with one sector producing press parts on subcontract basis from local automobile and electric appliance industries and then those producing LPG cylinders using own company brand. However, the scale of these

Table A5-6-6 NUMBER OF FOUNDRIES BY MEMBER
OF EMPLOYEE
- AS OF END OF 1987 -

Number of Employee	Number of Foundry	% of Total
20 or below	35	25
20 - 49	55	39
50 - 99	28	20
100 and above	22	16
Total	140	100

Source: Philippine Foundry Society

Table A5-6-7 REGIONAL DISTRIBUTION OF FOUNDRIES, 1987

Region	Number of Foundries	% of Total
Metro Manila	102	73
Luzon	17	12
Visayas	15	11
Mindanao	6	4
Total	140	100

Source: Philippine Foundry Society

companies is quite large, and besides those there would seem to be a number of petty or minor companies in the field.

There are three companies engaged in the production of LNG cylinders. Of these the Filipinas Industrial Corp. was visited. The scale of this company was considerable with employee numbers of more than 500 and a 1988 production output of LPG cylinders of 2,600,000. For the press working subcontractors there are ten companies known by name. However, the scale of domestic automobile, motorbike and domestic electrical appliance manufacturers is small, and large press parts are not produced due to a lack of equipment and technological limitations, so the scale of these press companies is not very large.*3)

(*3) Exceptional cases are ROH Auto Products Phils. Inc. in conjunction with technical assistance from Australia and UE Automotive Mig. Inc. in conjunction with technical assistance from Japan, both of which produce steel rims for automobile use on a considerable scale.)

Regionally most of demand is concentrated in the Metro Manila and surrounding area.

d) Electro-plating

According to the 1987 report of JETRO there are less than 100 electro-plating companies in the Philippines. 88 of these are sub-contractors of electrical appliance, automobile, bicycle, and other manufacturers. There are a number of electrical appliance companies and other large scale companies which have their own internal electro-plating equipment. The large majority of the electro-plating shops are concentrated in the Metro Manila area.

The average number of employees per the company belonging to the Philippine Electroplater's Association (PEA) was approximately 50 staff. (There were less than 10 associated companies in 1987).

At the time of the survey carried out in July, 1989 the number of associated companies in the Metro Manila area had increased to more than 20.

e) Heat treatment

With regard to heat treatment, there is no jobbing factory specialist companies, and this is carried out as processing related to casting, forging, machining, etc. it was not possible to quantify the situation regarding this sector. However, annealing to relieve stress, quenching and tempering to increase hardness were carried out in a

large number of the foundries, forging, machine shops and press work shops which were visited. Companies carrying out heat treatment processing are concentrated in the Metro Manila area and are medium and larger in scale.

f) Machining

It is difficult to categorize the various companies whose activities concentrate on machining. It was possible to identify a number of companies engaged primarily in gear cutting and in tool and die making. As machining industry requires a certain scale of equipment investment there are few small-scale companies and the large majority are of a medium-scale and located largely in the Metro Manila area.

Although the Automobile industry (taken to include the motorbike industry) and Domestic Electric Appliance Industries actually fall within the range of the Machine Assembly Industry, as their role as user of metalworking parts is extremely large they have been examined under the heading for the market.

Further, the steel industry, as a supply industry for raw materials, is treated under the heading concerning raw material problems.

2) The Market Situation and Particularities

The market relating to the metalworking industries in the Philippines is still largely domestic oriented and with the exception of a part of the industry exports remain small. Further, development of the industry has been slow and the relative weight of replacement markets has been great.

The main domestic markets are in the construction, sugar refining, mining, cement, shipbuilding, agricultural machinery, electrical appliance, and automobile industries. The sugar refining, mining and cement industries among these possess a long history and tradition and while these are stable great development is not to be expected.

On the other hand, with an improvement in the level of incomes an expansion is expected to occur in the automobile (including motorcycles) and electrical appliance industries.

The number of production and sales of Philippine cars has increased in line with the Progressive Car Manufacturing Program (PCMP) established in 1972, however a peak was reached in 1978 with approximately 70,000 cars. After this there was a fall in figures and in 1984 a sharp drop, which reached an all time low production of 3,737 cars in 1986 (Table A5-6-8). However, 1987 saw a fundamental recovery and the production and sales figures for the two companies PAMCOR (Mitsubishi) and PNI (Nissan) were as follows:

Table A5-6-8 VEHICLE SALES - 1972 TO 1986.

Year	Car	AUV*1	LCV	Trucks	Total
1972	11,994	209	6,015	3,298	21,516
1973	16,737	6,562	5,105	3,867	32,271
1974	21,844	11,546	5,263	5,494	44,147
1975	26,592	11,976	4,188	6,256	49,012
1976	30,839	12,356	5,267	4,263	52,725
1977	31,539	18,003	4,809	5,006	59,357
1978	34,626	20,851	8,600	5,884	69,961
1979	34,973	20,685	6,932	5,893	68,483
1980	29,980	14,021	9,721	5,008	58,730
1981	28,697	9,976	9,773	5,219	53,665
1982	28,995	12,730	10,407	4,123	56,255
1983	27,967	9,056	9,742	3,485	50,250
1984	6,481	2,472	2,007	1,155	12,115
1985	4,769	375	373	90	5,707
1986	3,640	54	22	21	3,737
1987	5,543	341	210	162	

Note: *1 Asian Utility Vehicle

Source: Philippine Automotive Federation, Inc.

1987 6,378
1988 12,651 (however, PNI sales figures up to Sept.,1988)

From March 1989 Toyota commenced production in addition to these two companies. The only companies producing passenger cars are the above three companies. However, there are a large number of companies producing trucks, buses, light commercial vehicles (LCV) and AUVs. The demand and production for vehicles is expected to grow in conjunction with the stabilization and improvement of the Philippine economy.

However, the main problem in this context is that of the rate of domestic production. The target for Minimum Local Content which was initially set by the PCMP was for 55%, but this was subsequently reduced to 40% in 1983. A further reduction to 32.26% was effected in the new guideline. These reductions were effected due to the inability of the present metalworking industries to cope with production capacity and also due to the inadequacy of production technology.

For example, the local content ratio of PNI (Nissan) is 32%, but local production is only realized for pressed parts and small items which are comparatively easy to changeover to local production, whereas large press parts such as doors, etc. are still imported.

Like PNI, PAMCOR (Mitsubishi) is also exerting its efforts to increasing the local content of production, and forged parts (gear blanks), cast parts (brake drums, brake disks, etc.) and press parts (seat adjusters, pedal parts, etc.) destined for delivery to both these companies were observed in the shops visited.

In the motorcycle sector the three companies Honda, Kawasaki and Suzuki have advanced into the Philippine market, but the scale of production remains small and Honda has an annual production of only 10,000 bikes.

A special example of a future user of metalworking parts is that for transmission assembly for automobile use. The Asian Transmission Corp. which was set up to secure the foreign currency needed for the import of component parts for PAMCOR (Mitsubishi) has an annual productive capacity of 143,000 units. However, as 93% of the production is exported the remaining 7% of production is all destined for supply to PAMCOR.

Although the rate for local content is 35% in the same company a large part of costs is taken for machining and assembly so that the purchase of local parts is very small. In fact such purchases are almost restricted to those for the gear blanks as forged items, and the stamp material fasteners among small items. As the accuracy of machine tools is poor it is not possible to subcontract externally and so all machining is done internally.

In the case of domestic electrical appliances also, a large number of metal working items are used for washing machines, refrigerators, air conditioners, electric fans, irons, etc. Table A5-6-9 shows the sales fluctuations for the main domestic use electric and electronic devices and products.

The three local manufacturers in the Philippines are the Philippine Appliance Corp. (Philacor), Conception Industries Inc., and the Standard Appliances Corp. which produce a limited range of items.

Japanese companies such as Matsushita (Precision Electronics Corp.) have also made inroads into the market. PEC uses the following analysis to divide the Philippine market for appliances. The population of the Philippines is 57 million 400,000, the number of households is 10 million 300,000 and the income brackets as follows:

A Class	15,000	pesos or more per month	
B Class	8,000-14,999	pesos per month	
C Class	3,000-7,999	pesos per month	30%(A + B + C)
D Class	800-2,999	pesos per month	
E Class	less than 799	pesos per month	70%(D + E)

As the current rate of electrification is 47%, 50% of all households are seen as potential customers.

