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UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org

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PROMOTION OF SUPPORTING INDUSTRIES IN THE PHILIPPINES*

Report of the Joint UNIDO/ECFA Mission to the Philippines

23 November - 4 December 1987

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Abbreviations used

ADB	Asian Development Bank
AMDP	Agricultural Mechanization Development Programme (of the College of Engineering and Agro-Industrial Technology, UP/Los Banos)
AMTEC	Agricultural Machinery Testing and Evaluation Centre
ASEAN	Association of South East Asian Nations
BOI	Board of Investments
BSMBD	Bureau of Small and Medium Business Development (formerly BSMI-Bureau of Small and Medium Industries)
CITC	Cottage Industry Technology Centre
CITEM	Centre for Industrial and Trade Exposition Missions, Inc.
CRC	Centre for Research and Communication
DAP	Development Academy of the Philippines
DCP	Design Centre Philippines
DOST	Department of Science and Technology
DTI	Department of Trade and Industry
ECFA	Engineering Consulting Firms Association of Japan
EPZA	Export Processing Zone Authority
FDC	Food Development Centre
FiDA	Fiber Development Authority
FORPRIDECOM	Forest Product Research Institute Development Commission
GTEB	Garments and Textile Export Board
JETRO	Japan External Trade Organization
MIRDC	Metals Industry Research and Development Centre
NACIDA	National Cottage Industry Development Authority
NAFC	National Agircultural and Fishery Council
NEC	National Engineering Centre (of the University of the Philippines)
NEDA	National Economic and Development Authority
NIEP	Nationwide Industrial Estate Programme (of NEDA)
NMYC	National Manpower and Youth Council
NSTA	National Science and Technology Authority
PCCI	Philippine Chamber of Commerce and Industry
PDC	Productivity and Development Centre (of the Development Academy of the Philippines)
PDCP	Private Development Corporation of the Philippines
PIDS	Philippine Institute for Development Studies
PIP	Packaging Institute of the Philippines
PPM	The Philippine Productivity Movement
PTRI	Philippine Textile Research Institute
RNAM	Regional Network for Agricultural Machinery
SBAC	Small Business Assistance Centre
TRC	Technology Resource Centre
UNDP	United Nations Development Programme
UNIDO	United Nations Industrial Development Organization
UP-ISSI	University of the Philippines - Institute of Small-Scale Industries

Introduction

In the ASEAN countries acceleration and diversification of industrial development has been the most effective means to create additional employment opportunities for a rapidly growing labour force, to alleviate the balance of payments situation and to achieve higher utilization of domestically available resources. Based on strong national industries, the ASEAN countries have increasingly adopted an outward-looking industrial development approach both in fostering industrial exchange and cooperation at the regional level and in strengthening their exports of manufactures towards the world market. In this, more emphasis has recently been placed on the development of private industries including the privatization of state-owned enterprises and the special promotion of medium-sized private enterprises.

In the strategy framework of both export diversification and import substitution the existence of a dense network of supporting industries - such as local parts/components manufacturers and sub-contracting industries - assume critical importance in generating self-sustained industrial development. It is in this context and based on a Trust Fund given to UNIDO by Japan that UNIDO and the Engineering Consulting Firms Association of Japan (ECFA) have agreed to initiate a joint study on the requirements and options for the promotion of supporting industries in the ASEAN countries. The individual country studies are to provide specific recommendations on the basis of which the Japanese Government will consider the provision of further funds for related technical assistance measures in cooperation with UNIDO.

A joint UNIDO/ECFA study mission was fielded to the Philippines between 23 November and 4 December 1987. Its terms of reference called for a review of the present status of supporting industries (a) by analysing them within the macro-economic perspective of national economic trends, (b) by micro-level investigations through site visits to factories. On the basis of these activities, development bottlenecks and technical assistance measures aimed at their removal were to be identified. Special attention was to be given to, firstly, technical improvement and technological modernization of the existing industry, e.g. in the context of rehabilitation, expansion and renovation projects, and, secondly, promotion activities and financial arrangements for investments, including joint ventures.

The Mission team had the following composition:

Surjit Sachdeva (team leader)	Special Technical Adviser, Special Trust Fund Projects Section, UNIDO
Nils Ramm-Ericson	Senior Industrial Development Officer, Regional and Country Studies Branch, UNIDO
Tsunenobu Miki	Industrial economist, ECFA
Yoshihiro Muronaka	Industrial engineer, ECFA

The Mission was advised throughout its stay through regular meetings and consultations by Mr. Ceferino L. Follosco, Undersecretary, Department of Trade and Industry while Mr. Edgardo Yonzon and Ms. Josephine Guan Ling of the Office of the Undersecretary fully assisted the Mission.

The Report of the Mission has been prepared at UNIDO headquarters by the Regional and Country Studies Branch on the basis of inputs from the Mission members. It reflects the findings and recommendations of the Mission as well as results of research previously undertaken by UNIDO. In its more general parts, the report draws particularly on the Report of the UNIDO Industry Sector Assessment Mission to the Philppines, 28 August - 10 September 1986 (PPD/R.1).

The members of the Mission wish to express their thanks to the many Government officials as well as private sector representatives who devoted their time to often long discussions of various issues. Without their cooperative spirit the tasks foreseen could not have been accomplished in such short time, considering the complexity of the exercise. Special thanks also go Mr. T.K. Mangun, Resident Representative, and Ms. M. Subroto, Assistant to the SIDFA, at the UNDP office in Manila, for the preparatory work undertaken before the Mission arrived and the guidance provided throughout its work in the Philippines.

A draft of the Report was submitted to the Philippine Government in June 1988. The UNIDO/ECFA Mission team revisted Manila on 22-25 September 1988 at which time concluding discussions were held regarding the proposals and project recommendations made by the Mission in the draft Report. The Report was cleared by the Government and projects were identified for priority attention for further development through subsequent Trust Fund arrangements between UNIDO and ECFA (see Addendum p.120-122).

I. The industrial sector in the Philippine economy: Performance and challenges ahead

(a) Structural characteristics

The present structure of the Philippine industry is characterized by a relatively strong concentration either on industries processing agro-products or industries producing end-products for domestic consumption and export. The import content in particular of the latter industries is quite high. Capital goods and intermediate goods industries are little developed and inter-industry linkages weak.

Although special attention has been given in the [since the early 1980's] on-going industrial restructuring work to ways and means to diversify the industrial structure in order to effect a shift from consumer goods-oriented industries to those producing intermediate inputs and machinery, the fact remains that much manufacturing continues to be limited to the end-product (often assembly) stage with heavy import contents. Major attention has only lately been paid to encourage increased use of local raw materials or (semi-processed) intermediate materials. The local know-how has in many sectors been limited to assembly of imported inputs and the technical capabilities have not been developed to meet the challenges of basic product development and to materials research.

(b) Present performance and immediate targets

The Philippine economy, after having in 1986, for the first time in four years, achieved overall growth (of 1.5 per cent), could record a growth in 1987 of about 5.0 per cent. The continuous revitalization of the manufacturing sector contributed significantly to this turnaround, although, as shown in Tables 1 and 2, the sector performance is still short of full recovery. During the first 9 months of 1987 the manufacturing sector reached a 7.5 per cent higher value added (in constant prices) than for corresponding period in 1986. The value added in 20 manufacturing subsectors during the 1980's, up to September 1987, is shown Table 2.

Table 1. Manufacturing value added, 1972-1986
(In million pesos, at constant prices of 1972)

1972	13,388	1979	22,239	1984	23,319
1975	16,537	1980	23,175	1985	21,541
1976	17,481	1981	23,959	1986	21,717
1977	19,532	1982	24,535		
1978	21,108	1983	25,108		

Source: Philippine Statistical Yearbook 1987, NEDA.

Table 2. Value added in manufacturing, 1980-1987
(in million pesos at constant 1972 prices)

Industry sector	1980	1984	1985	1986	Jan.-Sept. 1986	Jan.-Sept. 1987
Food manufactures	8,419	9,344	8,646	8,727	6,527	7,133
Beverages	732	805	796	733	506	603
Tobacco manufactures	1,039	890	970	747	561	465
Textile manufactures	1,049	949	734	891	678	773
Footwear, wearing apparel	1,019	1,299	1,213	1,378	1,023	1,127
Wood and cork products	665	588	536	388	289	301
Furniture and fixtures	132	142	109	120	85	101
Paper and paper products	191	182	158	172	131	138
Publishing and printing	324	370	389	430	315	339
Leather and leather products	68	63	69	61	46	48
Rubber products	302	334	281	290	225	229
Chemical & chemical products	2,365	1,797	1,704	1,584	1,262	1,196
Non-metallic mineral products	574	481	375	377	843	920
Products of petroleum & coal	1,373	1,259	1,153	1,156	273	293
Basic metals	853	1,121	1,070	1,018	779	850
Metal products	1,041	740	746	725	495	572
Machinery, except electrical	726	442	409	429	303	346
Electrical machinery	1,153	1,964	1,600	1,913	1,380	1,513
Transport equipment	885	124	136	130	99	100
Miscellaneous manufactures	265	425	447	448	341	330
Value added in manufacturing	23,175	23,319	21,541	21,717	16,161	17,377

Source: National Accounts Staff, Statistical Coordination Office, National Economic and Development Authority.

During the period of the Medium-Term Development Plan 1987-92 and within the framework of an average annual GNP growth target of 6.8 per cent, the manufacturing sector is envisaged to expand at an average annual rate of 7.6 per cent. The implementation of a structural adjustment programme is expected to contribute to more dynamic and productive manufacturing that will lead the economy towards recovery. Of great importance in this context would be the fulfilment of the Plan target of 12.5 per cent annual growth of exports of non-traditional manufactures (which does not include traditional exports such as cocount oil, sugar, logs and plywood).

A cohesive package of policies and strategies, anchored on the principles of comparative advantage and industrial efficiency, is to guide the country's industrial development, within the framework of general economic policies (e.g. exchange rate and credit policies) conducive to such development. In consultation with the private sector, the Department of Trade and Industry (DTI) has strategically focussed attention to the following:

1. Development of efficient industries. To help revitalize debilitated industries and guide their future development and to actively assist the DTI in developing sectoral policies and programmes, ten private sector 'industry groups' have been organized, namely: agro-based industries; forest-based industries; chemical industries; 'wearables' (textiles, garments, leather goods, accessories); construction materials; mining/extraction/processing; metal and engineering industries; electronic/telecommunication products; gifts, toys and housewares; and service industries. The DTI together with these sectoral industry groups, has initiated the formulation of Ten-Year Industry Sector Plans which identify sectoral strengths, weaknesses, thrusts and opportunities for each sector as well as measures which are necessary for achievement of efficiency and competitiveness.

2. Promotion of industrial investments. The Government has shifted to a less regulatory and more promotional-oriented policy of attracting investments - domestic as well as foreign. All laws and regulations pertinent to investment have been brought together in the Omnibus Investment Code of 1987 whose main features are simplified procedures and a comprehensive scheme of incentives. The Government has also issued the 1987 Investment Priorities Plan, listing preferred areas of economic activity which are entitled to incentives under the 1987 Omnibus Investment Code. The Government is encouraging foreign investments particularly in employment-generating, export-oriented, and high value added industries where they can pave the way for desired transfer of technology.

3. Export expansion. The DTI, in consultation with the private sector, has outlined a country- and product-specific national export strategy which pinpoints potentials in existing markets and realistic sales projections. The Department's assistance to the export sector focuses on the provision of technical services in product design and marketing.

4. Promotion and development of small and medium industries. Small and medium industries play a vital role within the country's overall industrialization strategy, in particular in the context of the objectives of dispersal of economic activities throughout the country. In the support programmes initiated by the DTI, special attention is given to the promotion of subcontracting arrangements and marketing assistance (including raw materials bulk-buying schemes). Action is, for instance, already being taken for the setting up of common facilities for small- and medium-scale industries in co-operation with local groups, such as branch associations. To effectively implement these programmes a decentralization or regionalization of the entire range of DTI services has been undertaken. Regional and provincial offices have been established to serve as "mini-DTIs" in their respective locations.

5. Mobilizing people participation. In recognition of the vital role of the private sector in the country's future industrial development, the 1987-92 Development Plan calls for consistent

pursuance of deregulation and privatization, and the institutionalization of a mechanism for private sector participation in planning and policy formulation. Particular attention is given to the effective mobilization of resources and the focusing of the people's efforts on a common goal. To foster this teamwork the DTI is encouraging the organization of People's Economic Councils (PECs) in all the provinces, cities and municipalities of the country. Based on the Department's initial experience (over 400 PECs had been established as of September 1987), the PECs have served as effective means for mass-based participation in economic policy planning and implementation within a visionary framework of a "Philippines, Inc."

Steps have also been taken to invigorate relevant Government R&D institutions to undertake programmes of work which would directly support the industries in private and public sector. The Metal Industry Research and Development Centre (MIRDC) has already launched projects to provide technical back-up in production to the small-scale industrial sector, e.g. through mobile testing laboratories, etc. Similary, textile research is being oriented to respond to the needs of industries, in particular in the small and medium-scale sectors.

II. The concept of supporting industries in the Philippine context

The Philippine industry initially developed with emphasis, in particular during the 1960s and 1970s, on a strong inward orientation. The strategy adopted led to a vigorous expansion of import-replacing consumer goods production. This included a rapid growth in the production of non-essential consumer goods in the wake of heavy protection accorded by way of import and exchange controls. Capital goods and intermediate goods production did not, however, develop in step with the production of final consumer goods. The latter production was generally either largely of assembly type (with high import content) or of a quality or technical sophistication which was not competitive on the international market.

The considerable reliance of Philippine manufacturing on imported inputs in this period, particularly before the mid-1970s was fostered by the prevailing system of incentives biased in favour of the finishing stages of producing consumer goods relative to intermediate goods, discouraging, therefore, backward integration. One effect of these policies was that little attention was paid to the creation of 'supporting industries' with different product or process specialization along with the development of larger industries. Indeed, in order to further deepen and strengthen the industrial structure, both in terms of linkages with other economic sectors and in terms of a stronger interdependence of the various branches of manufacturing, a comprehensive promotional approach would be required aimed not only at final producers but also at their, so called, supporting industries, that is, their suppliers of production inputs (including machinery) and of industrial services required.

As the term 'supporting industries' is not yet well established and hence subject to differing interpretations, a brief conceptual outline of the term's use in this report may thus be warranted (bearing in mind, however, that a watertight definition is not intended nor does it appear to be feasible at all). In principle, each industry providing inputs to other producers can be considered as a supporting industry. In this sense, the production of textiles 'supports' clothing manufacturers, a steel factory 'supports' the fabrication of metal products, plywood manufacturing 'supports' furniture-makers etc. At the same time, being a supporting industry is not an intrinsic property of any industrial branch or factory but essentially depends upon the length and nature of the production chain and the corresponding position of a specific industry therein. Typical categories of supporting industries - essentially in the small or medium industry category - would cover:

- separate manufacturing operations, e.g. in the metalworking field (often in the context of subcontracting);
- materials processing, e.g. in the textile field;
- production of dies and moulds, spare or replacement parts production;
- production of parts and components;
- production of accessories, e.g. to the garments industry;
- production of packaging items, e.g. containers, caps etc.;

- service industries, e.g. to undertake repair and maintenance work, testing and calibration services, design services.

The present report adopts a rather broad concept of supporting industries:

- At the core of the supporting industry concept have traditionally been those industries producing parts and components. The tend to belong to the private sector and have been the domaine of small- to medium-sized enterprises. Often they are linked to prime manufacturers by subcontracting arrangements as is predominantly the case in the automotive sector. Also (independent) manufacturers of accessories for, say, the garment industry constitute an important category of supporting industries.

- A less obvious albeit essential segment of supporting industries are the producers of machinery and equipment, be it moulds and dies for plastic or rubber processing industries; woodworking machinery; industrial pumps etc. By definition they are part of the engineering sector although they serve, of course, other industrial branches as well. This category may also include specific industries involved in materials processing, such as metal plating or textile dyeing.

- Finally, industrial services have been included as a third support category. Such services can either be provided by other enterprises (e.g. packaging or design) or by specialized institutions (e.g. training or quality control) which can be operated by private associations or public sector entities.

In overall terms, the strengthening of the supporting industries in the Philippines can be seen as contributing to making industrial development more self-sustained by generating stronger industrial interlinkages and hence reducing the high degree of import dependence. It is thus in particular in view of the country's mounting foreign debt and persistent current account deficit that the building-up of a viable domestic parts/components as well as equipment industry is called for in order to raise the local content ratio of industrial production.

As noted earlier there is a general danger, as has been the case in many countries including the Philippines to put too much emphasis on the promotion of assembly operations while at the same time neglecting capability generation in medium-sized firms supplying the required production inputs. A biased processing pattern in favour of final (assembled) products is the consequence. In this context, a brief comparative look at the experience of the two economies, the Republic of Korea and Taiwan Province of China, is instructive. While the former long neglected the development of an efficient local supply base of parts/components and hence continued for some time to suffer from high import dependency, in the latter industrial priorities were different from the start with stress having been placed on establishing a powerful domestic parts/components industry first. It was only out of parts manufacturing that the assembly sector subsequently grew.

Obviously, in a competitive world economic environment based on comparative advantages and specialization there should be reasonable limits to a strategy of import substitution and the raising of domestic content. After

all, 'support' should not be regarded as a physical concept. Whether a supplying industry effectively 'supports' or rather 'weakens' a user industry, is a question of the former's production costs and product quality as compared to a potential sourcing from the world market.[1/]

1/ Cf. UNIDO, "Industrial Policy in the Developing Countries. An Analysis of Local Content Regulations", UNIDO/IS.606, 3 February 1986.

III. Target industries: Linkage creation towards an integrated industrial structure

As indicated above, revitalization and structural rationalization programmes are presently being designed for the development of key industry sectors in the medium term, concomitantly with trade liberalization and improved investment promotion measures. Specific policies and strategies that are consistent with broader industry policies, are being defined for these sectors' future development towards improved productivity and increased competitiveness as well as in terms of potentials for additional production ranges and introduction of stronger inter-industrial linkages. The sectoral plans also identify the direction to be taken with respect to the technology requirements of each sector - specifying the technology needed to improve industry and the means by which it may be acquired - whether through local development, importation or a combination of both.

Particular attention is given to the development of effective linkages between small and medium industries and large enterprises through the promotion of subcontracting arrangements and the establishment of common facilities (e.g. for raw materials processing) and services.