For the time being the majority of commodities produced are aimed at the C and D class income brackets. However, in the future with an increase in the level of incomes the development of the market for domestic electrical appliances is expected to arise. Recently, there has also been a strong eagerness to purchase observable in the market.

Press parts, forged items, electro-plating, etc. are largely met by the production of local electrical appliance manufacturers. However, as there product quality poses problems for the foreign manufacturers these only order a part of the pressed parts and electro-plating externally after very careful consideration.

The sector of the Philippine metalworking industry with the longest tradition and history is casting. The proportional importance of the production of abrasion resistant cast steel for use in the mining, cement and construction industries as a consumable is very high compared to other industrial countries. As the production of such abrasion resistant cast steel products requires equipment and technology superior to a certain level such products are almost entirely produced by the Captive Foundry of mining companies (Benguet, Atlas, etc.), or by large joint venture companies set up with foreign companies (AG and P, AMSCO Foundry Inc.). The equipment and technical level of these companies is very close

Table A5-6-9 CHANGE SALES OF CONSUMER ELECTRIC AND ELECTRONIC PRODUCTS
IN THE PHILIPPINES

	1983	1984	1985	1986	1987
Black & White TV	228,812	117,017	114,209	118,451	130,000
Color TV	315,041	165,886	42,513	63,070	90,000
Refrigerator	200,000	98,000	95,315	108,111	170,000
Electric Fan	475,046	280,015	230,562	259,455	300,000
Electric Stove	217,574	157,369	125,162	139,334	160,000
Gas Range	44,903	22,044	22,117	19,422	24,000
Rice Cooker	52,540	32,688	23,004	23,775	28,000
Electric Iron	45,730	19,542	20,972	17,094	24,000

(Unit: Number)

Note: 1987 : Provisional

Source: Consumer Electronic Products Manufacturers Association

to that of international standards. Therefore, although they are Jobbing Foundries the links with customers ensures that the reliability of product quality is given priority.

However, besides the above the large majority of Jobbing Foundries unfortunately are influenced by customers who give priority to pricing. Table A5-6-10 shows the export situation for cast, forged and stamped products.

ANI, the largest company in the forging sector exports 80% of its production output. This company is mainly of a Job order type and was initially founded with the aim of supplying forged parts to the automobile industry of the Philippines in accordance with the PCMP. The other main company, the ACME Tool company, is also primarily of a Job order type. However, as the equipment and level of technology possessed by these is above the required standards and they continue to strengthen their links with the domestic automobile and transmission manufacturers.

As regards press working, both PNI- Nissan (automobiles) and Precision Electronics-Matsushita (domestic electric appliances) possess their own in-house press shop. However, the large majority of companies are medium and small-scale jobbing press factories. Further, automobile manufacturers, appliance manufacturers and motorcycle manufacturers buy press parts from sub-contractual companies.

With regard to electro-plating there are some companies with in house electro-plating shops but the majority are small- and medium-scale companies. These are linked with customers such as the automobile manufacturers, auto parts manufacturers and appliance manufacturers on a job order basis.

With regard to heat treatment, as noted previously, there are almost no specialized companies which take on job orders, and all companies which require heat treatment in their production process are equipped with an in-house heat treatment shop.

The strength of demand for product quality is generally high with regard to parts for use in original equipment, but in the replacement market context (for example auto parts) preference is given to the cheap pricing of products over product quality.

The recognition of the importance of marketing activities in the metalworking industries is generally quite weak. In the companies visited there was not sufficient provision of company brochures and explanatory pamphlets or of product catalogues. As the companies selected to form the object of the visits were the top companies in the Philippines, it is easy to imagine what the general situation is like for other companies.

Table A5-6-10 ANNUAL PHILIPPINE EXPORTS OF FOUNDRY PRODUCTS
 - FORGING PRODUCTS AND STAMPINGS -
 1985 TO 1986

Year	Quantity (Net kg)	Growth Index (1980=100)	FOB Value (US\$)	Growth Index (1980=100)
1980	1,523,639	100	2,809,683	100
1981	1,437,744	94	2,874,557	102
1982	878,830	58	1,880,551	67
1983	636,654	42	1,065,814	38
1984	1,492,633	98	2,419,424	86
1985	497,484	33	944,432	34
1986	617,282	41	1,147,921	41
Total	7,084,266		13,142,382	

Source: National Census and Statistics Office

The fluctuations in the production figures of Honda are as follows, with those for 1985 and 1986 representing a low point after which a fundamental recovery was realized;

<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>
11,349	13,055	3,986	1,586	1,910	3,902	4,090	10,000
							(estimate)

The total annual production for the Philippines overall amounts to 24,000 vehicles. When compared to the annual total sales figure for Thailand of 400,000 vehicles this is extremely small. There is great room for development. Further, the ratio of local content production could be raised to as much as 50%, making this a very promising market.

3) Difference in Business Performance of Firms by Market

The differences in business performance of the enterprises are partly due to the differences in the target market but are more fundamentally determined by whether the customer places more emphasis on product quality, or whether cheap pricing is preferred before quality, since the response of the enterprise is largely determined by this factor. The way a company responds and meets the customer's emphasis will affect the nature of the company.

Thus for the same automobile part there are great differences depending on whether this is to be purchased by a specific automobile manufacturer or whether it is destined for the replacement market to meet the demands of a large number of unspecified customers. However, in the case of aluminum wheel manufacturers which share the same replacement market conditions, there is much greater emphasis on product quality and reliability for the company brand product.

In general it can be said that those companies which supply Japanese companies (automobiles, motorcycles, appliances) on the domestic market must clear much stricter standards and so the management policy adopted by top management is very good.

A clear policy giving emphasis to product quality was also observed with companies which exported to the advanced industrial nations.

Moreover, in the case of abrasion resistant and heat resistant cast steel products used domestically in the mines, cement factories and for construction machinery the factor of service life was given attention as well as pricing. Also the companies producing these products were often large scale conglomerate companies which maintained an attentive attitude to quality.

However, companies giving attention to product quality remain in the minority. The top management of companies fully realize the importance of quality but are forced because of competition to prefer cheap pricing over quality, and many of these companies pointed out the need for the education of customers.

For example, complaints are frequently expressed that the PNS mandatory standards apply to steel bars but these standards are not well observed, and there are a large number of companies which supply undersize products.

(3) Problems with Product Quality and Specifications

1) Problems of Product Quality and Specifications

a) Cast Products

According to the PFS survey the following ration of defect in the products were identified;

Gray Iron	10-15%
Malleable Iron	20-25%

The main cause of defects was blow holes. Besides this cold shut was occasionally observed. The defect rate for cast steel could not be grasped but this is thought due to the fact that defects were not identified since repair by welding is possible.

In the case of the aluminum wheel produced using gravity die casts there is a defect rate of about 5% according to figures of the manufacturers. The main cause of these are shrinkage cavities and pin holes. It was felt on an actual visit to the workplace of the foundries that except for a number of the large scale companies that the level of production technology and some quality control were low, and that quality problems existed with products which nevertheless were passed as adequate.

As to the standards although the provisions of the PNS are inadequate nevertheless these are selectively used in accordance with the different customers such as the JIS, ASTM, SAE, AISI, ACI and AS (according to the PFS the provision of standards has been commenced recently and is in progress). Moreover, in the case of the customer being a Japanese company standards valid internally in that company are often demanded to be met. As the specification standards of Japanese companies are stricter than those of the JIS only a restricted number of firms are able to meet such strict requirements, and the majority of small- and medium-scale companies are unable to meet these demands.

b) Forged Products

The defect rate in mechanized forging workshops as opposed to forges is 2-3%. The main causes for such defects are either dimensional defects due to wear on the die, or over heating resulting from defective heat control of the heating furnace.