Regional industrial development will be furthered through identification of available resources and skills in the regions which will supply the requirements of industries locating there, including the identification of available supporting industry.

The national industrial dispersal programme is focused on the transformation of selected areas into attractive and viable industrial locations/centres that can counteract the central locational advantage of the Metro Manila area. In the development of these industrial centres, which are intended to provide the backbone for the integration of the various parts of the Philippines into the mainstream of the country's industrialization, the availability of supporting industry facilities will be of crucial importance.

In the following, a closer look will be taken at the industrial linkages and support industries in respect of some key subsectors namely,

- basic metals and engineering industries;
- electronics industries;
- plastics and rubber components and packaging materials; and
- textile and garments.

A. BASIC METALS AND ENGINEERING INDUSTRIES

A major portion of the industries included in this subsector can be classified as supporting industries. The subsector does, however, also include some industries which can hardly be considered as supporting industries. These are typically assembly industries of automobiles, electric appliances, agricultural machinery etc. (unless one argues that, for instance, assembly of farm machinery is supportive of agriculture). Most of the other

industries in the subsector are clearly supporting industries, by providing other industries with machining and other engineering services or with components and other requisites.

(i) Basic metals industries

The Philippines has abundant mineral deposits and mineral ore exports have played a significant role in the country's economy. However, the country has not been able to realize the complete transformation of indigenous minerals into finished metal products. Over the years, the country had heavily depended on imported semi-finished and finished metal products for its irrigation systems and power plants, for the provision of inputs for the making of agricultural machinery and equipment, and as supply materials for the construction of infrastructural facilities.

As indication of the scope of the Philippine basic metals industries sector, it may, however, be useful to refer to the data of an earlier, comprehensive study by Technonet/JICA[1/], which shows that already 10 years ago there were 63 firms engaged in primary iron and steel production; 190 were in ferrous casting; and some 230 were in the non-ferrous metals. In the primary iron and steel production, there were 31 rolling mills engaged in merchant bar and wire rod production, nine of which had melting facilities (usually for scrap) which produced billet-sized ingots, eight operated in pipe and tube mills, eight sheet galvanizing plants, two electrolytic tinning plants, three cold rolling mills, and one in hot rolling mill. In non-ferrous metals industry, there were 10 aluminium fabricators, 37 aluminium casting firms, 18 copper wire and cable manufacturers, 60 copper casting firms, and a large number of other establishments including galvanizing and plating shops.

Although no comprehensive up-to-date information on the current status of the basic metals industry was available, the mission was given to understand that, generally the output (and scope) of the subsector, if anything, had been slightly reduced since the early 1980s.

Foundry products play an essential part in the Philippine economy, specifically in meeting the requirements of equipment, machinery and spare parts manufacture. According to a study prepared in 1987 (by BOI) there are presently about 150 foundries engaged in the production of various cast products. Most of them are located in Metro Manila; these account for 72 per cent of the total production of castings. The vast majority is still manual in operation; only a few are semi-mechanized. The main outputs of the foundries are replacement parts of machinery and equipment, but some firms are now able to manufacture original components for the transportation, appliance and agricultural machinery industries.

(ii) Engineering and metalworking industries

(a) Overview

The products included in the engineering and metalworking industries sector primarily falls under the following criteria:

1/ "Small and Medium Scale Metalworking Industries." Philippines and Thailand/JICA research paper, August 1978-March 1979.

- all types of machinery used for agriculture, mining, industry and transportation;

- fabricated metal products used as inputs to the manufacture of machineries; and

- other fabricated metal products such as finished structural parts, hand tools, metal containers, etc.

The engineering processes involved are the following

- foundry,
- forging,
- machining,
- heat treatment,
- welding,
- presswork,
- metal finishing

Each of the above processes can be done by individual specialty operations.

According to a 1985 survey by the National Census and Statistical Office (NCSO), there were 738 establishments in the Philippines comprising the fabricated metal products, machinery and components sector, giving employment to 65,891 workers, or 10.6 per cent of total manufacturing employment. The survey also showed that the sector's gross value of output in 1985 was ₱16.3 million, representing 7.2 per cent of total manufacturing output. Compared to the early 1980s, however, the sector's performance had declined considerably (see Table 3). As illustration of the differentiation of activities of the Philippine engineering industry which prevailed then, a detailed listing is presented in Table 4 of such activities (obtained from a UNIDO study of 1980).

Of the 738 firms, 36 per cent was engaged in the manufacture of fabricated metal products. In terms of employment, this group accounted for 14,680 of the total workforce of 65,891 of the sector. The non-electrical machinery groups employed 13,603 persons while the electrical machinery groups (which includes the electronics sector) employed 37,608 persons (see Table 5).

With regard to the sector's share in the gross value added of the total manufacturing sector, the following figures apply:

	At current prices (per cent)	At constant prices (per cent)
1980	8.0	12.6
1981	8.5	13.1
1982	9.0	13.5
1983	9.6	14.4
1984	8.1	13.5
1985	8.0	12.8
1986	8.9	14.1

Table 3. Fabricated metal products, machinery and components sector. Gross value added, 1970-1986

(in million pesos, at constant prices, base year 1972)

	1970	1975	1980	1981	1982	1983	1984	1985	1986
Fabricated metal products	372	398	1,041	977	1,052	1,091	740	746	725
Non-electrical machinery	178	190	726	764	787	797	442	409	429
Electrical machinery	359	443	1,153	1,402	1,475	1,717	1,964	1,600	1,913
Total for the sector	909	1,031	2,920	3,143	3,314	3,605	3,146	2,755	3,067
As percentage to total manufacturing value added	7.7	6.2	12.6	13.1	13.5	14.4	13.5	12.8	14.1

Source: National Economic and Development Authority (NEDA); National Census and Statistics Office (NCSO).

Note: Data from 1970 and 1975 are for establishments with 5 or more workers; data from 1980-82 are for all manufacturing establishments, while data for 1983 and later are for establishments with 10 or more workers.

Table 4. Distribution of engineering firms according to activity

Activity	Number of establishments	Proportion of total (percentage)
Service	947	47
Manufacture of metal products	692	35
Machine tools	51	3
Farm machinery and equipment	97	5
Transportation equipment	58	3
Appliances	31	2
Power-engine machinery	17	1
Construction and mining machinery	8	-
Electrical machinery and electronic equipment	29	1
Food-product machinery and equipment	23	1
Textile and machinery	29	1
Chemical-processing machinery	23	1
Total	2,005	100

Source: A.V. Arizabal, The Light Engineering Industries in the Philippines, paper published in Appropriate Industrial Technology for Light Industries and Rural workshops, UNIDO, 1980.

(b) Fabricated metal products

The metal-products manufacture in the Philippines has during the last decade been gradually shifting from the production of ordinary metal products, such as nails, wire and sheet-metal products, into a more diversified production of other and more complex products.

In the early 1980s there was a total of about 2,000 enterprises engaged in metal-products manufacture, some dispersed throughout the country. About 91 per cent of them were located in the main island of Luzon. The welding shops and press shops represent the largest number in terms of firms, and most of them belong to the small-sized enterprises. Main items in metal-products manufacture in the Philippines are sheet metal items, wire and wire products, hand tools, hardware, metal fasteners, metal furniture and fixtures, lighting and plumbing fixtures, safes, vaults and storage cabinets, cutlery, kitchenware and appliances, hospital equipment and supplies, tin-plate containers, and springs.

The principal raw materials used in the industry are sheets (base metals and coated metals), plates, bars and rods, wires, pipes and tubes. Much of these basic products are imported, although there has always been a significant production of reinforcing bars and other billet-derived products as well as products cast from locally available scrap.

Table 5. Fabricated metal products, machinery and components sector, gross value of output and employment, 1970-1985

	1970	1975	1980	1981	1982	1983	1984	1985
Gross value of output (in ₱000 at current prices)								
Fabricated metal products	457	1,522	3,140	3,034	3,658	2,929	4,541	3,769
Non-electrical machinery	83	727	1,639	1,644	2,152	1,066	1,443	1,692
Electrical machinery	496	1,469	5,043	4,725	7,000	8,566	11,394	10,806
Total	1,036	3,718	9,822	9,403	12,810	12,561	17,378	16,267
As percentage to total manufacturing	0.7	7.2	7.9	6.7	8.1	7.7	7.9	7.2
Total employment								
Fabricated metal products	13,160	22,326	42,671	41,030	41,015	19,379	18,909	14,680
Non-electrical machinery	4,123	16,036	28,227	27,824	26,816	16,541	13,043	13,603
Electrical machinery	11,715	21,682	49,405	60,286	55,141	52,521	50,481	37,608
Total	28,998	60,044	120,308	129,140	122,972	88,441	82,433	65,891
As percentage to total manufacturing	7.2	11.7	11.2	11.8	11.3	12.6	12.8	10.6

Source: National Economic and Development Authority (NEDA); National Census and Statistics Office (NCSO).

Note: Data from 1970 and 1975 are for establishments with 5 or more workers; data from 1980-82 are for all manufacturing establishments, while data for 1983 and later are for establishments with 10 or more workers.

(c) Machinery, non-electric

Existing machine shops in the Philippines are basically jobbers, engine rebuilders, fabricators and small-scale subcontractors. They cater to nearly all sectors of industry. At present, there are about 873 machine shops in the country and about 121 engine reconditioners. These are mostly small, open-front shops in industrial centres, lining the roads and servicing numerous industries. Most of these shops have five general-purpose machines for undertaking machining, drilling and welding jobs. Their products, however, depend on the needs of their customers. Most worn-out parts of machines are brought to these shops for copying and fabrication, although certain standard items are made in small quantities. These machine shops are primarily engaged in the repair and maintenance of practically all types of machinery and industrial equipment, motorized and non-motorized vehicles, and in the fabrication of machine parts based on imported models and customers' designs.

Historically, the machine shops represent a small-business industry. Firms with less than 10 employees account for about 77 per cent of the total number of firms, while those with over 20 employees account for only about 5 per cent.

The machine tool and related sectors are still in their early stages of development. Most of the companies involved produce machines for their own use and repair or assemble a limited number of machine tools such as lathes, drills and shapers. There are about 14 pioneering manufacturers of machine tools. Although this industry is still young, the production of tools, dies and jigs has been developed to a certain extent. Several manufacturers, who are usually small subcontractors, have acquired the capability to fabricate quality tools. One of the main bottlenecks, the mission was given to understand, is in the production of tools and dies as well as in mould making for rubberworking and plastic injection-moulding machines. Special attention to these matters, in particular the technology aspects, is being given by the Metal Industry Research and Development Centre (MIRDC).[1/]

(iii) Inter-industry linkages

An important feature of the basic metals and engineering industry sector in the Philippines is its linkage between products and processes and its ability to supply other industries with specialized goods. Subcontracting is carried out at various levels, so that primary subcontractors may farm out some of the items they need to smaller subcontractors. A large volume of machining work is being let out by metal manufacturers, machine shops, appliances producers, the agriculture and the transport sectors and fabrication jobs, in that order. The manufacturers of metal parts subcontract most plating, casting and heat treatment jobs. There is much subcontracting in the automotive industry for items such as brake linings, disc brakes and exhaust systems. In the appliance industry, some heat-treatment, enamelling, casting, pressing, blanking and machining jobs are done externally. Most

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1/ See the MIRDC project proposal "Design and making of tools, dies and moulds for die casting, investment casting, plastics, etc, and shell moulding" which is presented as Project No.B-3 in the Annex.

jobbing foundries produce rough or machined castings to be assembled with other components to produce a certain unit. Most subcontracting is carried out by job shops, which usually have a considerable amount of underutilized machinery.

Well functioning rural blacksmithy[1/] and mechanical workshops are fundamental for rural and agricultural development. They are providers of most implements and equipment for small farmers and provide spare parts and essential maintenance services.

(iv) Current bottlenecks and priority areas of attention

The mission was given to understand that the state of technology in the country's machinery and components sector is generally some 10-20 years behind [the up-to-date situation]. The smaller firms in the sector use relatively low-cost, general purpose second-hand machines. Some larger firms, however, are now acquiring (through importation) fairly up-to-date equipment to remain competitive.

In the foundry sector there is a need to improve pattern-making tolerance, molt sand composition and melt analysis. Equipment is of older type.

In the structural metal working field the production is relatively labour-intensive. The cutting and welding tools used are generally in good condition. The processing of stainless steels, notably in the finishing of welding seams and surfaces, needs to be considerably improved.

Most of the equipment used in the machine building and component/parts manufacturing is 15-30 years old; there is a serious shortage of high speed tools. High performance special machines and more qualified measuring instruments are rarely found in the firms. Because of lack of quality equipment, and the labour-intensiveness of production it may be stated that only simple products, such as valves, fittings and stampings are of international marketable quality. Modern engineering systems (e.g. CAD/CAM) are hardly applied.

Subcontracting within the sector has not been very successful on account, mainly, of the inconsistency in product quality, high prices and difficulties with meeting of delivery dates.

On the other hand it seems that the service industries in the sector have developed relatively well. These are plating, galvanizing, anodizing, enamelling, tinning, phosphating, metallizing, rustproofing and heat treatment.

The mission was given to understand that there was a need for new and/or improved technology in areas of metallurgy, stainless steel polishing,

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1/ See the MIRDC project proposal entitled "Improvement of smithery technology in stainless steel cutlery and surgical instruments" which is presented as Project No.B-7 in the Annex.

machining, steel plating (hot dip and double dip) and CAD/CAM.[1/] In general, there is a need to assist the sector in upgrading the level of technology towards achieving international competitiveness of locally manufactured machinery and components.

B. ELECTRONICS INDUSTRY

The Philippines was a relatively late entrant (early 1970's) in the field of semiconductor assembly. However, by the early 1980s, electronic components had emerged as the country's top non-traditional export. The country's semiconductor assemblers may be broadly classified into foreign-owned subsidiaries (or international brand-dependent companies) and independent subcontractors. The first-mentioned category of companies often use subcontractors themselves during peak seasons.

Due to technological and other constraints, the Philippines semi-conductor industry is still restricted essentially to the assembly or packaging of devices designed abroad. The bulk of the materials and supplies - silicon dice and wafers, metal can packages, aluminium and gold wire, epoxy caps and vases, chemicals and other inputs - are either shipped into the country by the mother companies of local subsidiaries or imported directly by independent subcontractors for domestic processing (and re-exportation).

The domestic semiconductor assembly industry's chances at responding favourably to the international market opportunities depend much on its ability to focus on appropriate production areas and market segments. This presupposes the adherence to technology and product lines which best enhance the country's competitive edge in the international semiconductor subcontract trade.

The moderate wage level for local unskilled labour is one of the country's primary assets. This comparative advantage is, however, gradually being eroded as automated equipment is developed in industrialized countries resulting in improved yield and increased productivity. While automation may be gradually introduced in the Philppines only as and when the additional investment would result in substantial upgrading in quality and consistency, efforts will in the meantime have to be exerted at training available manpower for alternative areas of operation, like programming and software development. Increasingly automated assembly should be considered as an opportunity to move on to the production of items of higher technological complexity.

Serious thought should also be given to the development of support industries which can make use of indigenous resources such as the production of chemicals, packaging materials, metal and plastic frames, etc. Indeed, one major obstacle to the development of an indigenous electronic industry is the non-existence or inadequate presence of support industries. Development of these industries will enable the country to compete in an industry where "just-in-time delivery" is an essential component.

1/ See further in particular the MIRDC project proposals entitled "Upgrading of plating and other metal-finishing technology" and "Demonstration and Training Centre for CAD/CAM and Flexible Manufacturing Systems" which are presented as Project No.B-4 and No.B-5, respectively, in the Annex.

Support industries for the sector can be classified as those which supply components directly to electronic manufacturing industries and those which provide basic materials to support the components industry. The strengthening of the component manufacturing industry appears to be the most urgent task that must be attended to. Without component manufacturing, the Philippine industry will certainly lose out to countries (such as some of the ASEAN partners) which have such facilities. The facilities for production of metal components to be used in electronic equipment is a major requirement; metal parts being components although not electronic. Without adequate production of metal parts, completed units cannot be produced economically. The same is true with plastic components. Although these kinds of production facilities are presently available in abundance in the country they do not have the quality levels and delivery capabilities required of a support industry for the electronics sector.

While in various export-oriented developing countries attention had earlier been largely focussed on the potential of producing a wide range components and complete equipment, it is recognized that these products are now becoming less and less suitable for production in small enterprises because of changes in production technologies leading to different economies of scale, product development costs or costs of marketing of the products. Several countries are consequently now promoting the specialization of small industry in high technology parts production, e.g. computer disk drives production. Small enterprises in the Republic of Korea and Singapore have taken up such production for supply to large industries.

As is illustrated by recent development in industrialized countries, the growing production integration of electronic products leads to a gradual reduction in the scope for "traditional" subcontracting. Complementation seems to become more and more important for small-scale industry and its linkage to large-scale enterprises. Complementation products are, for example, computer peripheral equipment, industrial process control equipment, electronic control devices for the automotive industry and electric motor control devices. There are changes in product structure in subcontracting and complementation; engineering work is placed in the foreground and all product development and construction efforts are achieved through enterprise specialization. Even though the enterprises are highly specialized they, at the same time, assign great importance to product and customer diversification so as to limit dependencies.

The shift of small industries into specialization in high technology areas can on the other hand not be seen as a long-term 'security' for business success. Continuous adaptation to new developments is a fundamental requirement for the enterprises in this field. Indeed, technological change has to be seen both as a potential motor as well as an obstacle to subcontracting and complementation. This can be illustrated by the instrumentation and control equipment subsector. While many control processes traditionally were based on electro-mechanic systems which allowed decentralized production in specialized small enterprises, the change to electronic control devices reduced the subcontracting potential considerably as products became based on integrated devices. The same development can be observed in the telecommunication subsector.

Other fields with growing potential for subcontracting and complementation are the application of electronics and service functions.

Experience in industrialized countries shows their importance of this type of business for the development of small industry. These areas have, however, not yet received the attention by policy makers and industrial promotion agencies in the Philippines and other developing countries in Asia they deserve.

It may also be beneficial for the industry to consider the possibility of forward integration into the manufacture of finished consumer and industrial electronic products for export. Aside from generating greater value added, the establishment of an export-oriented consumer electronics industry could also extensively utilize the country's technical and mangerial manpower resources. Note that the Republic of Korea, Hong Kong, Taiwan Province of China, Singapore and, most lately, Malaysia are gaining a foothold in the higher technology items. Hence, local Philippine manufacturers could venture into the production of the lower technology, manpower-intensive lines such as television sets, radio receivers and digital clocks to fill in the huge vacuum left by the transit of the newly industrializing countries to high-tech production. Nonetheless, a clear definition of the specific markets into which the products will be diverted and the level of manufacturing technology that will be adopted is absolutely necessary in view of the intensity of competition in this area. Needless to say, Government support in the form of venture capital and other incentives would be imperative in generating entrepreneurial interest along this line.