The quality of forging is primarily determined by the raw material quality and the accuracy of the metal dies used. The source of steel types is distinguished with mild steel coming from local sources, low carbon steel obtained from South Korea and Brazil, and high carbon steel from Japan, West Germany and Australia, etc. The efficient and proper use of raw materials is skillfully realized.

The finished products which include special bolts, conveyer chains, shackles, hooks, hand tools, etc. and a number of automobile parts besides (gear blanks, connecting rods, etc.) are largely items of a shape which is easily produced.

Therefore the product quality of the forged items is considered to reach the required standards.

Specifications are based on the Buyer's standards rather than on those of the PNS.

USA standards : ASTM, SAE, IFI (Industrial Fastener Institute)

Australian standards : AS

In Japan the JIS or stricter standards of an in house nature are applied. The ISO, international standards, are also applied.

Due to no standard to dimensional tolerance, the different dimensional tolerances have been accepted reluctantly, which the buyers requested.

c) Press Worked Parts

The defect rate of the companies concerned by the survey was around 2%, most of which were caused by burn through, etc. during welding. The quality of the press working is largely dependent on the raw material sheets and the accuracy of the dies used. As a deep-draw ability is required of the steel sheets which are deep draw processed for such items as the LPG cylinders, the local materials are considered inappropriate and so imports from Japan are used.

Further, as local steel sheets easily give rise to air bubble defects on the plating surface during the plating processing which follows stamping steel sheets are imported

from Japan.

Press parts for automobiles, motorcycles and domestic electric appliances are produced in line with the company standards of the customer companies.

As there is a mandatory PNS specification for strength the cylinders for LPG use which are manufactured for the domestic market, are made in accordance with PNS.

The items destined for export are according to destination into AS, UL and ISO standards.

The U.S.A. welding standards are according to those sets by the following associations;

CGA (Compressed Gas Association)

DOT (Development of Transmission)

d) Electro-plating

Excepting those in house plating shops of the large scale companies all of the shops were of medium and small scale industries and until recently quality awareness was quite low. According to the 1987 JETRO survey there was no management of the chemical composition of the plating bath or of the electric current of the plating tank, and measurements of the plating thickness were not carried out. However, the support of JETRO was secured and improvements are underway.

In the workshops visited plating of automobile rims and bumpers, of motorcycle handles, of refrigerator handles and hinges and of kitchen utensils were carried out, and the defect rate was reported to be 0.5%.

There are no PNS for electro-plating processes but ISO are introduced as a reference specification. According to the customer processing is divided between JIS and ASTM but in general American standards are employed for processing destined to the domestic market.

2) Causes and Improvement Policies

a) Casting

Although the guidance of JETRO has been received since 1988 and improvements are being carried out, the awareness of product quality is still generally low and the following problems are encountered in the small- and medium-scale gray iron foundry;

1) Management of melting including that for raw materials is inadequate.

Iron and steel scrap is used as raw material and new pig iron of known purity is hardly ever used. In addition because of poor storage rust is often observed. Also cupolas are often used which use coke for the fuel for melting. However, due to structural problems inherent to the cupola, poor furnace operational expertise and inadequate foundry tests, it is not possible to obtain a proper temperature or composition of molten iron.

2) Many Foundry Shops Lack Molding Sand Reclamation Facilities and Test Devices for Molding Sand

Used molding sand must be continually reclaimed, and an appropriate mold strength and permeability maintained. To achieve these aims molding sand reclamation equipment and molding sand test devices are essential. Nevertheless, many foundry shops lack such equipment.

3) Lack of basic technology and awareness of Quality Control in relation to Casting

There is a trend to correct these shortcomings but generally levels remain low.

In principle superior casting products are obtained when molten iron with the appropriate chemical compositions and at the right temperature is produced using the appropriate gating system plan, and then when this is cast into a mold (in this case a sand mold) which is of the correct strength and permeability.

The minimum required production equipment and quality control facilities must be installed in order to realize the above, together with the improvements of foundry technology and a thorough application of quality control.

Further, it is desirable to participate in the related seminars carried out by JETRO, etc. as well as organize and take part in factory visits with the PFS (both domestically and abroad) to excellent foundry shops.

b) Forging

Compared to casting, forging and press working are much simpler processes so that if the choice of raw materials is carried out correctly, and efforts made to ensure that the accuracy dies is maintained there should be few problems in these sectors.

c) Electro-plating

The electro plating industry has received technical guidance from JETRO since 1967, and the achievements made in plating technology and quality control have been spectacular.

The followings are the problems encountered by the Philippine electro plating industry;

- i) Funds have not been forthcoming for equipment and so this has deteriorated (this is true for other metal working industries).
- ii) The supervision of the composition of the plating bath is not carried out by the plating company themselves.
- iii) Supervision of the electric current for the plating tank is insufficient.
- iv) Measurements of the plating thickness and its adhesiveness are not sufficiently carried out.
- v) Measures concerning the work environment and pollution prevention and control are belated.

In the company visited countermeasures to cope with the above problems were largely implemented and links with good customers developed.

In the future, it will be necessary to install devices for simple analysis of the plating bath and for measuring the plating thickness, as well as applying a thorough system of quality control. Further, it is advisable that equipment for recovery and recycling of waste plating bath be installed for shared use by the entire industrial sector.

Participation in the seminars sponsored by JETRO and MIRDC, as well as in those held by the PEA itself, together with the organization under the auspices of the PEA of inspection visits both domestically and abroad to excellent plating workshops would be most effective in improving levels of plating technology and of quality control awareness.

3) Projects for Improvement of Technological and Quality Levels which are in Progress or in Planning

There are a number of programs either actually underway or in the planning stage for the improvement of levels of product quality and of production expertise with support from Japan, the USA and West Germany.

- 1) To date JICA has presented the Metal Casting Technology Center of the MIRDC with each of the various types of laboratory equipment, including a precision casting device (Lost wax process), self hardening molding device (VRH process), a mixer for organic binder self hardening molding sand, and die cast machines (cold chamber, hot chamber and low pressure die casting).
- 2) As part of the program of the Center for the promotion of trade and industry of the developing countries initiated by JETRO are the activities for the diffusion and guidance of appropriate technology to the medium and small scale industries. Industries of the Philippines which have been selected in this context for attention and aid are electro-plating since 1987, casting since 1988, and machining and heat treatment since 1989.

The present program involves an examination of the present level of technology through a preliminary survey. This is to be followed by the actual activities of the program; seminars, workshops, consulting activities, and the invitation to leading local top managements to visit analogous factories in Japan and the reception of engineers for training in Japanese factories.

- 3) A USAID grant of US\$20 million is in course of implementation to help promote regional metalworking sectors in 6 Program areas (Regions I, IV, V, VI, XI and XII).

DTI/SMED are the sections responsible while MIRDC is the administration office. MIAP and PFS dispatch experts.

- 4) West Germany has decided to effect an industrial modernization loan program (KFW) of 15 million US dollars, and the DTI has the foundry industry in view as the object of this loan. These funds will be used for the updating of existing equipment, improvement of productivity, amelioration of product quality and for the training of operatives, etc.

(4) Problems In Product Quality and Specifications of Raw Materials, Parts and Supplementary Materials

Generally speaking the confidence in domestically produced raw materials is low, and where a high quality is demanded there is a reliance on imports.

Moreover, it is difficult to obtain materials, particularly special steel materials, which are of the appropriate nature and dimensions. This is true even in Metro Manila but the tendency is especially strong in the provincial regions.

1) Problems

a) Raw materials for steel making

There are no steel works for the integrated steel making in the Philippines, and they consist of steel works carrying out steel making using arc furnace and rolling, rolling mills, welded steel pipe manufacturers and surface treated steel sheet manufacturers, etc.

As there is very little of the steel scrap which is used as the principle raw material to be found domestically there is a consequent reliance on imports to supply the large part of this. However, there are problems with the imported steel scrap which comes from some sources. For example according to one steel rolling mill in many cases the locally made steel billets were made using steel scrap originating from the Vietnam War, and these steel scrap often contained harmful elements for making reinforced steel bar. Consequently, when these billets were rolled to produce high tensile strength deformed steel bar there were problems with the bending property of the product. As a result, this manufacturer now relies on imported billets from South Africa, Brazil, etc. which have all been made from iron ore.*5)

(*5) Cases where the cold drawing property was hindered by the presence of minute quantities of elements such as vanadium found in the steel scrap to be used for steel making have been reported by some wire and nail manufacturer.

Further the NSC has a monopoly steel work for hot rolled plates and coils, and cold-rolled coils and sheets, but depends on imports completely for the raw material slab. Whether there is a problem with the rolling technology or with the actual rolling mill remains unclear but complaints have been heard from the press working companies who are users supplied by the NSC that NSC cold-rolled sheets have uneven thickness, rough surface and have an inappropriate deep drawability. High quality steel, which is only in small demand in the Philippines (cold-rolled sheets for automobiles, structural

steel, alloy steel, tool steel, etc.), is supplied from the advanced industrial countries through imports. As the storage and distribution system for this does not function efficiently there are frequent complaints from companies of the difficulty of obtaining supplies of this.

For the ferro-alloys, ferro silicon and ferro chrome are domestically produced though in very small quantities. Reliance is on imports for the other ferro-alloys such as ferro nickel, ferro manganese, etc.

b) Casting

[Principal Raw Materials]

Pig Iron: Imported from Brazil, China, etc. Brazilian production is of an even quality but a purchase of 20,000 tons per shipment is required. With Chinese production 100 tons is sufficient order per shipment but the iron ore differs according to origin and so quality is uneven.

Scrap Iron: Disassembled engine parts are frequent, but sorting is needed since various materials are assembled together. If sorting is not sufficiently carried out this will lead to defects.

Steel scrap: Local supplies very small, imports continue to increase.

Aluminum alloy primary ingots are imported. Here are numerous problems with small scale industries which use secondary ingots of uncertain purity.

[Supplementary Materials]

Ferro Alloys: Fe-Si and Fe-Cr are domestically produced. However, production output is very small. Fe-Cr and Fe-Mn are imported from South Africa and Fe-Ni is imported from South America.

[Auxiliary Materials]

Coke: Complete reliance on imports from Japan. But as the coke size are too large relative to the cupola furnace diameter appropriate use is difficult.

Molding sand: High quality silica sand and chromite sand, etc. are produced domestically. However, foundries using these materials are still in a minority and most foundries use natural mountain sand with a clay content and molding sand control is inadequate.

Bentonite: There are two varieties of domestically produced bentonite, the high quality category is used for facing sand and other used as backing sand. Generally speaking the quality is poor.

Foundry chemicals: The Phenolic resin for shell molding is almost all domestically produced, but a part is imported from Taiwan. The chemicals for the self hardening molds are almost all imported. The inoculant for improvement of molten metal properties are also imported.

c) Forging

The steel material which constitutes the principle raw material is almost all imported. For mild steel items local steel is used. Low carbon steel is imported from South Korea and Brazil, etc. High carbon steel is imported from Japan and West Germany.

The only problem voiced by the large forging companies was the high price of Japanese steel materials.

d) Press working

The steel sheets used as the principle raw material which are required to have a deep draw property and attractive external appearance are of imported Japanese steel mills. The locally produced NSC sheets are not used by companies where uneven thickness, inappropriate deep drawability, or surface roughness would pose problems. Locally made welding rods are available but Australian rods are used for the LPG cylinders which have a high export ratio.

e) Electro-plating

Since bubble defects easily arise with the locally made steel sheet stamping materials for plating, imported materials are employed. Plating chemicals are imported from Japan. The copper anode is locally produced and other material anodes are imported from Japan and West Germany.

f) Tool and die making

The so-called tool steel used as material for dies is special steel imported from specific manufacturers in Japan, Austria and Sweden. Cutting tools also employ imported items. The copper electrodes and graphite electrodes used for EDM are of local production. The wire for the wire cut EDM is imported.

No problems relating to quality were voiced, but there were complaints that material costs and processing costs were increased because over size steel materials for dies had to be purchased due to stock shortage of the appropriately sized materials.

g) Machine assembly

Foreign automobile manufacturers, component manufacturers, motor cycle manufacturers and electric appliance manufacturers in the Philippines carry out the supply of a part of cast products, forged products and press parts with locally produced items. However, the reliability of production technology and quality control is still low and so the use of locally manufactured items is limited. In the case of automobile parts safety considerations in particular must be given consideration and so cause worry.

Although inconceivable with a large manufacturer there are cases where small scale companies, especially in the provinces, have used metal materials whose chemical composition was not examined. At most a composition analysis of constituents was confined to summary data from a sparking test and the hardness. Further, temperature control during heat treatment depended on the operator's sense rather than on accurate instrumentation. Superior quality component parts are impossible in such conditions.

2) Causes and Improvement Policies

The followings are the main causes for problems experienced with raw materials;

- a) The chemical composition and physical properties of the raw materials used are not identified.
- b) There is little awareness of the harmful elements found in the raw materials.
- c) The level of purification technology is low.
- d) The level of cold rolling technology is low.
- e) Appropriately sized materials are difficult to obtain.

As counter measures the following are proposed:

- a) The installation of testing laboratory facilities in the main areas for the shared use of the small- and medium-scale industries which cannot afford to support their own in house testing laboratories.
 - b) Carry out the diffusion of basic knowledge and expertise relating to the chemical composition of raw materials and to the metalworking processes including melting, purification, casting, rolling, forging, heat treatment, welding, etc. To this end the facilities for carrying out seminars and workshops are to be set up in the main areas.
 - c) Positioning of centers which will make possible the joint purchase and storage of raw materials in the main industrial areas.
- 3) **Related Projects in Progress or in Planning**

With the support of the Bureau of Small and Medium Business Development (BSMBD)/DTI, the MIRDC plans to set up Common Service Facilities in selected regions for the implementation of the above mentioned counter measures.

The MIAP is ready to cooperate in the management of the CSF.

(5) Proposal for Improvement in Product Quality

Although undergoing rapid changes, there is strong tendency among users generally speaking to give priority to pricing over quality. Consequently manufacturers tend to give less attention to quality for reasons of competitiveness. However, because consumers who prefer to purchase cheap low quality products are at fault it does not follow that consumer education is immediately the first priority. Rather, it is for the manufacturer to determine on a policy of improving product quality from a long term standpoint. Thus the vital question is the basic managerial philosophy of the company management. Almost all of the companies visited during the on site-survey carried out in March and July gave emphasis in their managerial policies to product quality, perhaps reflecting the fact that those visited were much superior to the level of industry generally in the Philippines. In any case these companies showed a strong awareness of the importance of raw materials management, production technology and quality control. They also manifested a strong will to improve quality. In particular, many of those companies which supply parts and materials to foreign companies in the Philippines eagerly responded to the challenge represented by the very strict standards demanded, on the knowledge that if these standards could be met their products would be exportable to anywhere in the world.

Further, managers of the casting and electro-plating shops who visited analogous establishments in Japan on the guidance of JETRO received an effective stimulus to quality control awareness. However, the diffusion of technological and quality control data has been weak to date because of the insufficiency of the activities of the industrial associations in the Philippines. On the other hand, industrial associations such as the MIAP, PFS, PEA, etc. have recently been most energetic in this direction. As a consequence, training seminars and workshops are frequently held. To this end the support of the MIRDC is of course essential, but it is also proposed that training staff and instructors be dispatched together with textbooks and study materials from abroad.

Further, because of the small industrial scale of the metalworking industries in the Philippines the equipment investing power is weak. However, as the domestic market remains incompletely developed an expansion of productive scale is to be achieved through the development of the export market. Therefore it is desirable to undertake modernization of equipment so that the high level of quality required for export production can be responded to.

The PNS has both mandatory and voluntary standards. Factories concerned by the mandatory standards must pass an approval test and so these have an awareness, however passive, of quality control. In the case of voluntary standards if a system similar to that of the JIS approved factory system was set up and promoted by the PNS this would play a positive role in improving the awareness of quality among users and manufacturers.