The continued expansion of applications and markets for electronics thus suggests positive prospects for this industry in the world market, especially in the light of the rapid decline of prices of components and finished items. Constant improvements in production technology and mass production of such equipment have driven down prices to levels which are applicable to a broad consumer base. In the context of such broadened market prospects, ASEAN co-operation in electronics manufacture could be tried out in order to maximize the utilization of available resources and expertise within the region, for instance in the fostering of inter-industrial linkages in the form of subcontracting and complementation in the electronics sector. The rapid innovative changes which are occurring in the sector, require a high degree of production flexibility based on continuous adaptation of new technological development which ultimately requires well trained, experienced and innovative engineering staff, often in specialized small-scale industries.

C. PLASTICS AND RUBBER COMPONENTS AND PACKAGING MATERIALS

(i) Plastics industry

In 1981 UNIDO conducted a study on the plastics industry in the Philippines and estimated that there were 400 firms in the plastics processing sector. Some 150 to 200 firms were classified as fabricators while the rest merely assembled, cut, glued or machined semi-finished products, or cast polyester resin into glass fibre. Only 20 to 30 companies were deemed to be capable of performing major or modern plastic processing operations.

Some of the respondents interviewed revealed that the number of plastic processing companies may be more in the vicinity of 500 firms owing to the presence of numerous small outfits which operate only one or two machines.

The preponderance of small operators is most evident among film bag makers and among companies engaged in injection moulding.

As far as geographical distribution of firms is concerned, there appears to be a concentraction of plastic processing plants, particularly in the Valenzuela and Caloocan areas of Metro Manila.

Inter-industry linkages. The Philippine plastic processing industry provides inputs to numerous industries, for instance:

Industry	Application
Food processing	Packaging, lamination
Sugar	Packaging
Fishery	Packaging, nets and ropes
Fertilizers	Packaging
Furniture	Structural elements, upholstery
Home appliances	Casing, wiring, coating
Supermarkets	Packaging, interior decoration (shelves)
Shipping	Ropes and twines, laminated flooring
Construction	Pipes and conduits, ropes and twine, wire insulation, wall finishing, lighting fixtures, flooring
Mining	Pipes and conduits, wire insulation, safety helmets

Technology. Generally, the plastic processors believe that their technology is adequate for the needs of the domestic market. In comparison, however, to the technology levels in other countries in the region, Philippine plastic processing technology seems to be lagging behind for some product lines. Industry modernization, therefore, becomes an important technology issue primarily when one speaks of catering to the export market.

Above all, a lack of high quality local plastic packaging raw materials reportedly hampers the ability of food processors to export directly. The plastic packaging items currently produced in the country often have inconsistent quality as result of cost cutting measures, such as extensive use of recycled plastics or unspecified "blends" of resin.

For companies engaged in the extrusion process, there seems to be a general desire to acquire co-extrusion facilities. Co-extrusion will allow manufacturers to extrude two or more layers of film in one process. This facilitates the production of multi-layered polybags, films, or sheets; the layers may even be made of different resins.

Companies involved in the moulding process expressed a desire for an upgrading of mould-making technology.

The importance of the plastics sector in meeting requirements of components and parts for complex industrial sectors such as electronics and its role in economic development is well recognized. The sector suffers from lack of institutionalized support in characterization and selection of the type of polymers, moulds and dyes to be used and production of quality products. Such support is easily provided through establishment of an independent industry-related applied centre to act as a technological support

to the plastics processing industry. Such centre equipped to test different formulations can service a wide spectrum of industries using plastics products with different polymer specifications.

(ii) Rubber products

There are over 100 firms in the Philippines engaged in the processing of rubber into various rubber goods (tyres, automotive and industrial machinery parts, household and medical products, sports goods etc.). Except for some specialized commodities, like industrial machinery parts and some special sizes of tyres for construction equipment and aircrafts, the industry can adequately meet the quantity of local requirements. With the revival of the automotive industry the local demand for rubber goods (e.g. engine mountings, battery containers, belts, bumper guards, etc.) is expected to grow considerably.

However, the mission was given to understand that in terms of technology, the industry still lags behind. New technology is needed especially in the manufacture of industrial machinery parts and for the upgrading of quality to international standards. For buyers of rubber parts for industrial machineries, technical specifications like tensil strength and hardness are evidently of utmost importance. However, many firms are not equipped with adequate testing and quality control equipment, to enable proper meeting of such specifications.

As general strategy for the sector, various approaches towards foreign investment stimulation are pursued, ranging from joint ventures, equipment leasing and technology licensing agreements to subcontracting (e.g. foreign rubber companies may be interested in labour subcontracting, that is, the foreign company will provide raw materials, equipment and machinery as well as marketing facilities while the local company will provide the factory building and labour).

(iii) Packaging materials

(a) Glass

The glass container manufacturing plants in the Philippines suffer from outdated and energy inefficient machinery and equipment, a fact which most significantly affects production costs, as glass manufacture is an energy-intensive process. This is compounded by the fact that power costs in the Philippines are relatively high compared to those of other ASEAN countries. Thus, any comparative advantage which may be derived from abundance of local raw materials (such as silica sand, feldspar and dolomite) is more or less offset by high energy cost for the glass container manufacturers.

Furthermore, the quality of local silica sand, though acceptable among domestic users, is still below the requirements of export producers. A greenish tinge in the glass product is visible if a substantial amount of locally-sourced silica sand is used. Exploration and development of better local sources, if not outright importation, will be necessary for the manufacture of export-quality glass containers.

Another aspect of crucial importance for the development of the Philippine glass packaging (bottles/containers) industry, as support industry to, in particular, the food industry is the fact that in glass bottle-making, large orders (e.g. one million cases) are normally needed to attain economies of scale in production. However, some food processors' orders are usually small (in the vicinity of 100,000 cases) and often with varying shapes and sizes. Unless economic lot sizes are ordered, coupled with standarization of container shapes, the use of local glass bottles by the country's food processors/exporters cannot be expected to increase substantially. (In comparison, food containers produced in Thailand have uniform sizes and limited variations in shapes; only the lables and decorations are utilized to differentiate one product from another).

(b) Tin-plate

A major concern for the canned food exporters frequently voiced at present is the high price of good quality imported tin-plates. Tin-plates imported from Japan by some can makers (who deliver to Philippine food exporters) are obtained at the relatively high price of US $1,114 per metric ton (the "home consumption value" in the country of origin, as recommended by the sole local producer of tin-plate - the National Steel Corporation). In addition to this price, the export producers still have to pay additional premium on the bond. On the other hand, canning companies who source their tin-plates locally from the National Steel Corporation, pay a lower price but often complain about inferior quality, and sometimes insufficient supply.

To the mission it was clear that an improvement of the quality of locally made tin cans was a prime requisite for successful exports of canned food products. As a first step, a detailed survey of the technological level of can making is strongly and urgently recommended, based on which corrective action can be started.[1/] [Other packaging materials used by the food processing industries such as plastic and laminated foils, bottles, paper containers, etc. are also locally made, but improvements are necessary, particularly for products to be exported. Other chemicals (food colours, preservatives, printing inks, lacquers, etc.) are mainly imported and their local production will be difficult to start (except through licensing).]

D. TEXTILE AND GARMENTS SECTOR

(i) Overview

An important emerging feature in the Philippine export-oriented garment industry development is the gradual backward linkages aimed at. This would mean that local textile mills would increasingly become important suppliers of fabrics (that is, becoming supporting industries) to the garment exporters.

1/ The Philippine small can-markers are looking for good low speed equipment. For hand operations in small canning plants there is, moreover, a need for more accurate measurement of temperatures, etc.

The Philippine garment industry had developed from cottage-type of companies in the 1950s producing dresses and other wearing apparel items, to a major export earning industry (see Table 6). The industry experienced a very rapid growth in the 1970's supported by Export Processing Zone and export incentives policies. As result a large number of foreign investors came into the country, mostly through joint ventures.

Table 6. Philippine garment and textile products exports (1970-1986)

(in million US $)

Year	Philippine garment and textile products exports ($ million)	% increase
1975	107.0	-
1976	184.6	72.5
1977	249.6	35.2
1978	326.3	30.7
1979	464.2	42.3
1980	500.0	7.8
1981	685.2	37.0
1982	549.0	19.9
1983	566.1	3.1
1984	646.8	14.3
1985	660.1	2.1
1986	802.9	21.6

Source: Foreign Trade Statistics of the Philippines and GTEB.

It is estimated that there were at present almost 30,000 establishments in the garment manufacturing sector which includes the traditional home sewers, dress maker and tailors. There are about 1,000 firms registered as exporters. A large number of garment producers are subcontractors to the exporting firms, but a majority are oriented towards the domestic market. A total of 150,000 workers are recorded in the apparel industry. Total employment in the sector is, however, estimated at close to 500,000.

Within the 1,000 registered exporters, the 20 largest firms account for 40 per cent of the country's exports. Most large firms subcontract a considerable part of their work and so effectively employ a much larger number than is recorded in their payrolls.

An important group in the industry are the producers of hand crocheted (embroidery goods). These require very high labour inputs, all on subcontract basis. In this connexion it should be noted that in recent negotiations on the Bilateral Textile Agreement with the US, the Philippines succeeded in having the quota allocation system modified in a way which would encourage the development of small firms and subcontractors.

(ii) Raw materials

The garment export market has developed in recent years almost entirely on basis of imported textiles, often brought into the country on consignment basis. The Philippine textile industry was able, from the latter part of 1985, to start servicing the export garment industry on significant scale through the implementation of the Advance Tax Credit Scheme, an incentive under the Omnibus Investment Code of 1983.

The background to this is as follows: After a comprehensive study by the World Bank team to rehabilitate the textile industry, a Textile Modernization Programme came into existence in 1982. While it met with some initial enthusiasm among textile millers, the programme did not materialize because the millers were unwilling to bear the foreign exchange risk attendant to the dollar-denominated loan facility made available by the World Bank through the Development Bank of the Philippines (DBP). It was at the time assessed that if rehabilitated, the industry, at best, may be able to substitute 20 per cent of the volume of textiles imported by the garment export industry. Based on the World Bank team's estimates of demand, it should for instance, be possible that domestic production from rehabilitated mills could supply 7,000 metric tons of the 10,000 metric tons of denim inputs needed by the industry. In addition, 16,000 metric tons or 16 per cent of imports of other fabrics could be sourced from the domestic textile mills. When, however, the Textile Modernization Programme of 1982 did not take off the ground, the "Advance Tax Credit Scheme" was introduced in 1985. This gave the textile millers the confidence to quote prices to garment exporters, knowing the mill would receive a known amount of tax credit after delivery of the yarn or fabric to the exporter's Manufacturing Bonded Warehouse. With that scheme emerged, on significant scale, local input sources for garment producers. These are in spinning, knitted fabrics, denim and sewing threads.

In addition to the Advance Tax Credit Scheme, other incentives are provided to export-oriented enterprises. Most important to the industry are tax exemption on imported capital equipment, spareparts, and raw materials. Tax drawbacks are likewise provided for raw materials and capital equipment sourced from local manufacturers.

(iii) Machinery, equipment and technological changes

In a survey conducted in 1981 by the Garment Business Association of the Philippines of its members, the estimted number of machines in large establishments was around 195,000 units.

About 70 per cent of the total machinery was composed of sewing machines, the remaining 30 per cent was broken down into other major machines such as knitting machines, cover-edging machines, and zigzagger machines. The age, design, and complexity of the machines varied from firm to firm. Only a handful of firms used sophisticated equipment.

Since then, a significant progress has been made among knitwear firms where modern equipment has been installed. While a few firms have installed computerized machines, most producers feel that the shift is not yet necessary. This is because most of the fabrics are consigned and therefore should have been marked, so only the steps of cutting, stitching, trimming, and packaging are performed in the Philippines.

Although the adoption of modern machinery is limited, efforts to rationalize production by improving work methods and of materials flows are undertaken in varying degrees by most firms.

Realizing that some firms in the OECD countries have begun responding to Asian competition by investing in new microelectronics-based technology, efforts have been undertaken to rationalize production by improving work methods and materials flow. At the present state of the industry, where pattern upgrading and marking are mostly provided by the customer, expenditure on microelectronics-based equipment would not be justified.

(iv) Marketing and product development

Marketing information and assistance for both potential and existing exporters and foreign buyers is being provided by the Bureau of Foreign Trade. Promotional activities beneficial to Philippine exports are centralized with the Center for International Trade Expositions and Missions (CITEM). These agencies co-ordinate closely with the GTEB on matters and activities relating to garments and textiles. Furthermore, small manufacturers who are not capable of exporting on their own are offered marketing services by the Philippine International Trading Corporation (PITC).

The Philippine export industry operates on a receptive rather than a dictative basis, relying principally upon customer generated designs either in the form of sketches or pre-made samples brought in. Some manufacturers rely entirely on detailed buyer's specifications while others build on basic shapes and silhouettes provided by the buyers. Only the bigger manufacturers maintain a design and sample making staff composed of one to two designers and sewing staff. In this context two different strategic routes seem to be given particular attention.

(a) There is already an increasing awareness among Filipino firms for the need to go upscale by adding some element of fashion to their garments. A number of firms have small design teams who essentially study the current fashions from Europe, and try to build on their designs by adding local motifs in order to differentiate their products. Although this activity is still in its infancy, it is of considerable importance given the Philippine entrepreneurship and creativity capabilities.

(b) The Philippine export garment industry has hitherto to large extent been dominated by US garment houses. Most of these firms have produced non-seasonal, low fashion garments such as children's wear and undergarments. With the increasing emphasis on fashion and intra-seasonal response, it is possible that US investments into the Philippines will decline. There is, however, the possibility that East Asian nations will use low wage Filipino labour in the same way that Europeans are hoping to exploit such labour in the Mediteranean and the US producers in the Caribbean.

To further support the industry in terms of improving production processes and productivity standards, there are several agencies in existence or being organized. Problems relating to textile and allied industries are addressed by the Philippine Textile Research Institute (PTRI). One area of major attention at PTRI is R&D in connexion with the use in textiles of indigenous fibre materials. Development of skills at various levels is being undertaken by the National

Manpower and Youth Council. One of the most recent projects is a unified programme of trade, export inspection and exhibition training which will be undertaken in co-operation with the Japanese Government.

(v) Specialist activities by support industries

If the Philippine garment industry is to be truly competitive in all aspects, it is essential that the necessary support technologies and facilities are available, and can service the requirements of the industry to the required degree of consistency.

In the past, those activities which were considered support industries to the garment sector were normally the supplying of packaging materials, thread, lining, zips and general accessories.

In order to remain competitive, many areas of the garment sector, particularly those areas dealing with the more fashionable items, are expanding their demand for support inputs even further with the introduction of special washes and bleaches, in the case of certain leisure wear garments, and the washing and scouring of knitwear.

Today's garments are produced from various combinations of natural and synthetic fibres, ranging from 100 per cent natural to 100 per cent man-made. The various treatments to which garments are subjected add a new dimension not only to the support industries, but also the technologies involved in order to obtain consistent finishes and final appearances.

The various washes now being called for by certain product groups is only one of the many additional requirements being called for at the international garment scene. In order to retain public interest and subsequently market shares, garment designers are consistently experimenting with, and developing new or revised garment finishes and constructions. Failure on the part of the industry and its support groups to be attuned to new developments and the technologies required will certainly act as a limiting factor to the potential development of the export-oriented garment industry.

(vi) Accessories production

The rapid expansion of the export-oriented garment industry in the Philippines has, as mentioned above, been based on incentives such as EPZ-privileges or duty free imports of raw materials, including accessories. The introduction of the Advance Tax Credit Scheme in 1985 provided a potential opportunity for the local accessory industry (which earlier had essentially catered for the domestic market) to compete with imports for the fast growing market of the garment exporters[1/].

1/ Considerable moves have been made by the Government in connection with the reduction of duties payable on garment accessories, but with tariff still as high as 50 per cent, smuggling is an extremely profitable business. As accessory suppliers are not the "end-users" even if a proportion of the sales are classified as "indirect export", there are considerable administrative delays in obtaining tax reimbursements or credits. The result is that the ultimate benefits of such reimbursements do not outweigh the initial capital outlay which must cover a wide variety of items - all dutiable.

The main categories of accessories are thread, zips, labels, interlinings and buttons. Of these, local producers cover thread, zips and labels fairly well. Also most elements of packaging are locally sourced.

Nevertheless, owing to the sophistications of the accessory market in such competitive areas as Hong Kong, Taiwan Province of China and the Republic of Korea, the Philippine garment exporters tend to purchase accessories whilest purchasing their basic raw materials, so that colour matching and delivery dates can be combined.

In order for the accessory industry to develop, the Philippines must become a sourcing stronghold in all aspects. The increased use of nationally produced fabrics for export as well as the domestic market will automatically stimulate the accessory industry.

The supply of garment accessories is very closely linked to international fashion trends.[1/] Because of this affinity, suppliers must be aware of requirements and cultivate their clients. In the accessary market, there are certain elements which can be classified as basics, or constants, e.g., thread, zips, labels, fasteners, etc. It is from such a base that customer contact can be established and supplier relationship developed.

(vii) Spare parts and equipment supply

For the textile mills many items of accessories and replacement parts are made in the Philippines, for example synthetic rubber rollers and spinning bands for ring spinning, picking sticks, pickers and shuttles for the weaving sector. Yarn carriers such as plastic or paper cones and bobbins are also made in the country. However, it must be stated that the quality of these products has not kept pace with the advance in technology in the proesses for which they are required to be used. The manufacturers need to develop links with overseas producers to keep up with the latest technical requirments of the end users of their proudcts. Machinery manufacturers can provide much information and international standards are available.

The problem with spare parts for the textile machinery is somewhat different. Over the last few years many attempts have been made to establish the manufacture of textile spare parts in the Philippines. The present position seems to be that the spare part users agree that the Filipino parts can be machined to the same tolerances as the imported spare parts, can easily be fitted to the machine and can work satisfactorily. However, the major problem is that they do not last as long as the imported parts due to the fact that the material they are made from, cast iron or steel, is not of the correct specification. This causes additional lost production time which can be more costly than the additional cost of an imported spare part.