(6) Proposals for the Provision of Related Industrial Standards

1) Present Provision of Related Standards

The Industrial Standards in the Philippines are as follows:

- PNS (Philippine National Standard)
- SAO (Standards Administrative Order)
- PHILSA
- PTRI (Philippine Textile Research Institute)

and, International or Foreign standards which have been adopted as Philippine National Standards consist of the followings:

ANSI (American National Standards Institute)
ASTM (American Society for Testing and Materials)
AS (Australian Standards)
BS (British Standards)
IEC (International Electrotechnical Commission)
ISO (International Organization for Standardization)
JIS (Japanese Industrial Standards)
UL (Underwriters Laboratory)

In addition to the above depending on the buyer SAE, Industrial Fastener Institute of the USA (IFI), Compressed Gas Association of the USA (CGA), or Department of Transportation of the USA (DOT) standards may be required.

With regard to the standards for metalworking products it is fair to say that standards, including foreign standards, are in force. However, there is inadequate provision for standards in the case of metal materials, machine elements, dimensional tolerance, surface roughness, etc.

2) Areas requiring a Future Provision of Standards

Looking quickly at the range of foreign standards which are employed as PNS, SAO or PNS it would seem that standards are provided for those finished products which have penetrated and entered into the daily life of the general public. In particular mandatory standards have been set up relating to safety.

Furthermore, in order to meet the advance of foreign capital firms or to respond to the export market a large number of foreign product standards and test inspections have been adopted.

It is possible to divide the stance taken by local companies in the Philippines towards industrial standards into two categories.

The companies which aim at the domestic market follow the mandatory standards comparatively well but as for the voluntary standards only a section of the better companies respect these, while a large number of the cottage industries have a very weak sense of their importance. The export oriented companies or those companies which seek to respond to the challenge of the foreign capital enterprises entering the Philippines are well informed of the high levels of foreign standards and of international standards and their awareness and application of these standards is very good.

As there will be an increasing will to export metalworking items from the Philippines, as in other ASEAN countries, it is necessary to internationalize standards. It will then be necessary to ensure that the basic standards have been provided for in the metalworking sector.

For example, in the iron and steel sector it is necessary to proceed promptly with the implementation of standards relating to carbon steel, alloy steel materials, cast steel, cast iron, forged steel, raw materials (pig iron, ferro-alloys, scrap iron), silica sand for molds, natural sand for mold use, and then in the non ferrous metals sector of standards for aluminum alloys, zinc alloys, copper alloys, and the raw materials of these such as primary ingot, secondary ingot, alloy scrap, etc.

Besides the above other metalworking sector standards which must be implemented include machine element standards such as those for gears, springs, ball and roller bearings, screws, etc. and the provision of dimensional tolerance standards for metalworking products manufactured by casting, forging, press working or cutting processes.

(7) Proposals for Systematic Testing, Inspection and Technology Guidance

The only companies which have a complete set of in-house testing and inspection facilities are those of the National Steel Corp. and a very limited number of large metalworking factories attached to financial conglomerates. The number of other factories with such large-scale testing and inspection equipment as instrumental chemical composition analyzers, universal testing machine, etc. is very small.

Almost all of the factories and shops visited were equipped with measuring devices such as micrometers, dial gauges, calipers, etc. and gauge blocks for calibration purpose or hardness testers (Rockwell hardness tester, Brinell hardness tester). Their awareness of the importance of scientific testing and inspection was rather small, partly owing to the small scale of these metalworking industries.

Results of the Questionnaire Survey and of the visits to companies revealed that many companies rely on the MIRDC for the performance of an analysis of chemical composition, and for confirmation testing of mechanical properties such as the tension tests, non-destructive tests such as radiation tests, ultrasonic tests, magnetic flaw detector tests, etc., anti-corrosion tests, etc. These tests by the MIRDC also have the reputation of being fair and impartial. Further, the MIRDC carries out high precision measurement services such as of surface roughnesses, roundness, straightness, and calibration of measuring devices. However as a large part of the equipment installed is outdated it is necessary to undertake replacement.

Further, there are many complaints that the testing and inspection services of the MIRDC take too much time. As this problem can not be completely overcome through a replacement of equipment alone, it is necessary to consider a rationalization of managerial practices and increasing personnel. In particular, as the preparation of samples requires a lot of time, the sample manufacturing equipment is to be reinforced and expanded, and to this end it will also be necessary to increase the number of operatives.

Also, as there is no provision for a public testing and inspection institute similar to the MIRDC outside of the Metro Manila area at present industries in other regions are forced to send test pieces and samples to the MIRDC. This delays the delivery of test results and is inefficient. It is desirable to set up neutral testing and inspection centers supported by the MIRDC in the other main industrial regions. As to the installed equipment of these, it will not be necessary for such institutes to possess such a wide range of functions as is held by the MIRDC, and testing and inspection of a high precision will be quite sufficient.

In the case of the metalworking sector the provision of the following equipment would be sufficient:

a) Chemical Composition Analyzing devices

- Atomic absorption/ Flame spectrophotometer 1
- Carbon/Sulfur Analyzer
(of a high frequency wave induction furnace type) 1
- Spectro Photometer 1

b) Mechanical Testing Devices

- 50 Ton Universal Testing Machine 1
- Hardness Testers 1 of
(Brinell, Rockwell, Shore types) each type
- Charpy's Impact Tester 1

c) Metallurgical Microscope 1

- d) Equipment for Preparation of Sample for Chemical Analysis, Preparation of Test piece for Mechanical Testings, and Preparation of Test pieces for Microscopic Tests 1 set

However, if the analyzing equipment is to be used for other sectors besides the metalworking sector then it will be necessary to modify the above to meet such needs.

There is not such a positive reception given to the system for technological guidance which is another function of the MIRDC, realized in particular through the seminars to be held by the same institute. There are for the following reasons:

- a) The location of the MIRDC is quite far from the industrial center of Metro Manila.
- b) The time scheduled for the seminars is not convenient for participants. It would be easier for companies to dispatch personnel if seminars could be held in the evening after operating times.
- c) The cost of participation is high and the burden for companies too great.

Another factor which is detrimental to a favorable view of the MIRDC is the undertaking by the foundry, heat treatment and machining shops which are its auxiliary facilities of sub-contractual work on a job order basis. Such work makes the private industrial sector consider the MIRDC as a competitor.

Besides those of the MIRDC, there are seminars sponsored by the National Manpower and Youth Council (NMYC), MIAP, PFS, PEA and seminars sponsored jointly by the PFS, PEA and JETRO. There is a widespread feeling that the NMYC seminars should concentrate on basics while the MIRDC seminars should be concerned with up-grading. As to location, the Metro Manila seminars which are in conjunction with workshops should be held in the MIRDC and those seminars without workshops be located in the center of Metro Manila for the easy access of participants.

As instructors and lecturers, member experts from the MIAP, PFS, and PEA, experts from the MIRDC, and experts dispatched from abroad are invited. However, more needs to be done. New personnel are in training at the MIRDC but this will not meet the present press needs. It is necessary to consider the reception of experts from abroad. Further, an expansion of the seminar rooms and seminar equipment in the MIRDC is needed.

For areas outside of Metro Manila, if the testing and inspection centers previously mentioned are established as branch functions of the MIRDC it would be a simple matter to arrange for the attachment of seminar room and training factory functions to these. This would be desirable. In the Northern Mindanao region which is without either a Foundry or heat treatment shop these training factories would need to function as a Common service facility. It is necessary that the Metalworking Shop equipment attached to the MIRDC be disposed and organized in a way to ensure that present and future development of the metalworking industries in the Philippines take place in the desired direction and without one sidedness.

For example, the melting furnace of the attached foundry is an induction furnace, but melting of gray iron in the Philippines is usually with a cupola furnace using coke as fuel. It is therefore desirable to have a small cupola furnace for training purposes. However, the case would be different for the Common Service Facility to be installed in the Northern Mindanao area, which is currently without a foundry. Since this region is plentiful in electricity, an induction furnace would be advisable for the CSF. There is a lack in equipment relating to forging and press working, but if there were equipment available for the practical training, this could also be used for the seminar workshops.