With the facilities available at the Metal Industries Research and Development Centre (MIRDC) it should be possible to develop exact metal specifications for the entire range of spare parts required by the industry.

1/ An area which is much influenced by fashion trends is the metal items such as belt buckles and similar accessories. An assistance proposal in this field, put forward by MIRDC, "Upgrading of plating and other metal-finishing technology", is presented as Project No.B-4 in the Annex.

Given the right raw materials there is no doubt that the Philippine engineers can produce parts to the same tolerances as the imported spares. What is required now is the liaison between the parties, the textile mills, MIRDC and the engineering industry with the aim to develop the correct metal specifications and produce and test the spare parts until satisfactory results are achieved. With this foundation, there is no reason why the majority of spares required by the textile industry should not be made in the Philippines.

The garment companies catering to the export market may import machines and spare parts free of tax and duty, whereas companies catering to the domestic market must pay both tax and duties, unless the company is a BOI registered new producer or an existing producer undergoing expansion. Companies so classified can avail themselves of a 50 per cent tax and duty exemption on machinery, equipment and spare parts for a period of up to five years from their date of registration. Because of the tax and duty situation, garment manufacturers supplying the domestic sector must rely heavily upon their existing plant and refurbished second-hand machines or else acquire smuggled goods, which is a thriving activity particularly for spare parts, which are small and easily concealed. At present, there are no industrial sewing machines manufactured or assembled in the Philippines. Suitable clutch motors, stands and work tops are available and are used where possible. Much of the machinery in use at present, particularly in the domestic sector is old, requires considerable maintenance, and is in some cases obsolete. Garment machinery in general, in the Philippines is worked ten if not sixteen hours per day - six days per week.

Proposals to alleviate the situation, by way of reestablishing the machinery supply and spare parts industry and creating a sector of engineering geared specifically to the garment industry, have been put forward[1/] along following lines:

(a) Promote assembly of sewing machines in the Philippines by the appropriate agents, with the parts being imported duty free. [This operation is being carried out in Taiwan Province of China.]

(b) Allow spare parts which are not made locally, to be imported duty and tax free for all sectors of the industry - both export and domestic market oriented.

(c) Examine the possibilities of bringing in non-machined "raw parts" for machining and finishing by Philippine engineers, starting with high use parts for lockstitch and overlock machines.

1/ Garment Industry Sectorial Report, BOI, draft, September 1987.

IV. Focal points for future technical assistance: Prospective approaches and projects to strengthen supporting industries

This chapter deals with prospective areas for future technical assistance and joint venture activities with the purpose of strengthening supporting industries. It also briefly describes projects identified by the UNIDO/ECFA team as warranting further examinations. Most of the project proposals are elaborated further in the Annex. The Annex contains two categories of projects: Group A: Projects developed by the UNIDO/ECFA Mission; and Group B: Project descriptions provided to the Mission by the respective proponents.

A. BASIC METALS AND ENGINEERING INDUSTRIES

(a) Regional metalworking industries complexes (regional engineering centres)

In the context of the Government's regional industrial dispersal programme the Department of Trade and Industry is actively promoting the establishment of regional metalworking industries complexes or regional engineering centres in Mindanao, Ilegan, Cagayan and Cebu among others.

The regional engineering complexes or centres will be set up on developed land plots with necessary infrastructure and industries in the subsector will be invited to locate (relocate) their factories into this area. The centres will include common facilities for privately organized 'supporting' industries covering foundry, forging and electro plating etc. Infrastructure to be built in such a complex would include:

- road, electricity, water supply, sewage;
- banking and communication services;
- aminities;
- common purchasing, quality control and marketing facilities.

To extent it is suitable existing industrial estates will be used for the development of the regional engineering complexes. The formation of co-operatives for common purchase of steel material is considered as nucleus of such development. The management of the complexes will be bestowed to a private party.

The aim is to provide industries with cheaper land space, easier access to necessary services, and above all to promote linkages among industries in a complex.[1/]

1/ A more detailed description is provided in the appended projects "Common facilities for metalworking in selected regional centres" (Project No.B-1) and "Assistance to the establishment of an Engineering and Metalworking Industries Estate in Northern Mindanao" (Project No.B-2). and "Improvement of smithery technology in stainless steel cutlery and surgical instruments" (Project No.B-7) as regards proposed common service facility in Tabaco, Albay.

(b) Promotion of linkages among engineering and metalworking industries

Apart from above indicated regional locations high priority is given to one or two complexes planned to be set up in the Manila area, e.g. in Carmona and/or Cavite City (by the new EPZ).[1/] They will closely co-operate with the planned Steel Service Centre (SSC) in Metro Manila. The SSC will have the tasks of serving the Manila area's small and medium industries, users of steel products by

(i) performing timely and competitive retail sales of National Steel Corporation (NSC) flat and other steel products to the small and medium scale steel endusers, both for domestic and export use, to the nearest required dimension and quality specifications at the optimum cost;

(ii) performing a fiscalizing function on pricing and supply stabilization of steel raw materials within the industry; and

(iii) serving as the vehicle for the growth of the small and medium scale steel industries by extending developmental assistance and formulating new applications and uses for steel products.

(c) Strengthening the Metal Industries Research and Development Centre (MIRDC)

The MIRDC is a government research institution designed to provide industries with R&D and other supporting services. The proposal is to assist this Centre for upgrading its capacity in following areas:

- Heat treatment (supplementing existing facilities by adding modern heat treatment furnances)
- Forging (to enable production of special parts and components as a developmental programme)
- Electro plating (to be established as central service facility) (Project No.B-4)
- Casting (upgrading of existing facilities) (Project No.B-6)
- Smithery technology for stainless steel products (Project No.B-7)
- Design and making of tools, dies, moulds (Project No.B-3)
- CAD/CAM applications (demonstration facility) (Project No.B-5)

1/ A more detailed description is provided in the appended project concept "Assistance to the establishment of a Regional Engineering Complex in the Manila area" (Project No.A-1).

(d) Strengthening of the Agricultural Machinery Testing and Evaluation Centre (AMTEC)

There is a felt need of industries manufacturing agricultural machinery for upgraded testing and design services. Some testing services are available from existing institutions such as the government run Agricultural Machinery Testing and Evaluation Centre (AMTEC) but their services are limited to performance tests and do not cover engineering tests for vibration, durability etc., which the industries need badly.

The design service in this context is, in particular, to obtain design modifications easily, by the use of CAD/CAM. For example, such modifications are needed when the industry wants to change thickness of steel plate used in an agricultural machinery item based on an original design it may have developed by itself or obtained from institutions like the International Rice Research Institute. It is proposed that a CAD/CAM facility will be provided for common use of the industry.

It is proposed, therefore, that necessary technology and hardware will be provided to the AMTEC so that services mentioned above could be more readily provided to the concerned industries.

It is also suggested that specialized parts manufacture be aimed at by the industry. Such approach would require certain standardization for parts.

(e) Supporting industries for engineering exports

Exports of engineering services for civil construction and plant erection abroad is one of the most promising areas for foreign exchange earning for the Philippines. Supporting industries in this regard which include fabrication of certain plant equipment, should be promoted.[1/]

The operating companies in Philippines have acquired experience in operations which could be utilized in a number of companies in other developing countries. Services of personnel from Philippines in a cement plant in Yemen Arab Republic has been utilized by UNIDO. The equipment fabrication is also being done by a number of companies in Philippines for sophisticated and technologically complex industries, e.g. oil drilling, petroleum sector, etc. Such companies could supply equipment fabricated in their works in Philippines at prices which could be competitive in the world market because of lower cost of labour in Philippines. In order to reach a wider market with an overall competitive edge, however, such companies could derive benefit if they are able to supply the equipment and manpower through contracts which are supervised and executed by renowned Japanese companies. For the above-mentioned cement plant in Yemen Arab Republic, as an example, the required equipment was supplied by the Japanese equipment suppliers. However, in similar plants being built in Yemen Arab Republic or other places in future, such equipment could be made by equipment fabricators in Philippines at prices lower than those of the Japanese fabricators and of the quality acceptable to Japanese suppliers, if the fabrication was to be

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1/ See further appended project concept 'Promotion of supporting industries for engineering exports' (Project No.A-5).

undertaken under supervision of the Japanese suppliers. The supply of engineering exports from the Philippines coupled with supply of manpower could no doubt provide interesting commercial propositions for the Japanese companies in different industrial fields.

(f) Rehabilitat .f underutilized plants (PDCP)

The rehabilitation of certain plants e.g. a copper producing plant presently under the control of the Private Development Corporation of the Philippines (PDCP) is proposed to be pursued in the context of supporting industry development, on the pattern of the approach (diagnostic and programme development) used successfully within the UNIDO-assistance project SI/PHI/86/921 with the PDCP. The short-term assistance implemented with experts from the consulting group NKK of Japan aimed at assessing whether - and how - three specific underutilized plants under the PDCP control, namely, a ceramics plant, a hand tool plant and a plant producing cubed sugar cane tops, could be rehabiliated. Two of the projects are now in the process of being revived after a diagnostic appraisal has been accepted by joint venture partners in Japan.

The PDCP has similar other projects in different stages of undertulization and used for revitalization; a list of such projects is enclosed as Annex 2. Some of these projects may be of potential interest to Japanese enterprises and taken up for development for rehabilitation scheme on the same pattern as that developed with the Japanese experts from NKK. The experience with PDCP under the UNIDO project has demonstrated that if the rehabilitation scheme is properly designed it is normally possible to interest potential joint venture partners to take up equity as well as management responsibilities to rehabilitate these plants.

(g) Relocation of Japanese engineering to the Philippines

A number of factors including high cost of labour and recent Yen revaluations have made some industries in Japan weak in international competition. Many Japanese entrepreneurs are now considering possibilities of locating some of their production facilities, in whole or in part, in countries nearby, such as the Philippines or other ASEAN countries, where they could make parts or produce finished products of quality and standards corresponding to the Japanese requirements and market such parts or products to the locations normaliy supplied from production in Japan. These industries cover various sectors, e.g. engineering and textiles.[1/] In the engineering sector may mainly metal working, consumer durables and automotive parts be included. These industries, established and run under supervision of Japanese sponsors, could supply spare parts and materials for main equipment supplied from Japanese producers. A project concept 'Assistance to prcmote relocation of Japanese industries in the Philippines' is given in the Annex as Project No.A-2.

1/ For the textiles sector see page 39, item (f).

(h) Service industries for the automotive industry. Upgrading and renovating existing industries

There exist at present in the country production facilities for automobile components once established but not in operation at present due to the economic setback in recent years. Such facilities include those for machine grade casting, making of cam shafts and vehicle axles, fabricating electric motors. These facilities should be renovated and utilized in full.[1/] The modified Vehicle Manufacturing Plan is going to highlight this aspect. Of great interest, in particular for Japanese and US companies might be the potentials of export-oriented replacement parts production in the Philippines.[2/]

Secondary and tertially subcontractors for automobile industries need upgradation. These are those which provide machining and other services to the automobile component manufacturers. Their technology and management call for upgrading so that they can supply their services with satisfactory quality, price and delivery schedule.

Opportunities for new investments might also be of interest in connexion with the production of rubber parts and components.

B. ELECTRONICS INDUSTRIES

In addition to above-mentioned upgrading of capabilities for mould making (dies) for plastic components, the electronics industry expressed interest in or indicated particular potentials of the country for production of parts with limited demand (short runs) which now were getting very expensive to produce in Japan. Another area would be the production of 'modules' of small ceramic circuit boards and production of automotive low voltage regulators.

Plans are also under way for a common facility supported by the Semiconductor Electronics Industry Foundation. Such common facility might produce dies for plastic moulding and certain standard components, such as finger cuts, lead frames, shipping tubes, for which electro-plating is required. Consideration should be given to the use of computer-aided design and drafting (CADD) for the mould making.

Representatives of the electronics industries were also of the opinion that the country's training capability should be strengthened, especially in the following areas:

- tool and die making, and
- quality control (specially that based on statistical methods).

1/ There is, above all, a deficiency of good design capability. Also, capacities regarding pressed items and moulded items are very limited. Often, say, 200,000 parts may be needed and the capacity is only 20,000 within the given time frame.

2/ See further appended project concept 'Development of industries in the automotive sector' (Project No.A-3).

Opportunities for new investment in engineering (service) industries for the electronics industry were identified as follows, as being prospective areas for Japanese investment:

- die making,
- electro plating,
- metal stamping and forging,
- tool making, and
- reshaping of twisters, etc.

There are also plans to establish a computer industry in the Philippines for the US market. This industry holds a great potential for development, both in terms of hardware and software in Philippines. UNIDO has, separately, been pursuing development of this sector with industries from the United States and technical support from Japan. Such a programme aims at utilizing basic software and Japanese production technology to ensure conformity to quality requirements of the Japanese and American markets. Any supporting industry for such projects would be justified to be promoted. This would include both software and component making industries. The industry in Japan is becoming more automatized and, therefore, orders for short-run equipment could be more appropriately supplied by firms in the Philippines, which could be set up as multi-product firms. A draft proposal being pursued by UNIDO in this sector is given in the Annex as Project No.A-4.

C. PLASTICS AND RUBBER COMPONENTS AND PACKAGING MATERIALS

(a) Plastics processing industry: Selected user-industry studies

The growth of the plastic processing industry as supporting industry depends to a large extent on the plans and performance of domestic user-industries. In this vein studies are suggested[1/] to be conducted on the prospective use of plastic products in following industries, among others:

- Pharmaceutical industry - use of plastic bottles and closures
- Cement industry - use of polybag-lined PP sacks
- Flour industry - use of polybag-lined PP sacks

The studies which might be sponsored by BOI and the Philippine Plastics Industry Association, would provide guidance for expansion of existing plastics processing plants as well as new investments.

(b) Plastics Research and Development Centre

Consideration should be given to an activation of the proposal of 1982 [based on a UNIDO recommendation[2/]] for the establishment of a Plastics

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1/ Ref. BOI 1987-90 Sectoral Plan for Plastics Processing (draft).

2/ Proposal prepared by the UNIDO plastics expert (in the UNIDO project PHI/77/004 "Quality Control and Productivity Improvement Programme"), Dr. K. Andrews. The estimated required project funding was $600,000.

Research and Development Centre in a form and within a scope commensurate with the priority demands of the industry of today within the framework of the Government strategies for support of small industry and rural development and exports. The services to be performed would include:

- information (sources)
- testing and quality control
- chemical and instrumental analysis
- processing
- formulations.

The proposed Centre was at the time perceived (in discussions, i.a. with NEDA) as a joint government/private sector industry undertaking. Initial emphasis was to be given to the provision of technology and training rather than research. It is recommended to the matter now be taken up for further discussions with the Philippine Plastics Industry Association (PPIA).

Investigations (under the BOI-sponsored programme of industry subsector strategic plans) indicate the need for upgrading of the level of technology of the plastics subsector. Such upgrading would entail the establishment of quality standards in the industry through the setting-up of laboratory and testing facilities. The creation of a Philippine Plastics Reserach and Development Centre is part of this envisaged development.

(c) Opportunities for new investment in the plastics sector

In general in the plastics industry subsector, as corollary to the objective of employment increase, main aims are increased capacity utilization and the attraction of new investments in more modern plastics processing machinery and in downstream industries which utilize the outputs of the plastic processing subsector.

A specific area providing interesting opportunities for new investments is that of plastic parts to support the electronics industry. The electronics industry consumes 4 million plastic parts a year which are met by imports and the demand is increasing.

(d) Establishment of a feldspar beneficiation plant in Northwestern Luzon

With the objective of increased utilization of the feldspar resources in Northwestern Luzon and further local processing in the area, consideration has been given to the potential establishment of a feldspar beneficiation plant aimed at providing good quality raw material with guaranteed specification for use of existing Philippine glass and ceramics industries and stimulating expansion and new investments. A proposal for assistance in the establishment of such beneficiation plant is given in the Annex (Project No.B-8).

(e) Testing and R&D support for packaging

It is recommended that a centre be set up for packaging materials testing and research. The mission was given to understand that the packaging

centre or institute envisaged may have functions similar to those of the Packaging Centre of Japan. A project concept was now being considered by members of the Packaging Institute of the Philippines (PIP). (PIP is an association of packaging makers and users and functions mainly as a forum for contacts.) The centre should deal with hardboard, wood, glass, tinplate, plastics, etc. [As for plastics close co-ordination should be maintained with the above-mentioned Plastics Research and Development Centre, if established].

In this connexion note should be taken of the UNIDO assistance proposal currently under consideration by the Government for support to the Fibre Development Authority (FiDA) entitled "Establishing of a fibre processing and utilization laboratory" (PHI/87/003). The objectives of the proposed assistance are to develop, improve and/or adapt fibre processing technologies and to establish a fully operational R&D laboratory for fibre processing technologies, including a mechanical workshop within the FiDA. The perceived assistance to FiDA would not cover areas of fibre utilization in the textile field [ref. proposed UNIDO assistance to the PTRI, Project No.B-13 in the Annex]. Through the project, technologies would be developed and/or adapted in fibre extraction and processing of fibre-based products in areas such as non-wovens, fibre boards (panel boards and acoustic and insulation boards), and specifically paper. Techology for non-wovens, for instance, would address its potential use (i) as leather substitute, (ii) for wall decor purposes and (iii) as disposables. Technology would also be developed for utilization of fibre wastes as organic fertilizer, fuel and low grade pulp.

Complementary additional international support might be provided to the planned food products testing centre at Cebu (central testing laboratory for food products from small and medium industries) in order to prominently include packaging testing. It might be mentioned also that a project proposal for assistance in establishing a number of other testing centres for processed food exports is under consideration.[1/] Note may also be taken of an interesting joint venture opportunity, suggested to the mission, in the food processing field, namely the manufacture of food products based on seaweeds, utilizing Japanese technology and aimed at Japanese and other overseas markets.

(f) Post-harvest storage facilities and shipping containers

The entire area of post-harvest handling of agricultural products, from rice and corn to fruits and vegetables is said to be one of the weakest parts of the country's agricultural system. An in-depth survey, crop-by-crop, should be made to identify shortcomings, based on which plans can be made to provide the required industrial inputs, be it controlled temperature or bulk storage facilities, shipping containers and crates for fruits and vegetables, or bulk handling facilities. Many of such support industries would be amenable for local production (e.g. storage buildings, crates).

Experience available on packaging, storage and transportation over long distances of agricultural products, fruits and vegetables could be of particular interest in examination of the requirements in the Philippines. The use of collapsible post-harvest storage silos which have the advantage

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1/ See proposal [for UNIDO assistance] 'Testing centres for processed food exports' prepared by BOI, Project No.B-12 in the Annex.

that they can be erected quickly at the site where such facilities are required and subsequently easily be dismantled to be erected at another location in order to meet emergent storage requirements of agricultural produce. Similarly, there are advantages of transportation of parishable fruits and vegetables through collapsible crates over long distances, which permit return of crates after transportation in the collapsible form, thus occupying much lower volume and hence lower transportation cost.

(g) Wood processing industry

Some 4,000 wood working workshops/plants exist in the Philippines. They are mostly small-scale enterprises located in all parts of the country. The sector has a large development potential. It doubtlessly calls for modernization with regard to equipment and working methods and expert advice may be required in many forms.

One important route for the sector's further development would be specialization combined with product standardization and overall restructuring measures to be introduced and voluntarily implemented by the small and medium enterprises themselves. Instead of manufacturing the complete piece of furniture from the beginning to the end in one small workshop, several workshops would participate in the manufacturing process, each specialized in the production of specific parts of the furniture item and one specialized in assembling. Standardization would be a pre-condition for specialization, as no standards exist with regard to sizes of common furniture items (drawers, height of chairs, etc.) and each piece of furniture of the same type may more or less vary depending on the manufacturer and the manufacturing methods used.

Both standardization and specialization are essential for such an overall restructuring process to take place. In order to bring about the required restructuring, considerable work will have to be carried out by the authorities as well as relevant associations to inform and to convice the small entrepreneurs on the benefits to be obtained therefrom. In particular, international market contacts should be developed. A wast market exists, for instance, for 'classic' (Spanish-inspired) furniture, the knock down components of which may still be relatively labour intensive.

Another most important aspect for an upgrading of the secondary wood processing and furniture industry would be the provision of good kiln drying. A project proposal, prepared by the Bureau of Small and Medium Business Development (BSMBD) for the establishment of a kiln drying facility in Zamboanga City in Western Mindanao is provided as Project No.B-9, in the Annex. A similar proposal has been prepared by Misamis Occidental Furniture Association for the setting up of a kiln dryer in Cimenex, Misamis Occidental. The project is envisaged to serve as a common service facility and as a raw materials procurement arm of the Association.

(h) Product development and design

Special attention should be given to the application and/or development of technologies geared to producing high quality exportable goods using as far as possible locally available raw materials. Inadequacies observed at the production level in connexion with the pursuance of the Product Specialist

Programme of CITEM (Centre for Industrial and Trade Exposition Missions of DTI), confirm this need. These aspects might be addressed in co-operation with the country's specialized R&D institutes in fields such as textiles, leather, wood working, metalworking etc.

The Design Centre Philippines (DCP) under the DTI also has an important role to play, in particular in stimulating product development for exports, in co-operation with the enterprises concerned and/or the concerned specialized R&D institution. A strengthening of the DCP-activities, possibly with special attention to the requirements of the Japanese market, might be considered for pursuance under the UNIDO/Japan programme. The DCP has focused its efforts in improving the quality and competitiveness of Philippine manufactured products through innovative programmes and measures. Product ideas in bamboo, rattan, wood, buri fibres, shells, stones and other materials are developed in collaboration with manufacturers. [See also suggestions put forward elsewhere in the report concerning packaging research (page 34) and textile/garment design capabilities (page 38)].

D. TEXTILE AND GARMENTS SECTOR

(a) Strengthening the Philippine Textile Research Institute (PTRI)

There is an urgent need to develop a programme for the PTRI with the purpose of increasing its capability to service the growing needs of the textile, textile-based and allied industries in the context of a changing international techno/economic environment and emerging trends and developments relating to textile materials utilization. The mission was given to understand that among the priority areas for upgrading or provision of additional capacity at the PTRI were:

- pilot equipment for spinning and weaving (including as the setting up to a worsted spinning facility);
- improved finishing capabilities (this notwithstanding, certain aspects of finishing may be applied better through initiatives already taken by chemical laboratories of private firms); and
- certain testing equipment.

A major aim would be to contribute to the upgrading of various kinds of textile fabrics to a quality level required by the garment exporters. (Now local industry supplies about 12 per cent of the garment exporters' requirements.)

The PTRI's R&D functions are vital for the attainment of the Government's objective of fullest utilization of indigenous raw materials for development of new products and processes for the export markets in particular, but also for the domestic market. Special attention is given to fibre raw materials that are abundantly available such as ramie, banana leaves, pineapple and maguey fibre, abaca, kenaf and buntan (from buripalm) fibre.

A conceptual project proposal for assistance to PTRI is included in the Annex: Project No.B-13 "Development of a programme for the enhancement of the PTRI capabilities to serve the textile industry".

(b) Establishment of a Ramie Research Centre at PTRI

In particular in the case of ramie further R&D would be called for. For instance, an introduction of the spinning technology developed in Japan, on high count yarn would be very important for the Philippine industry. Also R&D in the area of blendings of ramie with other fibres would be important.

It is proposed that the ramie R&D be concentrated in a special Ramie Research Centre within PTRI with the tasks of

- co-ordinating research activities undertaken by Government agencies and the private sector on ramie fibre production and processing;
- serving as central agency for the testing and evaluation of raw and degummed ramie fibre and products thereof;
- contributing to maximize the utilization of ramie fibres through the development of ramie products with the incorporation of other fibres, like silk, rayon and others; and
- undertaking R&D work on the improvement of quality fabric through the application of improved processing and finishing techniques.

An assistance project concept entitled "Establishment of a Ramie Research Centre" is included as Project No.B-14 in the Annex.

(c) Establishment of common purchasing facilities for small garment producers in the provinces

The Bureau of Small and Medium Business Development (BSMBD) of the Regional Operations Group, Ministry of Trade and Industry is actively encouraging the establishment of common purchasing facilities by local garment producers associations in various parts of the country where garments manufacturing is an important industry with potentials for developing a wider domestic market base as well as venturing into export markets. Such co-operation among garment producers might also facilitate arrangements for export-oriented specialized production and/or subcontracting activities.

A project concept, put forward by BSMBD, is given in the Annex as Project No.B-15, "Assistance in the establishment of a common purchasing facility for the Cagayan de Oro Garment Producers Association".

(d) Strengthening the design capabilities of the textile and garment industry

The medium-scale export oriented garment industry is faced with the need to strengthen its design and product development capabilities, having to a large extent been built up relying on overseas (mainly US) designs and product

specifications. In particular for the penetration of the Japanese market, it is important that the products, including their designs, be developed by the producer/exporter. It is proposed that programmes be set up for sending designers for training and market trends observation to Japan for the common benefit of the Philippine garments export industry.

(e) Opportunities for new investment in supporting industries for the textile and garment sectors[1/]

The textile industry needs finishing chemicals such as softener, sizing material, etc., which can not be supplied from domestic sources. New investments in these areas may be interesting opportunities.

The garment industry is very much dependent on inputs for its requisite not only of yarn and fabrics but also of accessories such as buttons, fasteners, belts, buckles, etc. New investments in these later lines should be considered.

Services industries for dyeing, printing and finishing of textiles are also areas calling for specialized high standard establishments. Specifically for ramie fabrics, expansions and/or new investments in degumming and spinning capabilities (for very fine fabrics) would seem to be called for.

(f) Relocation of Japanese industries

For the similar reasons as described above for the Japanese engineering industries, Japanese textile industries may wish to establish in the Philippines. The advantage of cheap labour in Philippines can be a major factor in favour of relocation of textile industry from Japan to Philippines.[2/] The availability of suitable quality of locally available textile raw materials and a significant garment manufacturing sector which has performed well in exports, are other considerations favouring such relocation of textile industry.

1/ See further appended project concept 'Assistance for developing the support industries capabilities to provide the garment industry with necessary requisites (Project No.A-6).

2/ In discussion the mission had, the example was given of a well-known overseas garment group who was making standard long-run items in Hong Kong and certain fashion-relatd items (in short series) in the Philippines.

V. Framework for implementation programme and institutional requirements

A. PROGRAMME BASIS

The mission has attempted to identify needs and requirements for a further development of the Philippine supporting industry structure in order to meet the challange of an envisaged future development in key areas of the country's manufacturing. These needs and requirements have been seen in relation to a strengthening of existing industrial facilities directly or by means of institutional support - in technology adaptation, R&D, training and skills development, etc. - as well as in the form of proposed new investments and joint venture opportunities, often envisaged with specific technology inputs from the foreign partner(s).

Some of the suggested projects concerning various investment opportunties have already been developed in more detail (through market surveys and/or feasibility studies) while others are in an early concept stage only. They are presented in this report as opportunities for possible further attention, for instance, in the planned Philippine/UNIDO investment promotion meeting late in 1988 or within the framework of Philippine-Japanese or other bilateral investment promotion activities.

In some cases, in particular concerning proposed assistance to institutions working with the country's small- and medium-scale industry, projects are relatively well developed. Some are even being under active consideration for possible funding under various TA-programmes. The mission felt that even these later projects should be taken note of and special attention given to their importance for the furtherance of the country's support industries. In other cases, only preliminary ideas could be presented requiring substantial preparatory work before implementation may be considered.

B. CRITERIA FOR SELECTION

The programme to be designed on the basis of the present report and to be carried out by UNIDO jointly with Japan within a Trust Fund arrangement will have to operate within fairly narrow financial constraints. Accordingly, specific care will need to be exercised in selecting the projects to be implemented. It is suggested that the selection process be based primarily on the three following criteria:

- Programme focus: Individual projects should be selected as elements of a coherent action programme which clearly defines the relationship and interlinkages between the projects. Without a focussed implementation there is a danger of misspending the limited resources on dispersed activities. The overall objective 'strengthening of supporting industries', though important, appears too broad to provide the required focus.

- Impact maximization: If a programme as limited as the one under consideration here is to have an impact industrial progress of the Philippines at all, it will need to concentrate on projects with maximum spread effects. Accordingly, priority is to be given to such

projects (be they of an investment or technical assistance nature) which can be expected to affect a large number of downstream activities and user industries.

- Short gestation period: As the programme to large extent is aimed at the removal of constraints currently facing the country's engineering and other key supporting industry sectors, preference will be given to projects with a short gestation period, particularly those permitting immediate implementation.

- Direct assistance to industry: The programme will favour projects that involve direct assistance to the country's industries. Possibilities to combine direct assistance measures with institution-building projects should be explored and co-operation with other donor agencies (bilateral and multilateral) be sought for this purpose.

The above general selection criteria - while providing a basic framework from which to derive priorities - certainly leave a number of different options to be pursued. Without wanting to prejudice the decisions to be taken, the present report holds that preference may be considered to be given to projects addressing key problems or opportunities of the small- and medium-scale engineering industries and other key supporting industry sectors to broaden the spectrum of supporting production and services of required quality in the country - be it in the metropolitan area or in provincial locations.

Another most important aspect is the effective pursuance of new investment opportunities. Here, the UNIDO/Japan programme may provide certain resources for promotional and investigatory activities, leaving costs directly linked with the investment to be covered under other arrangements.

New investments may in some cases be resulting from relocation of manufacturing plants from Japan, e.g. in the textiles field. Such relocation might be facilitated by the association of Philippine engineering and construction companies in the setting up of the relocated plants.

As for proposed activities aimed to strengthen institutions in their provision of services and guidance to the support industries, it would be important to ensure that the requisite basic institutional infrastructural set up is already in place, as is the case with, for instance, MIRDC and PTRI, so that immediate results may be achieved. In this connexion importance will also be attached to industry initiatives (such as the Semiconductor Electronics Industry Foundation Inc.) or branch associations or co-operative entities in various provincial locations.

C. INSTITUTIONAL ARRANGEMENTS

In view of the distinct orientation of any suggested programme towards medium-sized private industries as the relevant target group, the Mission has specifically sought to explore which type of institutional arrangement would be conducive to its efficient implementation. On this issue, there was a broad consensus that the nature of the envisaged projects would warrant the

creation of a specific counterpart institution which, above all, should be closely linked to private industry both in its outlook and in its personnel composition.

The new institution would essentially serve as the proper counterpart and "clearing house" extending support to projects under the forthcoming UNIDO/Japan Trust Fund arrangement. Its main functions would be:

- to provide local support services to identified investment projects, particularly those involving foreign investment;

- to provide information required for identification, formulation and execution of advisory services and other technical assistance both for new investment projects and within rehabilitation programmes for existing industries; and

- to undertake liaison services with government and non-government agencies as required.

The new institutional set up would on the one hand be closely linked with the support activities of the Department of Trade and Industry, in particular those of the Bureau of Small and Medium Business Development (BSMBD), as well as with specialized R&D institutions such as MIRDC and PTRI, and on the other hand work closely with private sector branch associations and other relevant NGOs.

The mission would like to put forward for consideration that the services of a counterpart institution may be provided - at least as far as technical support programmes and technical co-operation projects are concerned - by the Philippine Productivity Movement Inc. which is an organization incorporated with trustees from industry and senior officials of the Government. Its chairman, the Undersecretary for Industry Mr. C.L. Follosco, expressed most positive interest. The mission felt that the Productivity Movement would be well placed for serving as local counterpart for the forthcoming UNIDO/Japan programme. (A note on the Philippine Productivity Movement Inc. is appended as Annex 3.)

The mission found in the private sector group TRAFFIC, an institution with interesting potential for co-operation with the UNIDO/Japan programme The group is headed by Mr. Antonio A. Lopa, and has wide representation from private industry.

The Private Development Corporation of the Philippines (PDCP) expressed interest as counterpart agent in the services under the UNIDO/Japan Trust Fund for diagnostic appraisal of a number of its enterprises/projects, inter alia, in the engineering sector, in textiles and in ceramics for rehabilitation purposes (see pages 30-31).

Annex 1

Technical co-operation project concepts and background information

Projects No.A-1 to A-6 are projects developed by the UNIDO/ECFA Mission. Projects No.B-1 to B-15 are project descriptions provided to the Mission by the respective proponents.

Project No.A-1

Project title: Assistance to the establishment of a Regional Engineering Complex in the Manila area.

Co-operating agency: Metals Industry Research and Development Centre (MIRDC)

Objectives: The basic objective is to contribute to improved productivity, efficiency and competitiveness of small and medium scale engineering and metalworking industries in the Manila area.

Project description: The project is to plan and facilitate the establishment of a Regional Engineering Complex in the greater Manila area, which will have following features:

1. Processing facilities

   - casting, forging, machining, heating treatment, pressing.

2. Assembly facilities

   - assembling of final products such as agricultural implements, industrial machinery, components thereof etc.

3. Services facilities

   - common purchasing, marketing, quality control, material handling, stretch;

   - drafting, duplicating, accounting, auditing;

   - machine designing and computing.

4. Infrastructure facilities

   - road, electricity, water supply, sewage, waste disposal;

   - banking and communication services;

   - amenities such as canteen, clinic etc.

The complex will be set up on developed land plots with necessary infrastructure in a selected location in the greater Manila area, e.g. Carmona, Cavite. Industries

in the engineering and metal working will be invited to locate (relocate) their production facilities in this complex.

A corporation with equity participation from both the private and government sectors will own and run the complex. Facilities described above will be established either as individual enterprises or as a common service centre. Individual enterprises will lease or buy land and building from the corporation on long-term basis. The corporation will be responsible for running the common services centre, which is expected to operate at least on cost covering basis.

The project activities will include the examination of following aspects:

- suitability of alternative proposed locations;
- interest of existing industries to relocate;
- economic potential of establishing processing and service facilities not covered by relocating industries; and
- technol/economic viability of the complex.

Background: Small and medium scale engineering industries are scattered in many different locations in and around Manila. Linkages which could possibly develop among these and with large industries have hitherto been restricted much due to the wide locational spread, resulting in heavy traffic and other difficulties. These scattered small and medium scale industries are faced with problems related to insufficient infrastructure, material purchasing, marketing and other related services. Support to attend to such problems could more easily be provided if they are located together in one area.

International assistance inputs: Consultants to develop a basic plan and financial arrangements for establishing the complex (4 to 6 m/m).

Project No.A-2

Project title: Assistance to promote relocation of Japanese industries in the Philippines.

Co-operating agency: Board of Investments

Objectives: The basic objective is to enlarge and strengthen the country's industrial base and promote manufactured exports by the promotion of Japanese industries to relocate in the Philippines.

Immediate objectives are

1. to explore the possibilities of plant relocation of selected industrial sectors from industrialized countries; mainly from Japan, and

2. to ascertain technical and financial viability of relocation projects.

Project description: The project is to pave the way for Japanese industries to relocate production facilities to the Philippines by

- identifying (within the framework of the UNIDO/ECFA study) subsectors suitable for relocation and enterprises interested in pursuing the relocation. The subsectors may include casting, forging, textiles and garments, as well as engineering services, such as graphic design and engineering design and research and development;

- conducting opportunity studies for selected subsectors;

- recommending guidelines for financial, managerial, adminstrative and other arrangements for prompt materialization;

- recommending investment and other incentives which the Philippine Government could provide to the industries.

The opportunity studies for the selected projects would include the following elements:

- Project background and history
- Market and plant capacity
- Materials and inputs
- Location and site

- Project engineering
- Plant organization and overhead costs
- Manpower
- Project implementation
- Financial evaluation

Background: A number of factors, including high cost of labour and recent Yen revaluations, have weakened the international competitiveness of some industries in Japan. Many Japanese entrepreneurs are now considering possibilities of locating some of their production facilities, in whole or in part, in countries nearby, such as the Philippines or other ASEAN countries, where they could make parts or produce finished products of quality and standards corresponding to the Japanese requirements and market such parts or products to the locations normally supplied from production in Japan. These industries cover various sectors, e.g. engineering and textiles.

International assistance inputs:

- Consultants for project development and promotion (industrial economist, industrial engineer, financial analyst) (4 m/m).

- Staff travel

Project No.A-3

Project title: Development of industries in the automotive sector.

Co-operating agency: Industries from USA, Japan and the Philippines

Objectives: The main objective of the project are

(i) to promote development of the automotive sector by strengthening existing facilities in terms of productivity and quality control; and

(ii) more specifically, to support production of spare parts for the after market of both American and Japanese vehicles

Project description: The project is designed to benefit the growth of Philippine industries in the automotive sector. The focus of activity is on the replacement parts manufacturing. The rationale behind this choice is the fact that in the United States there is a big surplus of OEM (original equipment makers) production capacity and, therefore, manufacture of complete vehicles from the Philippines for exports to that market is likely in the near future. On the other hand replacement parts manufacturing will not require the "just in time" delivery schedules needed in the OEM. The Philippines can more realistically cope with these conditions while in the learning process.