The services which need to be strengthened hereafter by the MIRDC are those for Tool and Die Making, and the Technology Extension services for Machine Rebuilding and Reconditioning. At present neither of these is sufficient. There is a lot of sub-contractual work done in die making as a means of raising funds and the MIRDC has its hands full with the machine rebuilding and reconditioning involved in the adjustment of its own machine tools. It is necessary to strengthen the specialist personnel relating to both of these services.

Chapter 7 Synthetic Fibers

(1) Manufacturers and Their Productive Capacity

Synthetic fiber manufacturers in the Philippines at the end of March 1987 were the Texfiber Corp. producing continuous filament nylon with a productive capacity of 7,300 tons per year, the Philipinas Synthetic Fiber Corp. producing polyester fibers with a productive capacity of 17,900 tons per year for continuous filaments, and 11,000 tons per year for yarns (previously there had been one more company in each of these sectors but those manufacturers have now ceased production).

A comparison of these productive capacities with those per company of other neighboring countries (see Table A5-7-1) which produce synthetic fibers shows that the average productive capacity per company is greater in the field of continuous filament nylons than that of Indonesia or Thailand, and is one third of the average company capacity of Taiwan and one seventh of that of South Korea. For continuous filament polyesters the figures are again better than Indonesia and Thailand and represent 40% of the Taiwan figure and 70% of the South Korean figure. For yarn polyesters it is one third below that of Indonesia and Thailand, and less than one fifth of Taiwan and South Korea. (Both Indonesia and Thailand are proceeding with new investment and expansion programs for long and yarn polyesters.)

(2) Production Costs of Synthetic Fibers

The most important factor influencing the production costs for synthetic fibers after raw material costs is the scale of equipment capacity since this is a process industry. Production costs are extremely hard to evaluate since they fall under the heading of company confidential matters. During the Asian Textile Trade Conference on Fibers, Textiles and Apparels sponsored by the Japan Chemical Fibres Association and held in Singapore in November 1987 Chairman Dee of AFTEX Co., the representative for the Philippines reported "The production of polyester fiber in the Philippines costs more than 2 US dollars per kg whereas the cost of imported items is between 1.5 and 2 US dollars per kg". (Conference minutes)

As an index of the international competitive power of polyester fibers from the Philippines the import statistics of Hong Kong show that in terms of monetary cost for continuous filament polyester while the overall average unit price to exporting countries was around 2 US dollars per kg the average unit price for polyester from the Philippines was 2.5 US dollars. Thus continuous filament polyester from the Philippines was about 20% more expensive. Moreover, probably due to the high price the share of the Philippines was

Table A5-7-1 PRODUCTION CAPACITY OF SYNTHETIC FIBER
IN NEIGHBORING COUNTRIES

	Number of Manufacturers	Total Production Capacity (tons p.a.)	Average Production Capacity (tons p.a.)
Nylon Filament			
S. Korea	3	155,500	51,800
Taiwan	8	197,100	24,600
Indonesia	2	12,300	6,200
Thailand	3	18,200	6,100
Polyester Filament			
S. Korea	11	284,800	25,900
Taiwan	13	618,400	47,600
Indonesia	5	70,900	14,200
Thailand	4	35,100	8,800
Polyester Staple			
S. Korea	5	267,100	53,400
Taiwan	9	572,400	63,600
Indonesia	4	136,900	34,200
Thailand	2	75,500	37,800

(3) Policy of the Philippine Government

In the above mentioned Asian Textile Trade Conference Chairman Dee also reported as follows; "The Government of the Philippines has a 'Textile Expansion Program', but that 576 million US dollars were estimated to be necessary for its implementation so that an early realization of the program was difficult. The Government is not following a policy of short term encouragement of the domestic production of synthetic fibers". Further, as proof of this he pointed out the fact that "The import duty on polyesters which was 30% in 1987 was lowered as of April, 1988 to 20%."

(4) Required Sum of Investment for Synthetic Fiber Plant Construction

At present, the economic scale for a new or expanded synthetic fiber plant is said to be 33,000 tons per year for continuous filament nylon, and 42,900 tons per year in the case of polyester fibers of both short and long type. In the case of Japan the investment sum which is estimated to be required for construction of these plants is about 200 million US dollars in each case.

The Philippines does not possess sufficient domestic processing facilities for synthetic fibers at present. And even if existing facilities were 3 to 5 times their actual size, and plants in line with the above scale were constructed, even so the synthetic fibers produced would have to compete with those of Taiwan and South Korea (which have an advanced depreciation) on the Hong Kong and third world markets. It is likely that in this context it would not be possible to compete pricewise.

In the light of the above, it would seem that the policy of the Philippine government of "...not following a policy of short term encouragement of the domestic production of synthetic fibers" is in fact extremely reasonable.

Chapter 8 Garments

8-1 Market Concerned and Particularities of the Industry

(1) Main Markets and Their Particularities

1) Export Market

There is a tradition of Embroidery trade in conjunction with South America which goes back to before the Second World War. The Embroidery trade involves the import from South America of semi-processed goods such as cotton cloth and lace material, and these are processed by sewing as ladies lingerie, etc. and then re-exported. This trade accounted for 17% of the total export value of the Philippines for 1988 as is indicated in Table A5-8-1, making this after electric and electronic goods the second strongest export commodity.

As can be seen for Table A5-8-2 for the changes in the total export value for clothing items between 1984 and 1988 this sector has shown a large growth with an annual average increase of 23%.

The category of "Clothing items embroidered on a processing to order basis" accounts for 60% of the total clothing products, showing that the 'Embroidery Trade' tradition still continues. The next most important category is knitted outerwear and knitted underwear, and the above three items taken together constitute 90% of the total export value for clothing.

By export destination 64% of the clothing items go to North America including Canada, about 25% go to EC Countries principally U.K., West Germany and France, while only about 3% is exported to the surrounding countries including Japan (1.5%).

Buyers, largely European and American importers, conduct direct transactions with manufacturers or intermittent negotiations via local or foreign trading corporations, but there are many cases where the European or American importers, or the manufacturer directly makes a capital investment inroad into the Export Processing Zone (EPZ) and undertakes to carry out processing. Looking at the capital composition for 17 clothing manufacturers located in the relatively easily analyzed EPZs of Bataan, Mactan, Baguio and Cavite gives the following results:

Table A5-8-1 PHILIPPINE EXPORT BY PRODUCT GROUP IN 1986-1988 CALENDAR YEAR

Product Groups	1986		1987		1988	
	Value	Share	Value	Share	Value	Share
Traditional Products	1,133,335	24.0	1,201,270	21.0	1,374,769	19.4
Non-Traditional Products	3,590,151	75.9	4,418,657	77.2	5,581,466	78.9
1. Manufactures	2,996,725	63.3	3,822,355	66.8	4,836,767	68.4
Electronics	918,465	19.4	1,157,078	20.2	1,436,585	20.3
Garments	654,508	13.8	989,197	17.3	1,193,498	16.8
- Consigned	375,682	7.9*	630,765	11.0*	773,938	10.9*
- Unconsigned	287,825	5.9*	385,441	6.3*	419,560	5.9*
Process Food	142,052	3.0	158,596	2.8	213,210	3.0
Gifts, Toys & Houseware	140,231	3.0	187,234	3.3	249,323	3.5
Fashion Accessories & Travel Goods	129,596	2.7	148,753	2.6	169,835	2.4
Furniture	89,353	1.9	130,380	2.3	183,606	2.6
Footwear	48,121	1.0	56,598	1.0	76,993	1.1
Construction Materials	34,772	0.7	40,079	0.7	64,586	0.9
Others	893,627	17.8	954,440	16.6	1,249,130	17.8
2. Non-Manufactures	593,426	12.5	596,302	10.4	744,700	10.5
Special Transactions	6,547	0.1	100,311	1.8	117,955	1.7
Grand Total	4,730,032	100.0	5,720,238	100.0	7,074,190	100.0

Notes: Each product group's share is calculated on Total Philippine Export.

* Figures are inclusive in "Garments".

Sources: Bureau of Export Trade Promotion, DTI

Table A5-8-2 EXPORT TREND OF GARMENTS IN 1984-1988 CALENDAR YEAR

Products	(Unit: Value in 1,000 US\$, Share %)					% of Total
	1984	1985	1986	1987	1988	
Finished Embroidered Goods, Apparel and Clothing Imported on Consign Bases	279,103	273,500	375,682	630,756	773,938	64.8
Outergarments and other Articles Knitted or Crocheted	59,600	65,414	93,447	143,135	167,542	14.0
Undergarments, Knitted or Crocheted	57,410	48,055	63,772	106,033	109,263	9.2
Outergarments, Womens', Girls' and Infants', of Textile Fabrics	53,311	65,648	53,874	53,698	70,601	5.9
Outergarments, Mens', Boys' of Textile Fabrics	53,277	55,852	51,478	39,940	51,509	4.3
Undergarments of Textile Fabrics other than Knitted or Crocheted	11,563	14,520	12,546	12,268	19,344	1.6
Articles of Apparel and Clothing Accessories of other Textile Fabrics, Headgear of All Materials	1,936	3,162	3,709	3,366	1,301	0.1
Grand Total	516,200	526,151	654,508	989,196	1,193,498	100.0
Growth Rate (%)	-	1.9	24.4	51.1	20.7	

Source: Bureau of Export Trade Promotion, DTI

100% Philippine Capital	1 company
Majority of Philippine Capital	2 companies
Majority of Foreign Capital	3 companies
100% Foreign Capital	7 companies

As can be seen from the above the advance of foreign manufacturers in securing footholds in the Philippines has already progressed quite far.

There is a wide diversity of scale for the manufacturers ranging from small companies with less than 10 personnel to large-scale companies employing between 200 and 300 employees. In the case of the small firms joint organizations are formed for carrying out reception of orders, purchase of materials, designing, pattern making, grading, marking, cutting, etc. An example is PIE, the Philippine Integrated Exporters, with approximately 400 small-scale companies participating. These manufacturers possess a number of petty sub-contractual operators in their area who carry out handwork such as embroidery.

On the export market competition is presented by Taiwan, South Korea, Hong Kong, Thailand and Japan, but the international competitiveness of Philippine clothing items is reinforced by the above mentioned tradition of the embroidery trade, the intermittent transaction relations with importers and the advantageous cheapness of labor in an industry which is labor intensive. Incidentally the rate of value added accounted for in the production cost is 35%.

2) Domestic market

There is a very large general domestic market from the very nature of the commodity. However statistics relating to the quantity of demand do not exist.

Generally the clothing items which are produced in each particular region by small scale companies with between 10 to 50 employees are either taken by the manufacturer or by a domestic trading corporation to the Greater Manila area or to sales outlets in the initial or its neighboring region where it is then sold to consumers. These small manufacturers secure a share of the domestic market in line with their productive capacities, and so competition with imports or products of the large scale manufacturers is not so severe. 90% of the cloth, thread and auxiliary items used are supplied from the Greater Manila region and these are principally domestically produced. However the small scale companies are rather exceptional in the overall context of the clothing industry.

The main interest of company managers is to expand the share of the domestic market and for this reason they tend not to focus on reinforcement of production equipment, entering foreign markets or improving quality.

(2) Particularities of Raw Material Supply

Materials for clothing items destined to export markets are almost all imported from Hong Kong, Taiwan, South Korea or Japan. The manufacturers of export orientated clothing items must of course supply clothing which meets the specifications of the buyers regarding cloth material, design, product quality, etc. But the cloth supplied by domestic manufacturers not only suffers from inequalities in the dyeing, but there are not any of the thin textiles required for underwear, etc. and compared to imports prices are high. Moreover, in the case of imports of cloth and accessories the conditions for use of bonded warehouses are fulfilled.

In contrast to this, the materials for clothing items destined for the domestic market are almost all supplied from domestic textile manufacturers. Problems with the domestically produced cloth include uneven dyeing and high pricing.

As the product quality of finished products is largely dependent on the cloth quality it is quite understandable that there are strong demands for the improvement of the dyeing of the clothing items. At present, the dyes and finishing agents are imported, there are no domestic substitutes and the dyeing equipment is deteriorated. A number of manufacturers carry out the indirect export of cloth which has been dyed in the Philippines so that technologically it is possible to respond to the needs. The Philippine Textile Research Institute (PTRI) is confident in its ability to provide guidance in this direction.

The main reasons for the defective dyeing of items for the domestic market are the use of inappropriate dyes in order to cut prices, the use of dyes diluted too weakly, and not using finishing agents, etc. It is necessary to establish and set quality standards for dyeing and finishing.

The main reason for the high price is that instead of direct purchase from the textile manufacturer there are wholesaler middlemen who take a profit margin. There are examples where a cloth is 80% more expensive than a similar quality cloth made in Hong Kong. From the wholesalers point of view the orders from the clothing manufacturers do not constitute whole lots and the delivery period is short so that they must keep an inventory and in turn are forced to pass on the burden of the costs involved.

8-2 Product Quality

(1) Problems of Product Quality

There are almost no problems which arise from the quality of the clothing products neither on the foreign nor in the domestic market.

(2) Conditions for Undertaking an Improvement in Product Quality

The export of clothing products in line with the buyer's specifications has been carried out for a long period since the beginning of the embroidery trade. At present, the clothing manufacturers faced with severe international competition preserve a strong interest in quality. Inspections are carried out at three crucial stages i.e. during reception of materials, during production and at the time of product dispatch. However, these inspections by the nature of the product involve ensuring that the products match with the sample made according to the specifications laid down by the buyer (product as per sample). The industrial standards used as the basis for these specifications are those of the buyer's own country. It is general for the buyer's representative to assist at the inspection. Therefore there are hardly any claims.

The public inspecting authorities for export goods are the Philippine Textile Research Institute (PTRI) and the Fiber Inspection and Development Authority (FIDA).

As an example of one of the small number of claims is that the standards for the L, M, and S sizes are not the same as those of the destination country, or the defect in cloth due to the bleach resting in the seams (in the case of jeans) and the defective button holes.

Claims arising in the domestic market relating to product quality are said to be limited to soiling or tears, and it is said that defective export items are sometimes put on the domestic market. The sense of product quality control with the small scale companies supplying the domestic market seems to be very poor.

(3) Expected Impact in Conjunction with the Establishment of a Standardization System

At present, the technical committees formed to promote the standardization of clothing related items are the TC 17 relating to sizing systems for clothing and the TC 18 for textiles. PS set to present in relation to textiles and clothing amount to 65 articles including the testing method for stability of dyeing, specified sizes for ready made clothes, testing methods for textile tearing and stretching, body measurement methods, etc.

The response of industry to a strengthening of compulsory standards hereafter will be complicated. On the one hand the domestic market orientated small scale businesses do not recognize the need for standardization or quality control, while in the case of the large scale firms orientated to exports these are forced to apply the standards of the buyer's country.

8-3 Quality of Purchased Raw Materials

As the raw materials used for the clothing items destined to be exported are chosen from the full range of materials available worldwide there are no claims which arise relating to product quality.

As mentioned above, the problems of locally purchased raw materials, for clothing in local market is indeficiency of dyeing. Some reasons for that are inadequate dyeing materials, lower density of dyeing liquid than the standard, and no use of finishing material to respond to the low cost oriented structure of local market. It is proven by the fact that. There have been no claim against dyed products of natural fibre for export.

8-4 Testing, Inspection and Technical Guidance Systems of the Industrial Sector

There are a large number of industrial associations including the Textile Mills Association of the Philippines (TMAP); an association of spinning and weaving manufacturers), the Textile Producers Association of the Philippines (TPAP); an association of knitting manufacturers, the Garments Business Association of the Philippines (GBAP); an association of manufacturers of clothing for export, etc. However, none of these associations has a system for carrying out testing, inspections or technical guidance. These functions are carried out by such public institutes as the Philippine Textile Research Institute (PTRI) or the Philippine Trade Training Center (PTTC). While the PTRI is not fully adequate with regard to synthetic fibers, it carries out research development and technical guidance at its own expense into textile manufacture, spinning, weaving, knitting, dyeing and finishing relating to natural textiles, and it is also almost entirely responsible the promotion of industrial standardization relating to textiles. The PTTC carries out training courses in quality control methods and material reception inspection methods aimed at the medium and small scale clothing manufacturers.