A number of companies from USA have indicated their interest in ordering replacement parts from the Philippines. The drawings, specifications and order quantities for each part are available and MIRDC has started preparation of quotations for submission to interested parties. These parts may even include items such as

- yoke release;
- cylinder block crank case;
- aluminium dye cast piston, etc.

The purpose of the preparation of these quotations is to establish that a national supply agreement is possible. The factors to be considered from the point of view of the prospective joint venture partner from US are

- price advantage;
- price stability;

- predictably reliable delivery services; and
- consistently acceptable quality.

Under the project, as initial phase, a joint Japanese/US/UNIDO mission will be organized to visit the Philippines with the aim to develop production programmes, discuss the creation of joint venture production units and work out programmes for implementation. This could be followed up by discussions in Japan and the US between prospective partners.

A number of companies from US have expressed interest to pursue this approach. On the basis of preliminary contacts, Japanese companies could also be interested. Two representatives from American companies have been identified for further project developmental work and two to three representatives are expected to join from the Japanese industry and ECFA. The delegation of the above representatives alongwith a representative from UNIDO could visit the Philippines for about two weeks to tie up arrangements required for establishment of joint venture production facilities. Arrangements relating to marketing, manufacturing, financing, technical skills and raw materials would be finalized. Basic developmental work has already been completed by UNIDO experts from US and specialists from the Philippines.

International assistance inputs: The estimated expenditure for the next phase - financing of joint mission - is approximately US $35,000. It is assumed that industry representatives will bear their own expenses.

Project No.A-4

Project title: Development of industries in the electronics sector.

Co-operating agency: Industries from USA, Japan and the Philippines

Objectives: The main objectives of the project are:

(i) to promote development of industries in the electronics sector by strengthening existing arrangements of quality control, improved productivity and training of technicians;

(ii) to especially foster the development of three crucial subsectors, such as

(a) computer soft-ware;
(b) machine vision and knowledge engineering; and
(c) semi-conductor wafer fabrication; and

(iii) to co-ordinate software and production of hardware to enable export of such software/hardware package through marketing arrangements available from US and Japanese collaborating partners.

Background: In the area of computer software, activities are already going on to a limited extent in encoding and programming. Software programming is still on very limited scale, mainly due to the reluctance of buyers in the United States to entrust this activity to an off-shore and united source. There is also the problem of the absence of hardware (main frame) facilities that could be used for the programming. In order to solve the problem, a two-stage approach is proposed: the first stage aims at the maintance of existing software programmes. Software houses in the United States spend a large number of man-hours and hardware time to maintain existing programmes. The profit realised from this activity is not comparable to the profit from working on new programmes. In view of the limited manpower resources of the United States software houses, it is attractive for the US companies to subcontract such less profitable maintenance activities to somebody else.

There is thus an ideal opportunity for the Philippines software houses to acquire the hardware (main frame) on a consignment basis from the US software houses. As the main frame will not be occupied on a full time basis to take care of the maintenance activities, free time could be utilized to generate new software programmes and to develop confidence in the ability of Philippines software houses to comply with US requirements in quality, predictable delivery and price.

In the area of machine vision and knowledge engineering there is a huge demand for classification of all kinds of information according to the content. The equipment needed for this activity is the IBM Personal Computer. Especially, there is a big demand for properly catalogued information according to the content in the field of knowledge engineering.

In the area of semi-conductor wafer fabrication the need to establish a world class capability is essential to establish a stable electronics industry. The industry experts advise that the electronics industry could really grow with an established capability for wafer fabrication. This industry will stimulate the tool and die industry as well as chemical process and other industries that are needed to support the wafer activities. There is a possibility of establishing wafer fabrication capability for the Philippines despite the fact that wafer fabrication exists in the Republic of Korea, Taiwan Province of China and Singapore. The production capacity could be approximately US $60 million per annum which is more than adequate to supply all local needs with some excess for exports. It is possible to entrust an experienced international group which could be willing to relocate an existing fabrication facility to the Philippines, through provision and/or training of factory workers and technical staff, and start up production. Such a project could be completed in two and a half to three years' time.

Project description: Basic project developmental work for the project has already been completed through special assignments of senior UNIDO experts from USA and specialists from the Philippines. The project will now cover the organization of a joint mission of representatives from interested industries in the USA and Japan, along with UNIDO, to visit the Philippines. The aim is to develop production programmes discuss the creation of joint venture production units and work out programmes for implementation.

The industrial representatives from US have already been identified; the representatives from Japan could be identified in consultation with the specialists from USA

and the advice of ECFA. The programme has to be pursued quickly and preferably agreed upon before end-August 1988 in order to take advantage of prevailing favourable conditions and the momentum that the project has gained

International assistance inputs: International expertise at senior level from industry comprising four representatives from US industry, 2 to 3 representatives from Japanese industry and ECFA and one representative from UNIDO. The mission to Philippines would be for a period of two weeks and MIRDC in Philippines will assume the leading role in making all necessary arrangements to enable the accomplishment of the objectives. The mission would also consider the aspects of

- marketing
- manufacturing
- financing
- technical skills and
- raw materials.

The expenditures the proposed mission, based on the assumption that all the representatives of industries would bear their own expenses on travel and subsistance, is estimated at approximately US $30,000.

Project No.A-5

Project title: Promotion of supporting industries for engineering exports

Co-operating agency:

Objectives: The objective is to contribute to improve capacities of the local engineering/manufacturing industries to supply equipment and services of internationally acceptable quality for the engineering projects involving overseas plant constructions.

Project description: The project is designed for the benefit of the Philippine participation in international engineering projects (whether in the Philippines or overseas) would be promoted in following supporting areas, possibly under subcontracting arrangements:

- Design and engineering work;
- Equipment fabrication;
- Construction and erection of the plant; and
- Start up and initial operation and maintenance of the plant.

Firstly, the project will cover technical/engineering training services from the Japanese companies which will be carried out either in the Philippines or Japan. A systematic training programme will give the Philippine companies more solid background of engineering and manufacturing which would gradually enhance their capacity.

Secondly, expert services would be provided with the aim to ensure that equipment can be made by the Philippine fabricators at comparatively much lower price but of the acceptable quality.

The Japanese companies would thus have another source of equipment and manpower which would give them a better commercial position in different industrial fields. It would also lead to the refinement of the Philippine human resources, which would give the Philippine companies an advantageous commercial position. These collaborations could be carried out so that close relations are established whcih will give both countries increased opportunities to jointly work in overseas plant construction projects in the future.

Background: Present day engineering industry in the developed countries like Japan is often looking for a possibility of setting up an international consortium to obtain a project. The international consortium would employ companies of the developing countries to achieve minimum cost, thus providing these companies with a opportunity to upgrade their capacities of design and engineering, manufacturing of equipment and construction.

International assistance inputs:

(i) In general, in order to promote Philippine participation in international engineering work a Japanese exploratory mission, as a first step, may be fielded to the Philippines to obtain detailed information on local capacities and advise on training and skills upgrading requirements (2 x 1 m/m consultants).

(ii) As for training services, it is fully recognized that the project is to cover wide ranges of engineering; process engineering, design and manufacturing of equipment like heat exchangers, vessels, towers, rotating machines, etc., electricity and instrumentation, piping, civil structures and so forth. International assistance inputs will differ depending upon the particular items.

(iii) As for equipment manufacturing, international short-term consultants (experts) on engineering/manufacturing of equipment will be required (2 x 1.5 m/m)

Project No.A-6

Project title: Assistance for developing the support industry capabilities to provide the garment industry with necessary requisites.

Co-operating agency: Board of Investments

Objectives: The basic objective is to contribute to improved productivity, efficiency and competitiveness of medium scale garment industries through efficient provision of inputs of high quality from local support industries. In particular, the project aims at strengthening the competitiveness of the industry in the Japanese market.

Immediate objectives are

- to ascertain technical and financial viability of the selected projects categorized as supporting industry to the garment industry such as production of buttons, and fasteners;
- to improve design capabilities; and
- to promote the selected projects for materialization.

Project description: The project will have the following components:

1. Identification of opportunities for new investments to establish industries which manufacture requisites of the garment industries, including service industries for textile finishing in areas calling for specialized high standard establishments.

   An opportunity study world contain the following elements:

   Project background and history
   Market and plant capacity
   Materials and inputs
   location and site
   Project engineering
   Plant organization and overhead costs
   Manpower
   Implementation scheduling
   Financial evaluation

2. Promotion of investment and/or transfer of technology from industrialized countries.

Preparation of specific investment promotion guidelines, including terms-of-reference for feasibility studies.

3. Training of Philippine designers in Japan.

Background: The garment industry in the Philippines is very much dependent on inputs for its requisites, not only of yarn and fabrics, but also of accessories such as buttons, fasteners, etc., and certain specialized textile finishing services. The lack of such inputd from local sources has brought forth substantial disadvantages to the industry vis-à-vis its main competitors, like Taiwan Province of China and Hong Kong, where such requisites could be obtained locally.

The main export market of the Philippine garment industry has traditionally been the USA, where buyers prefer Philippine industries to manufacture according to the designs provided by the buyers themselves. The Philippine industries now trying to penetrate in the Japanese market, have found that Japanese buyers want the Philippine suppliers to propose products designed in the Philippines. There is accordingly a pressing need to strengthen design and product development capabilities on the Philippine side.

International assistance inputs: Consultants for project development and promotion (one industrial economist/financial analyst and one engineer) (3 to 4 m/m)

Staff travel

Training scholarship for 3 to 5 designers in Japan for 3 months

Project No.B-1

Project title: Common facilities for metalworking in selected regional centres

Co-operating agency: Metals Industry Research and Development Centre (MIRDC)

Objectives: The basic objective is to contribute to improved productivity, efficiency and competitiveness of the country's metalworking industry in provincial areas (outside of Metro Manila) within the framework of the Government's regional industrial dispersal programme.

Project description: The project will assist and strengthen the selected regional metalworking industry centres

- by setting up new or upgrading existing facilities for heat treatment, plating, forging and tool and die work;
- by upgrading the skills of craftmen in such centres; and
- by assisting the metalworking co-operatives in the centres in obtaining raw materials at favourable prices by bulk buying and/or import substitution.

Background: Industrial development in the Philippines is characterized by a pattern of high concentration of activity in urban areas, in particular that of Metro Manila. To support the Government's regional industrial dispersal programme, assistance is to be extended by MIRDC to metalworking co-operatives in selected regional centres by helping them upgrade facilities for heat treatment, plating, forging and tool and die work.

Research is to be made (by MIRDC) as to alternative sources of raw materials and guidance is to be provided to co-operatives in their negotiations towards obtaining production inputs at lower prices by buying in large quantities.

Following regional metalworking industry centres are proposed for common service facilities:

Region	Province	Technological requirements
1st priority		
Central Luzon (III)	Balacan	Plating, stamping
	Pampanga	Stamping, forging
Southern Tagalog (IV)	Bataugas	Plating, stamping, forging
	Laguna	Forging, stamping, plating
Bicol (V)	Albay	Forging, stamping, plating
Western Visayas (VI)	Iloilo	Heat treatment, tool and die work
	Negors Occidental	Testing, heat treatment, machine design, tool and die work
Central Visayas (VII)	Cebu	Heat treatment, testing, machine rebuilding, tool and die work, plating
Northern Mindanao (X)	Misamis Oriental	Heat treatment, testing
Central Mindanao (XII)	Lanao del sur	Brassware casting, plating
2nd priority:		
Ilocos (I)	Pangasinan	Testing, heat treatment
Cagayan Valley (II)	Cagayan	Equipment design and fabrication, foundry
	—	equipment design and fabrication, foundry
Southern Mindanao (XI)	Davao del Norte	Testing, heat treatment

International assistance inputs: International and local consultants (to assist MIRDC staff to identify (i) requirements/ facilities for selected regional centres, (ii) sources of raw materials for bulk buying or import substitution and (iii) market linkages and export potentials)

Fellowships

Equipment

Project No.B-2

Project title: Assistance to the establishment of an Engineering and Metalworking Industries Estate in Northern Mindanao[1/]

Co-operating agency: Metals Industry Research and Development Centre (MIRDC)

Objectives: The basic objective is to contribute to improved productivity, efficiency and competitiveness of the engineering and metalworking industries in Northern Mindanao. The development and upgrading of these industries in Mindanao will constitute an important step in the implementation of the Government's policy of dispersal of industrial activities to various parts of the country.

Project description: Under the project assistance is to be given to the establishment at Mindanao of an Engineering and Metalworking Industries Estate with the following components:

(i) Basic Facilities Centre, which will comprise the following

- foundry
- forging
- machine shop, including mass production and precision machines
- heat treatment facilities
- presswork

(ii) Common facilities for

- power
- water
- sewage
- garbage disposal
- material handling facilities, like fork lifts, heavy trucks and others

(iii) Common services such as

- engineering services through specialists in various engineering disciplines where individual companies' needs do not warrant full-time engagement
- medical services.

1/ This project concept refers to Northern Mindanao but would be relevant also for similar metal working industries estates in other locations, e.g. Ilegan, Cagayan and Cebu.

A corporation, with both private and government equity, will own the Estate and will establish and operate the Basic Facilities Centre and all common services. It will also be responsible for the common facilities. The individual enterprises who will set up at the Estate, will lease (or buy) land and buildings from the corporation on long-term basis.

Background:

Very little metalworking or manufacturing is done in Mindanao. Even in the largest city Davao, which has some basic facilities, like foundry and machine shop facilities, operations are almost exclusively of jobbing type. Most of the machinery equipment and fabricated products come from Manila.

The market potential for engineering and metalworking products in Mindanao is big with high potential for expansion into the Visayas.

The establishment of an Engineering and Metal-working Industries Estate in Northern Mindanao, either at Iligan or at Cagayan, is considered, i.a. on basis of following:

- Mindanao has a high economic growth potential;
- Raw materials, like steel, are available in the area;
- Reliable power is available;
- Skilled labour is available (supported by the existence of technical schools in Iligan and Cagayan) and relatively cheaper (than in Manila);
- Some infrastructure support is already existing in Iligan where a number of industrial companies are established as well as in Cagayan where Philvedec has an industrial estate;
- Competitive advantages, especially for the Mindanao market, wherein freight costs from Manila are excessive.

Individual companies which may set up at the Engineering and Metalworking Industries Estate may include companies producing the following:
- implements for 4-wheel tractor (like plows and harrows)
- pumps
- threshers and driers
- power fillers
- reapers
- animal drawn equipment
- hand tools
- sprayers

- feed milling equipment
- trailers
- jeepney bodies and motorcycle sidecars
- dump bodies
- pressure vessels
- storage/overhead tanks
- industrial machinery and components thereof
- building components, like roof trusses, etc.
- industrial plant structures and components, like frames
- subcontracted components and parts.

International assistance inputs: The UNIDO/ECFA Mission suggests, as initial phase the provision of consultants to develop a basic plan and financial arrangements for establishing the complex (3 to 4 m/m).

Project No.B-3

Project title: Design and making of tools, dies and moulds for die-casting, plastics, etc., and shell moulding

Co-operating agency: Metals Industry Research and Development Centre (MIRDC)

Objectives: The basic objective is to contribute to improved productivity, efficiency and competitiveness of the country's metals and engineering industry by enhancing the potentials of local foundry shops, forging plants and machine shops to meet to demands of the industry for quality metal products. Other objectives are to reduce the importation of tools, dies and moulds (by some $8 million a year) and to contribute to providing employment for new engineering graduates and technicians (the surplus of which is recorded at 2,000 yearly).

Project description: The project will strengthen the capabilities of MIRDC in terms of manpower and physical facilities to enable the transfer of technology, i.e. modern methods of tool and die manufacture, particularly in the design of tools and dies intended for die casting, investment casting and shell moulding, through the carrying out of workshop/training programmes with personnel of small and medium firms, comprising foundry shops, forging plants and machine shops. Workshops training programmes will be held at MIRDC as well as in selected regional centres.[1/] The training of personnel will aim at the application in the plants of efficient production methods and product diversification.

The specific areas for training, where MIRDC on its part also requires upgrading, include

- tool and die design;
- material selection for die making;
- production methods/techniques;
- die design of intricate products; and
- quality control.

Background: The technology for tool and die manufacture is an important factor in the production of metal products. The quality of output depends largely of the tools and dies used in the manufacturing process. In metal casting, die design is a

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1/ See also MIRDC assistance proposal "Common facilities for metalworking in selected regional centres" (Project No.1)

crucial element and should be handled by highly trained personnel. The learning process for tool- and die-making requires many years' experience, especially for intricate products. At present there are insufficient craftsmen for tool- and die-making to meet the needs of the country's foundry shops, forging plants and machine shops.

International assistance inputs: Consultant to train MIRDC engineers and technicians (in particular, introducing modern methods of tool and die manufacture) (12 m/m)

Fellowships training for MIRDC engineering and technicians (5 persons)

Equipment approx. $1,500,000

Project No.B-4

Project title: Upgrading of plating and other metal-finishing technology

Co-operating agency: Metals Industry Research and Development Centre (MIRDC)

Objectives: The basic objective is to contribute to improved productivity, efficiency and competitiveness of certain segments of the country's small and medium scale metalworking industry thereby, among others, enhancing its potentials as supporting industry, for the making of accessories to consumer goods producers (such as footwear, leather goods, clothing exporters). Other objectives are to reduce the importation of metal accessories (by some $3 million a year) and to contribute to exports of fine jewellery (by some $10 million a year).

Project description: The project will strengthen MIRDC's electroplating capability in terms of manpower and physical facilities to enable an extension of direct technical assistance to small and medium firms in the improvement of electro-plating technology and the upgrading of skills to produce quality products. The specific areas for assistance to the small and medium scale producers where MIRDC lacks technology are:

- Decorative crome plating - chromium, nickel and copper plating
- Precious and semi-precious metal plating - gold and silver plating
- Fancy-jewellery plating
- Electroless nickel plating.

Background: Almost all the decorative metal requirements of the footwear and leather goods export industries are presently being met by imports due to the poor quality of the accessories made in the Philippines. These include metal accessories like buckles, hooks, clamps, fasteners, clasps, brass fittings, etc.

In some parts of the country, jewellery making has traditionally been an important source of income. However, the crude method of production, deficient equipment, and insufficient facilities have contributed

to low productivity and low quality output. Given the proper technical assistance on metal plating, this industry could compete in the overseas markets. The world market for jewellery and customs designed accessories is fast growing not the least in Japan.

These MIRDC services in the fields of electro-plating, precious metal plating and other finishing will be particularly important for the precious metal plating activities in Region III and XII. In the Province of Bulacan alone, there are about 400 producers who can benefit from MIRDC's services.

International assistance inputs:

Short-term consultant(s) on
- decorative crome plating)
- precious and semi-precision metal plating) 12 m/m
- electroless nickel plating)

Fellowships training for MIRDC personnel (3 fellowships)

Equipment[1/] ($120,000)

Total: approx. $300,000

1/ List of required equipment available with MIRDC.

Project No.B-5

Project title: Demonstration and Training Centre for CAD/CAM and Flexible Manufacturing Systems

Co-operating agency: Metals Industry Research and Development Centre (MIRDC)

Objectives: The basic objective is to contribute to improved productivity, efficiency and competitiveness of the country's metalworking industry through wide dissemination and effective guidance in application of CAD/CAM (computer aided design/computer aided manufacturing) and FMS (flexible manufacturing systems). Other objectives are to increase software production and exports (from present $2 million per year to over $20 million by 1990) and to contribute to a reduction of imports of automotive parts (by some $5-12 million per year) by encouraging the introduction of required local manufacturing capabilities (in particular the use of precision/versatile CNC-machines in the local manufacture of spare parts). It will also provide employment opportunities for surplus semi-skilled labour and new engineering graduates.

Project description: Assistance will be provided for the establishment of a Demonstration and Training Centre for CAD/CAM and Flexible Manufacturing Systems at the MIRDC. The Centre will be capable of conducting finite element analysis, solids modelling, interactive tool, mould and die design, engineering drawing and documentation generation, machine tool path programme generation, metal part design, process simulation and limited manufacturing. It shall have demonstration and training facilities and a collection of audio-visual material. The Centre will be equipped to achieve the objectives set by

(i) demonstrating to the metalworking industry the potentials of CAD/CAM;

(ii) disseminating the technology through training, including in-plant training programmes;

(iii) making available the resources of the Centre (facility sharing) to the private sector (in particular to automotive spare parts manufacturing); and

(iv) serving as intermediary between the foreign buyers of CAD/CAM software and the local firms interested in generating the software under subcontract arrangements.

Background: The metalworking industry is continually working towards greater productivity in order to be competitive in the global market place. Producing better-designed products at greater productivity levels and lower cost requires a systems approach that would streamline and optimize the flow of information required to see a product from design to completion greatly reduces costs and improves productivity. CAD/CAM is such a system. It ties up the design, planning and manufactuirng stages so that all design and engineering information is in a single source. The designs drawn up by an engineer is not only used for analysis but is also used by other engineers for material requirements planning, process planning, machine tool programming and product documentation. Duplication of data is eliminated, more sophisticated analyses are possible, the generation of engineering diagrams and data is automated and development time is reduced.

Computer aided design, computer aided manufacture and computer numerically controlled machine tools are practical realities within the present state of the art of metal product manufacture. The majority of CAD/CAM systems used in diverse industries today evolved from the integration of computers in the design of metal products and the operation of metalworking machinery and processes. As the price of computing continued to go down, more and more companies in industrialized nations are integrating computers with the design and manufacturing process. CAD/CAM promises substantial gains in productivity coupled with cost savings. It is revolutionizing the design, planning and production processes in much the same way word processors have changed the typing pool.

With the emerging role of CAD/CAM in the design office and factory of the future, the Metal Industry Research and Development Centre recognizes the reality that Filipinos must keep abreast of these developments. Some factors that underscore the urgency of this issue are:

(i) The cost of computing is going down. At this point in time the Philippines must be preparing for the inevitable widespread acceptance of CAD/CAM technology and flexible manufacturing system (FMS).

(ii) CAD/CAM systems and FMS for metal product manufacture are among the most mature systems available today. They constitute tools that may be put to use immeidately without fear of obsolescence in order to improve the metalworking sector's productivity and competitiveness.

(iii) The metalworking industry subsector has linkages with practically all the other industry subsectors. Metal products have their place in the

entire spectrum of goods produced. Clearly, improved productivity in the metalworking industry would benefit the entire economy.

International assistance inputs: International consultant (18 m/m)

Fellowships training for MIRDC engineers (2 x 12 m/m)

Equipment, NC machine tools, computer hardware and its assessories (approx. $300,000)

Software development costs (approx. $6,000).

Project No.B-6

Project title: Production of ductile cast iron in Philippine foundries

Co-operating agency: Metals Industry Research and Development Centre (MIRDC)

Objectives: The basic objective is to contribute to improved productivity, efficiency and competitiveness of the Philippine foundry industry. Other objectives are to increas the use of locally available raw materials for the foundry industry, to contribute to an increase of exports of castings (by some $3 million a year) as well as decrease of imports of castings (by some $2 million a year) and to provide employment to some 500 workers.

Project description: The project will strengthen MIRDC's capability to provide direct technical assistance to the country's foundry industry in improving the quality and competitiveness of tehir product. In particular, assistance will be provided in the development of a wider range of foundry products through production of ductile cast iron using the Vortex process. Within the project a survey will be made to identify and select foundries that will comply with the technical requirements for the production of ductile cast iron products, determine required equipment/facilities and related areas for training. An evaluation will be made of raw materials (for the production of ductile cast iron) from MIRDC and selected foundries. With the training component a study tour is included to foundries where the Vortex process is used. Through the project MIRDC's training programmes for foundrymen, from small and medium scale foundries, will be upgraded and expanded. The project will have a duration of 2 years according to following work plan:

Activities	Time phase - 24 months Year 1	Year 2
1. Select foundries where the production of ductile cast iron shall be transferred	2 months	
2. Evaluate raw materials from MIRDC and selected foundries	3 months	
3. Order/install requred equipment and facilities	3 months	
4. Fellowship/training of foundry personnel, study tour	6 months	
5. Disseminate acquired technology		15 months
6. Practical experience/ after care		6 months
7. Final report		2 months

Background: The foundry industry is fundamental to the development of the metalworking and manufacturing industries. Cast products play an essential part in meeting the requirements of equipment, machinery and spare parts manufacture. The products presently turned out by the Philippine foundries generally leave much to be desired in terms of quality and cost. The development of foundry goods through production of ductile iron castings would make available a new local material for the capital goods industries which would be replacing steel castings, forgings and welded structures at reduced costs and reduce demand for imported components and parts.

International assistance inputs:

- Internal consultant, 12 m/m
- Fellowships, study tour
- Equipment (approx. $500,000)
- Materials (approx. $100,000)

Project No.B-7

Project title: Improvement of smithery technology in stainless steel cutlery and surgical instruments

Co-operating agency: Metals Industry Research and Development Centre (MIRDC)

Objectives: The basic objective is to contribute to improved productivity, efficiency and competitiveness of the country's metal working industry. Specifically, the project will address the needs for upgrading and development of smitheries in the countryside with focus on producers in the Albay, Pampanga and Batangas provinces. Particular beneficiaries will be those now making cutlery in Tabaco, Albay, where their skill will be upgraded in the area of stainless steel forging of surgical instruments and the like. The project is expected to initially benefit more than 100 small- and medium-scale producers who will avail of the common service facility. Introduction of modern equipment, tools and techniques will result in competitive products, increased diversification and employment generation.

It is expected that the project will contribute to export earnings of about $4 million a year.

Project description: The project is to provide (forging) blacksmith technology in stainless steel to MIRDC to enable the centre to render direct technical assistance to small- and medium-scale producers, with the aim at upgrading/developing skills and enabling production of quality products.

The project is also to contribute to the establishment of common service facilities in selected areas where the industry has growth potential.

Under the project following specific activities will be undertaken

Project Component 1:

- Development of smithery technology at MIRDC (consultant advisory services and training of MIRDC engineers and technicians).

- Establishment of a common service facility in Tabaco, Albay.

Project Component 2:

- Initiation of organization/reorganization of cutlery manufacturers

- Supporting industry development. Establishment of linkages to other related industries and/or associations. Information exchange.

- Needs analysis and staff development/training (seminar, workshops).

Project Component 3:

- Design and implement research on following:

(i) Identification of products (and engineering services) that can be made locally for the export market as well as serving as substitute for imports;

(ii) Identification of trained manpower requirements;

(iii) Identification of material sourcing;

(iv) Identification of marketing/product development requirements, including equipment/financial requirements.

Project Component 4:

- Provision of training (skills upgrading) to personnel of small and medium scale producers.

- Technical consultancy to small- and medium-scale producers.

Project Component 5 (subsequent phase):

- Preparation of detailed economic study for the products identified under Project Component 3.

- Preparation of proposal for mechanism to tie up with financing institutions for capital sourcing.

Background: Blacksmithing is one of the traditional industries in the country handed down from generation to generation. Craftmanship developed among producers has made it one of the principal sources of livelihood specifically in the provinces of Pampanga, Batangas and Albay. In fact, cultery manufacture is the second largest cottage industry in Tabaco, Albay, next to abaca handicraft.

Manufacturers carry a number of products ranging from agricultural tools, and carving tools. However, because skills were directly handed down, no formal training has been undertaken. Producers do not have standard testing

and quality control techniques. Product designs are basic, simple and just functional.

The process used is mostly manual with the aid of manually-operated bellows, anvils, grinders and various hand tools. This poor technology and insufficient facilities and equipment have resulted in substandard products and limited diversification.

To alleviate the plight of the smithery industry, this project proposal hopes to undertake various above-mentioned activities including the establishment of common service facilities in selected areas where the industry has growth potential. The project will also seek to widen the range of products beyond that of razors, knives, scissors and the like.

International assistance inputs: International consultant (12 m/m).

Fellowships training for MIRDC engineers and technicians (4 x 12 m/m)

Equipment approx. $180,000 as follows:

	Quantity	Estimated cost ($)
Forging hammer	1	100,000
Eccentric presses	2	15,000
Smith's hearth or forge	1	1,500
Preheating/tempering furnance (small)	1	11,350
Electro-chemical etching equipment	1	5,000
Ultrasonic degreasing equipment	1	10,000
Air compressor, 3 cu.m/min. 10 bars	1	6,000
Pneumatic handtools	2 sets	1,300
Hand forging tools	2 sets	1,500
Anvil (small, medium, large)	1 each	1,000
Milling machine	1 unit	22,000
Lathe machine	1 unit	4,000
Drill press	1 unit	250
	Total	179,000

Project No.B-8

Project title: Assistance in the establishment of a feldspar beneficiation plant at Ilocos Norte

Co-operating agency: Regional Operations Group, Department of Trade and Industry

Objectives: The basic objective is to contribute to the economic development of the northwestern Luzon area by promotion of increased utilization and further processing of the area's mineral raw materials.

By the establishment of a beneficiating plant in the area, the economic utilization of feldspar, an abundant mineral reserve in the area, to its full potentials will be possible. Its commercial and industrial value in the local and export markets will be enhanced.

The establishment of a beneficiating plant in the area will also be expected to trigger the establishment of other plants using directly or indirectly the products of the beneficiation plant.

Specifically, the project will be expected to result in

- the processing of the local minerals into a better quality raw material with guaranteed specification for use of local industries;
- the provision of employment opportunities to the increasing labour force of the province;
- the promotion and development of industries utilizing said mineral reserves within the province;
- the provision of much needed revenue to the province;
- the promotion and development of the marketability of the mineral especially in the export market; and
- the stimulation of establishment of other industries/ concerns utilizing feldspar as a major raw material input.

Project description: The project calls for the establishment of a ten ton per day capacity feldspar beneficiation plant complete with facilities to transform/process feldspar ore into concentrate suitable to the requirements of industrial users like ceramics and glass factories. Primarily, the plant shall process the output of the various mining

firms in the province. The plant is envisioned to process all the produce of the mines to enhance the desirability and marketability of the material. This could be made possible by absorbing all the production, transform it into concentrates before the materials (minerals) are shipped-out of the province.

With the establishment of the plant, mining operations in the area will be intensified. It must be noted that the absence of a processing plant in the area contributed largely to the stagnation of feldspar mining activities. Over the past years, it has been observed that the output of the mining firms registered a very erratic trend in the volume of production. This may be attributed to the uncertainty of the quality of the ore being supplied.

Project location

The feldspar reserves of Region I are concentrated in the province of Ilocos Norte. Specifically, these are located in the northern part of the province within the municipalities of Pasuquin, Burgos and Pagudpud. This is 500-600 kilometers north of Manila.

Most of the users of the mineral are on the other hand within the Metro Manila area. While it may be in principle advantageous to locate the beneficiation plant close to the users of its products, it may not be economical in this case considering that feldspar is a bulk product. It should be noted that the weight recovery rate of the final product (feldspar concentrate) is 58 per cent. Therefore, if processing is undertaken right at the source before transporting, substantial savings will be derived from transport costs.

With this consideration, it is proposed that the plant be established within the perimeters of the mining areas. The exact location may be in either of the three municipalities identified. However, if the extent of mining operations will be considered in the final selection of the site, it may be advisable to put-up the plant in Pasuquin, Ilocos Norte.

Background: Region I, like any coastal region in the country is affected very much with the problems that development brings about to the environment. Physiographically, the seven provinces of northwestern Luzon have very limited flat areas for its growing population. Of the 34,134 sq. km. land area, a great portion is mountainous. Because of this reason, the economy of Region I is mainly dependent upon the exploitation of its natural resources particularly its mineral resources. It has to depend upon industry to augment agriculture to sustain

its economy, and industry is also dependent, among others, upon the mining industry for its raw materials. One of the mineral resources in Region I is feldspar.

Data gathered from the Bureau of Mines and Geo-Sciences (BOMGS) Region I revealed that there is an estimated feldspar reserve amounting to 22 million metric tons. These are primarily located in the province of Ilocos Norte, specifically in the municipalities of Pagudpud, Burgos and Pasuquin. The province of Ilocos Norte is the major supplier of feldspar in the country.

The feldspar reserves of Ilocos Norte are in the form of clay and are of the sodic variety (with soda content) with a feric oxide (Fe_2O_3) content ranging from 0.6 per cent to 0.8 per cent. Feldspar is used primarily in the manufacture of glass, ceramic wares, and abrasives and scouring soaps. Other uses of feldspar include that as fillers in rubber and plastic products, welding and coatings, poultry grit and many others.

The feldspar of Ilocos Norte is mostly used in the manufacture of vitrified tiles. In fact, the unprocessed feldspar, being mined and quarried at the different areas of the province, is shipped and sold to the manufacturers in the Metro Manila area.[1/]

Feldspar mining and quarrying activities in Ilocos Norte dates back to the 1950's. Despite all these years of mining operations, however, Ilocos Norte has remained to be a supplier of raw feldspar up to the present time due to lack of processing facilities which could convert feldspar ore into a semi-finished product (feldspar concentrate) for more profitable products. None of the present mining firms perform beneficiation activities before shipping the feldspar ore to the industrial users in Manila. Moreover, the manner and methods of extracting the minerals from the mines have not gained

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1/ There are four big industrial users of feldspar in the country, all in the Manila area. These are:

- Republic Glass Corporation
- Refractories Corporation of the Philippines
- Fil-Hispano Ceramics, Inc.
- Saniwares Plumbing Fixtures and Suppliers

Except for Saniwares which imports its feldspar requirements, all the three firms use locally produced feldspar. Republic Glass and Fil-Hispano Ceramics get their requirements from Ilocos Norte while Refractories Corporation buys from Mindanao. It has also been noted that Republic Glass consumes/utilizes the biggest quantity of feldspar ore (300 metric tons per month).

any improvement and development. The present predominant method of mining and quarrying feldspar is the open-pit or surface quarrying. This is done through the use of small bulldozers and hand equipment.

While there has been previous attempts by some firms to establish a feldspar beneficiation plant, these were not pursued for several reasons, foremost of which is the amount of capital investment required to establish such a facility. In addition, the technology involved is not readily available locally. Based on interviews conducted among the users of feldspar, given the right specifications (chemical composition and desired fineness of the material) through beneficiation, better quality and more competitive products could be produced.

Considering the quality requirement of the industrial users of feldspar, it is important that a technically advanced beneficiation plant be established to cater to this need.

Since feldspar (unprocessed) is a bulk product, transportation costs from mines remote from ceramic plants which are all in Metro Manila, are becoming all but prohibitive. This is a major consideration affecting the need to situate the plant proximate enough to the mine sites.

With the establishment of a beneficiation plant within the perimeters of the mining sites, it is hoped that supply of quality feldspar corresponding to the Philippine industry's needs, is assured and that the costs of semi-processed feldspar will be at fully competitive levels. It must be noted that the recovery rate after beneficiation is 58 per cent in terms of the total weight.

Financial requirements:

A. Fixed capital requirements

The fixed capital components of the project include land, building, machinery and equipment, and pre-operating costs. The three components amount to approx. ₱7,000,000 as follows:

Land (5,000 sq.m. @ ₱10.00)	- ₱ 50,000
Building	- ₱ 500,000
Machinery and equipment	- ₱5,200,000
	₱5,750,000
Contingency (15 per cent)	- ₱ 862,500
	₱6,612,500
Pre-operating expenses	- ₱ 350,000
	- ₱6,962,500

B. Working capital requirement

The provision of three month's working capital requirements is deemed necessary for the smooth initial operaiton of the plant. The major cost component include: (a) supplies and materials; (b) salaries and wages of personnel and labour force; (c) power; (d) repairs and maintenance; (e) selling and administrative costs, and (f) transport cost. This is estimated to amount to a total of ₱2,000,000.

International assistance inputs: The UNIDO/ECFA Mission suggests as initial step, a pre-feasibility project study be prepared (requiring 4-6 m/m international consultant services).

Project No.B-9

Project title: Assistance for the establishment of a kiln drying facility in Zamboanga City

Co-operating agency: Bureau of Small and Medium Business Development (BSMBD)

Objectives: The basic objective is to contribute to improved productivity, efficiency and competitiveness of the country's secondary wood processing industry, especially as regard the industry in and around Zamboanga City in Western Mindanao, Region IX.

The immediate objective is the provision of drying facilities for wood furniture manufacturers in Zamboanga City so as to improve the quality of local furniture products in order to increase its competitiveness in the local market and, possibly, to meet export standards.

Project description: Assistance is to be provided in the establishment of a kiln drying facility at Zamboanga City. The facility will consist of a low-cost furnance type kiln dryer designed by the Forest Product Research Institute Development Commission (FORPRIDECOM). The dryer will have a loading capacity of 10,000 bd.ft. per charge.