8-5 Policies for Improvement of Technology and Product Quality

(1) Promoting Understanding of the Importance of Dyeing, Finishing and Printing, etc. and Implementation of Technical Guidance

It is necessary to disperse the thinking represented by "if cheap then poor quality" which is widespread at present in relation to the finishing of textiles which are destined for the domestic market. To achieve this it is first necessary to undertake the promotion of an understanding among the manufacturers of the importance of dyeing, finishing and printing. Once this is done then the imposition of compulsory standards on those manufacturers who are slipshod will be desirable. It will also be necessary to provide technical guidance to those manufacturers recognizing the importance of the above factors and desiring some such guidance.

(2) Provision for Joint Operations in Receiving Orders, Purchasing Materials, CAD, Cutting, Product Inspection, Packaging, etc.

As already explained in 1-(1) the method of the PIE is to promote the joining of those elements common to a given sector in order to reduce material costs, reduce the cost burden by shared use of expensive equipment, increase the influence with regard to buyers, and also to encourage the improvement of quality levels.

In addition to the above a general upgrading of the textile industry as a fundamental improvement policy might be considered but as this would require an extremely large investment this transcends the limits of the present report.

ANNEX 6

**SUMMARY OF THE SURVEY OF FIRMS RELATING TO INDUSTRIAL
STANDARDIZATION AND QUALITY CONTROL**

ANNEX 6: SUMMARY OF THE SURVEY OF FIRMS RELATING TO INDUSTRIAL STANDARDIZATION AND QUALITY CONTROL

Chapter 1 Outline of the Execution of the Survey

(1) Objective of the Survey

A survey of firms was conducted parallel to the interview survey of the associations and the representative firms in order that the master plan reflects the actual state and needs of the industry and the firms of the Philippines and that it is realizable and in order to grasp the possibilities of the private sector comprising the industry and the firms to promote the standardization and quality improvement in cooperation with the effects of the government.

The main items of the Survey are;

- Recognition and benefits of the PS Certification Mark System
- Approach to and the benefits of quality control
- Actual state of installed testing and inspection equipment
- Philosophy, needs, requests to government regarding industrial standardization and quality improvement.

(2) Methodology of the Survey

Sycip, Gorres, Velayo & Co. (SGV), a competent consulting firm of the Philippines was commissioned to execute the survey.

From the list of firms which the company possesses, 633 firms covering the following industries were selected and the letters requesting cooperation to the Survey and the questionnaire blanks in the form shown on separate attachment were distributed by mail in the first part of May, 1989.

The answers to the questionnaire returned were checked by SGV for their contents, and confirmation and supplementary work was conducted by telephone on unanswered questionnaires and unclear answers. The questionnaire was closed at the end of July, 1989 when the Second Field Survey was completed, and the tabulation was started. The number of

firms that responded was 310 firms (retrieved rate of 49%). As described in paragraph (3), it is considered that the number of samples and the retrieval rate are sufficient to estimate the population although there is a bias in the samples.

Furthermore, in the tabulation of Item 2 and thereafter, the electrical and electronic equipment were tabulated in two categories namely, electrical equipment and electronic equipment according to the entries made as the main products in answer to Q107.

Industry	Number of firms to which questionnaires were distributed (firms)	Number of firms which responded (firms)	Retrieval rate (%)
Textile and clothing	94	45	48
Cement	17	12	71
Food processing	59	30	51
Metal working	111	44	40
Electrical and electronic equipment	56	48	86
Footwear	23	6	26
Paper and paper products	49	19	39
Furniture	64	25	39
Wood and wood products	25	12	48
Agricultural products	15	12	80
Miscellaneous products	46	19	41
Automobile parts	10	5	50
Chemicals	64	33	52
Total	633	310	49%

(3) Characteristics of the Objects of the Survey

In order to group the characteristics of the samples, the questionnaire contained the following questions in addition to the industrial fields listed above:

- Region where factory is located
(in the case of plural number of factories, listing of all factories was requested, therefore the number of responses was 325.)
- Year founded
- Number of employees
- Size of sales
(annual turnover)
- Relationship with foreign firms
(supply of raw materials and supplies, exports of products, technical tie-ups, etc.)
- Main markets
(exports, indirect exports, domestic sales)
- Sources of procurement of main raw materials and supplies
(imports, domestic procurement)

1) Region where factory is located

The cumulative total of 325 factories was located as follows:

Region I	2 (< 1%)	Region VIII	7 (2%)
Region II	0 (0%)	Region IX	5 (2%)
Region III	22 (7%)	Region X	10 (3%)
Region IV	18 (6%)	Region XI	19 (6%)
Region V	2 (1%)	Region XII	0 (0%)
Region VI	2 (< 1%)	Region Manila	216 (66%)
Region VII	22 (< 7%)		

indicating that 72% of the factories are concentrated in Metro Manila and Region IV.

2) Year founded

The founding of operations by year is as follows, indicating that many firms are relatively young, even the oldest firm being founded in 1914.

Founded in 1959 or earlier	48 firms	(15%)
Founded in the 1960s	71 "	(23%)
Founded in the 1970s	112 "	(36%)
Founded in 1981 or thereafter	79 "	(26%)

3) Number of employees

The distribution by size of the number of employees is as follows; the average of the number of employees is 490 persons, indicating many firms with a large number of employees.

1 to 4 employees	3 firms	(1%)
5 to 99 employees	90 "	(29%)
100 to 199	60 "	(19%)
200 to 499	83 "	(27%)
500 to 999	35 "	(11%)
1000 or more	39 "	(13%)

4) Size of sales (annual turnover)

Eleven firms of the 310 samples did not answer on the ground that the information was confidential, but the size of sales of the remaining 299 firms was distributed as follows; firms with annual turnover in excess of 10 million pesos account for the majority of the firms, indicating that the samples are biased for the large firms.

Annual turnover less than 0.5 M pesos	7 firms	(2%)
" 1	6 "	(2%)
" 5	30 "	(10%)
" 10	23 "	(8%)
" in excess of 10 M pesos	232	(78%)

5) Relationship with foreign firms

There are 132 firms, or more than 43%, that have some type of relationship with foreign firms.

Of these, the main types are as follows:

Receives supply of raw materials

and supplies	63 firms	(48%)
Technical tie-ups	23 "	(17%)
Destination of exports	21 "	(16%)
Overseas marketing	21 "	(16%)

The industries which have high rate of supply of raw materials and supplies are the clothing, electronic equipment, etc. indicating the high number of transactions on a consignment basis. On the other hand, there are surprisingly few with technical tie-ups.

6) Main markets (exports, indirect exports domestic sales)

The answers received in percentages of the sales of products by exports, indirect exports and domestic sales came up with following results (307 response):

Type of market	100%	80% or more	50% or more	Less than 50%	Total
	(firms)	(firms)	(firms)	(firms)	(firms)
Exports	82	34	13	65	194
Indirect exports	2	2	7	40	51
Direct/indirect exports*	-	-	2	-	2
Domestic sales	87	58	20	47	212
Grand total	171	94	42	152	459

Note: * The firms whose direct exports and indirect exports, severally, are less than 50%, but exceed 50% when both are added.

Except for the 87 firms which are 100% domestic sales firms, the 220 firms (72%) are engaged in exports, directly or indirectly, of which 142 firms (46%) are export-oriented firms with export ratios of 50% or higher.

7) Sources of procurement of main raw materials and supplies

The answers to sources of procurement of raw materials and supplies as percentages of imports and domestic came up with the following results:

Imports	100%	18 firms (6%)
	80% or more	43 " (14%)
	51% or more	51 " (17%)
Domestic	50% or more	53 " (17%)
	80% or more	73 " (24%)
	100%	69 firms (22%)
Total		307 firms

Except for the 69 firms which are 100% domestic procurement firms, it is seen that 238 firms (78%) import some sort of raw materials and supplies from overseas. The acceptance inspection of raw materials and supplies is important.