Project beneficiaries. The immediate beneficiaries will be the wood furniture manufacturers in Zamboanga City. A confederation of these furniture makers will be formed so that they can select from among themselves a representative who will become the conduit in the negotiations and implementation of the project.

Project location. The ideal site of the project is within the city proper in which most of the furniture shops are located. As for the actual site it will be decided upon by the Association using the accessibility of the area as the preference.

Project feasibility. Once the proposal qualifies for financing a detailed project feasibility study will be prepared by the DTI Zamboanga City Office.

Project technology source. The Forest Product Research Institute Development Commission will assist in the construction of the furnance type kiln dryer. Training of workers to operate the project will at the same time be conducted by that institution. Other related agencies such as the Department of Science and Technology and the Cottage Industry Training Centre will also play an important roles once the project is in operation.

The project will be implemented by the beneficiaries with the assistance of the Department of Trade and Industry Region IX who will act as overseer of the project in its construction stage. The DTI will continue to assist, co-ordinate and monitor activities of the project also when the kiln drying facility is operational.

In the implementation of the project, linkages will be established with lumber and logs supplies to assure raw material supplies for its processing operation. Tie-ups with furniture makers is also to be strengthened so that members and non-members can avail of the services of the drying facilities.

Background:

The quality of furniture products measures its competitive stance in its market. The importance of quality is one prime factor that could not be easily ignored in the development of the industry. Inferier quality is undoubtedly one of the factors that contributed to the slow growth of the furniture industry in Western Mindanao. The industry has apparently limited market. Except for the rattan products with which some of the manufacturers are able to penetrate the outside market, the wood sector remains confined to the domestic outlets.

The design and construction of good quality furniture depends largely on the facilities available. The inadequacy of such deters any effort to upgrade the quality of the products. This, unfortunately, is one of the problems of the furniture makers in the Western Mindanao region.

There is no commercial lumber drying plant existing in Zamboanga city except for a 3,000 bd.ft. capacity kiln dryer owned by a lumberyard operator who happens to be a furniture operator at the same time. This kiln with its limited capacity is only catering to the needs of the owner/furniture maker.

The establishment of common kiln drying facilities in Zamboanga City is considered a good beginning towards the further development of the furniture industry in that area. The project is envisioned to alleviate the problem of low quality wood materials need in the manufacture of furnitures. It will hopefully provide the industry a gradual take-off from its limited level and pave the way towards outside market exploration.

International assistance inputs:

Short-term consultants (international and/or local) for feasibility study preparation:

- on production kiln drying (1 m/m)
- on marketing/product development (1 m/m)

Local capital inputs:

Equipment	
Kiln dryer	Pesos 600,000
Baby band saw	Pesos 25,000
Fewer saw	Pesos 15,000
Meisture content meter	Pesos 8,5000
Land, buildings	Pesos 500,000
Raw materials, operating expenses	Pesos 700,000

[A similar BSMBD-proposal, for the setting up of a wood kiln dryer in Cimenez, Misamis Occidental, has been prepared by Misamis Occidental Furniture Association. The project is envisaged to serve as a common service facility and as a raw materials procurement arm of the Association.]

Project No.B-10

Project title: Assistance for the establishment of a common packaging facility for the Food Processors Association in Cagayan de Oro

Co-operating agency: Bureau of Small and Medium Business Development (BSMBD)

Objectives: The basic objective of the project is to enhance the development of the small- and medium-scale food processing industry in regional areas of the Philippines through upgrading of packaging and promotional activities.

The immediate objective is to improve the present level of packaging technique employed by the food producers in Cagayan de Oro in Region X, through the establishment of a common packaging facility.

Project description: The Cagayan de Oro Food Processors Association will establish, as a pilot project under sponsorship of the BSMBD, a common packaging facility.

The project will serve as common purchasing arm of packaging material and at the same time provide the member with the packaging and labelling facilities like printing machines. Polythelene will be bought by roll to be cut later to sizes suitable for individual member's products. Management of the project will be entrusted to a general manager who will be hired under the supervision of the Association's board of directors.

Background: One hindrance to the development of the food processing industry in the Philippines in general is the absence of effective design and packaging strategy. This was clearly revealed in a study on the food processing industry in Region X conducted by the Small Business Assistance Centre (SBAC) about two years ago. Due to lack of awareness to the potential benefits which may be derived from packaging in terms of promotion and sales, the producers generally considered this to be of least priority as far as product development was concerned.

The food processors of Cagayan de Oro, being the most advanced in terms of technology as compared to the other provinces in the region have lately realized the necessity to upgrade and improve their packaging methods as a major step taken towards attaining their long-term objective of penetrating the rigid competition in the

export market. Problems of prices of packaging material and lack of a printing facility in the area are considered as the major obstacles to the attainment of this goal. The price of cellophane or polyethelene, the most commonly used packaging material, is in Cagayan de Oro most significantly higher by 30-50 per cent, than in Cebu and Metro Manila. As far as labelling is concerned, limited capital and low production volume of the food producers in Cagayan de Oro are further constraints, making it difficult for them to meet the minimum printing requirements of printing presses located in Cebu or Manila.

It is against this background that the Cagayan de Oro Food Processors Association seeks the assistance of the Department of Trade and Industry to put up as a pilot project a common packaging facility in Cagayan de Oro City. Cagayan de Oro Food Processors Association is the target beneficiary of the project. It has 21 members at present who are producing food products that range from processed frozen meat, dehydrated fruits, dairy products, noodles and other flour-based products. If realized, the project will be instrumental also to the growth and development of the food processing industry not only in Cagayan de Oro but in the region as a whole.

International assistance inputs: The UNIDO/ECFA Mission suggests the provision of international short-term consultants to prepare a feasibility study/project study for the common packaging facility (2 to 3 m/m).

Project No.B-11

Project title: Assistance for the establishment of a Fruit Processing and Preservation Centre in Jolo, Sulu Province

Co-operating agency: Bureau of Small and Medium Business Development (BSMBD)

Objectives: The basic objective of the project is to enhance the possibilities of the people at the Sulu Province to fully utilize the output of tropical fruits in the area - which are considerably larger than what is consumed there - through improved processing and preservation methods.

Specifically, the immediate objectives will be

(i) to encourage and promote the establishment and development of a Fruit Processing and Preservation Centre in Sulu; and

(ii) to provide guidance to present producers and to encourage more entrepreneurs to engage in fruit processing preservation activities on basis of the abundant supply of fruits in the Province.

Project description: An association of fruit plantation owners and producers/ entrepreneurs, at Jolo, Sulu Province will, under sponsorship of BSMBD and the DTI Regional Director of Region IX, establish a Fruits Processing and Preservation Centre at Jolo. A project feasibility study will be prepared by the DTI Region IX Office.

The Centre shall undertake training programmes not only on the technical aspects but also on management and marketing. The main thrust of the programme is to provide the producers/entrepreneurs with technical expertise and guidance.

The Centre may be suggested to have main equipment as follows:

2 big freezers
2 big pressure cookers
2 weighing scales
1 gas range
1 food processor

Background: Sulu is noted for its vast resources in terms of fruitbearing tropical trees, such as durian, mangosteen, marang, mango, lanzones, banana and others. Tropical

fruits in the area more than supply the needs of the province and some are sold in places beyond that area, such as Zamboanga City, Cebu and even Manila.

It is estimated that in Sulu some 30 per cent of the fruits gathered are being wasted even before a possible shipment to other areas.

Based on the 1980 Census of Agriculture, Sulu has the following major permanent fruit tree resources:

Fruits trees	No. of productive trees	Production (kilograms)	Average production per tree (kg/tree)
Durian	70,433	2,193,592	107.4
Lanzones	63,458	5,055,547	79.7
Mango	19,674	2,034,643	103.4
Mangosteen	1,974	50,093	25.4
Banana fruits	123,529	1,247,800	10.1
Marang	22,075	1,678,158	76.0

International assistance inputs: International or local consultant(s) (about 3 m/m) to carry out (i) a survey of potentials for expanded fruit processing activities in the Sulu Province with a view to domestic as well as international markets and (ii) a detailed project study for a Fruit Processing and Preservation Centre at Jolo.

It would be expected that machinery and equipment required for the Centre would cost about $20,000.

Project No.B-12

Project title: Assistance in the establishment of testing centres for processed food exports

Co-operating agency: Food Processing Division, Agro-Industries Department, Board of Investments

Objectives: The basic objective is contribute to the development and upgrading of food processing activities in various parts of the country with a view to increased value added exports. The immediate objectives of the project are

- to adopt and cost new and existing food processing techniques and/or develop their market potential through pilot plant production;
- to establish quality control standards and specifications for the developed products and other products with export potential, including attention to packaging matters;
- to make available to small, medium and cottage industries processing facilities not presently installed in government institutions for product, process and equipment testing;
- to establish a pilot food plant for new or non-available food processing methods for product, process and equipment testing;
- to make existing processing facilities in government institutions available to small, medium, and cottage industries for product, process and equipment testing;
- to make use of idle and/or underutilized processing facilities in said government institutions; and
- to help develop food processing activities that will promote gainful employment and increase utilization of local materials.

Project description: The project will encompass assistance for the establishment of testing centres for processed food exports, making use of idle or underutilized/utilities of government institutions such as the Food Terminal, Inc. (refrigeration/freezing facilities) and the University of the Philippines Pilot Food Plant (thermal processing equipment).

The project has a duration of four years. It will consist of semi-commercial production, market testing and establishment of quality specifications of selected food products for which laboratory-scale technology is sufficiently developed and for which an established or potential market exists. It has two major phases or activities - "quality and cost control" runs and "pilot to semi-commercial" runs.

Semi-commercial scale proudction will mean 1,000 kg of finished products per 8-hour day. Dehydration, thermal processing, refrigeration and food processing techniques, as fermentation and/or sugar concentration used in conjunction with dehydration, thermal-processing or refrigeration will be the main activities of the project.

Products for testing are classified into two major categories - Category A includes products for which a market already exists but for which quality and/or cost constraints prevent them from performing well in the said markets. Category B are products for which a potential market exists, but for which raw material supply adaptation to indigenous raw materials, and/or proper processing methods have not yet been established.

The proposed products for testing, classified into categories are as follows:

Category A - Dehydrated fruits: mango, pineapple and papaya

- Tropical fruit puree: Mango, calamansi and guyabano and mixtures of such

- Fruit preserves: mango, pineapple and mixtures of such

- Frozen fruits and vegetables: mango halves, okra

Categroy B - Dehydrated vegetables: onion, garlic and tomato

- Tropical fruit purees: banana, guava, atis and jackfruit.

The quality and cost control runs will be conducted for Category A products to establish quality standards for the product, and cost said products with the aim of making these more competitive in the export market. "Pilot to semi-comemrcial" runs will be conducted for Category B products for market test purposes.

Project location for Category A products will be at the UP Pilot Food Plant and the FTI refrigeration plant. Category B products will be tested at a plant with a 1,000 sq.m. floor area for lease at the Food Terminal, Inc. compound. (Project locations are subject to notification and approval of said institutions.)

Schedule of activities:

The schedule of activities during the 4-year duration of the project is as follows:

Year 1 - Purchase and/or installation of aspetic/ dehydration equipment

- Quality and cost control runs for conventional thermal processed products (UP-PFP)

- Quality and cost control run for frozen/ refrigerated products (FTI)

- Trial runs of aseptic/dehydration equipment.

Year 2 - Quality and cost control runs (continued) at UP-PFP/FTI

- "Pilot to semi-commercial" runs for aseptic processed/dehydrated products (first batch)

Year 3 - Same as year 2 with market tests for developed products

Year 4 - Same as year 3 with dissemination of quality and cost control standards for Category A products; "Pilot to commerical" and market results of Category B products.

Background:

In 1985, 17.8 per cent of the country's export value was accounted for by processed food exports, indicating, however, only a 0.3 per cent increase from 1984 figures. This notwithstanding, more detailed export figures for 1985 indicate dynamic increases e.g. in processed fish, crustacean and mollusk meat export values, up by 43 per cent from 1984. There was furthermore an 8 per cent increase in processed fruit exports. Investment in the area is also growing.

In recent years the Philippine participants in international food fairs, have exhibited products such as frozen marine products, aspetic processed fruit purees, spices and dehydrated fruits. Marketing and merchandise findings from said participants highlight cost and quality as major consideration for export performance and/or non-performance.

Dehydrated products, to cite one example, exhibit high potential in the international market. However, Taiwan Province of China and Thailand - from which the Philippines have "borrowed" technology and which are major suppliers of dehydration equipment - offer cheaper dehydrated products. This can be traced to the applied "borrowed" technology, which have been found not fully appropriate, in its entirely, for application to domestic varieties of fruits and vegetables.

There is need, therefore, for research and development activities aimed at costing dehyration technology, when applied to indigenous raw materials.

Merchandise findings for fruit puree exports highlight quality constraints that prevent improved performance in the export market. Because aseptic processing is "borrowed" new technology, appropriate processing methods for local materials are not estblished. Research and development activities in the area are presently being done only by capital-intensive organization like San Miguel Corporation.

Other processed food exports, such as frozen and canned/bottled foods also have quality constraints highlighted in the merchandise findings. Research and development/quality control studies/facilities are, however, being conducted or are available in various agencies. FTI has refrigeration and freezing facilities not fully utilized by the private or government sectors. Bottled fruit preserves, canned marine products and other conventional thermal processed foods have available services for research and quality control studies at the various agricultural or technical schools offering food technology, as the UP units in Los Baños and Diliman, the PWU Food Technology Institute, and the Central Luzon State University pilot food plant in Nueva Ecija.

International technical assistance from UNIDO and others may thus be channelled to the problems of the food export industry. This proposal means to address the research and development, cost and quality problems of processed food exporters by giving them access to existing facilities at various government agencies, and make possible purchasing for their use, facilities not presently otherwise available, such as aseptic and dehydration equipment for testing of processes, products and equipment, prior to commercial production or investment.

The long-term result desired from such activities is the improved performance of processed food exports after quality, R&D, and cost constraints have been studied and disseminated to the industry members for their actual practise or commerical application.

International assistance inputs:

- Short-term international experts/consultants (in fields such as marketing, quality control, R&D) (12 m/m)
- Training
- Equipment, approx. $250,000

thereof	dehydration equipment	$ 50,000
	aseptic processing euqipment	$150,000
	preparation equipment	$ 25,000
	laboratory equipment	$ 10,000

Project No.B-13

Project title: Development of a programme for the enhancement of the PTRI capabilities to serve the textile industry

Co-operating agency: Philippine Textile Research Institute (PTRI)

Objectives: The basic objective is to contribute to improved productivity, efficiency and competitiveness of the country's textile and garments industry, including the development, production and proper utilization of local raw materials needed by the textile industry.

The immediate objective of the project is to develop programme for the PTRI in order to increase its capability in servicing the growing needs of the textile, textile-based and allied industries, in the context of a changing international techno/economic environment and emerging trends in materials usage.

Project description: A report will be prepared containing an analysis of the requirements of the PTRI for its strengthening in order to enable it to most effectively fulfil its role as the country's textile research and service institute.

The analysis is specifically

- to identify and assess present capabilities of the PTRI in terms of its services to the textile and allied industries;
- on the basis of perceived future development of the country's textile and allied industries, to assess the needs of the PTRI to further strengthen its services to the industry; and
- to identify possible areas where further foreign technical assistance will be required to increase the capabilities and productivity of the PTRI in its services to the textile and allied industries.

On basis of the analysis a proposal for a programme will be prepared for the increase of the capability of the Institute to serve the requirements of the industry based on the identified needs. The programme will indicate where priority attention will be warranted.

Background: The Philippine Textile Research Institute (PTRI) is the sole government textile research and service institute in the country and is a line agency of the Department of Science and Technology (DOST).

The functions of the Philippine Textile Research Institute are

(a) to undertake a comprehensive programme of reserach and experimentation that will contribute to the development, production or manufacture and proper utilization of local raw materials needed by the textile industry;

(b) to undertake technological projects that will materially contribute to the improvement or development of machinery, equipment, processes or production methods for use in the textile industry;

(c) to conduct physical and chemical examinations, tests, investigations, inspections, verifications and identifications of textile materials and products, such as fibres, yarns, fabrics, dyestuffs, textile auxiliaries and finishes, and other tests eventually aimed at assuming the public proper quality control and issue certifications, of findings thereon; and

(d) to provide consulting and information services, disseminate and encourage the application of the results of scientific and technological research, conduct training programmes and periodically undertake marketing and other economic studies for textile manufacturers, exporters, consumers, researchers, technologists and the general public.

The Government has determined that PTRI has a vital role to play not only in the revitalization of the depressed textile industry towards improvement of productivity and upgrading product quality but also in servicing the technical needs of the garments industry which is now the major export industry of the country, including product quality improvement of handloom-woven products such as fashion accessories, gifts and housewares, and table linens. These later products are often related to cottage-scale operations that will greatly benefit the countryside.

PTRI's R&D function becomes vital in the attainment of the Government's objective to considerably increase added value of textile goods and services through judicious utilization of indigenous raw materials for new products development, diversification of products for the domestic and export markets, and the generation of new industries.

Particular attention is given to fibre raw materials that are abundantly available such as ramie, banana leaves, pineapple and maguey fibre, abaca, kenaf and buntan (from buripalm) fibre.

Through the years, PTRI has endeavored to acquire testing and processing equipment and chemical laboratories through its regular budget, donations and grants from international funding organizations. Its manpower complement has been continously sent for local and international training in the different textile fields to gain expertise and competence. However, the process of building up PTRI's capability may be considered having been at a too slow pace in view of the growing needs of the modernizing textile, garments and allied industries. In particular, PTRI's finishing capabilities are not commensurate with the needs of the industry.

The Government is therefore seeking UNIDO assistance in the form of consultancy services from high level technical adviser(s) in order to assist in identifying the areas where serious efforts should be concentrated in enhancing the capability of the Philippine Textile Research Institute in servicing the growing and changing needs and demands of the textile, garments and allied industries.[1/]

International assistance inputs: International consultant (3 m/m)

Envisaged follow-up: On basis of the findings of the project and in the context of an established programme for the enhancement of PTRI's capabilities, further (large-scale) international assistance requirements will be expected to be defined.

1/ (i) Short-term UNIDO-assistance is presently being provided to the PTRI for the revitaliztion and development of the Philippine silk industry under project SI/PHI/86/084, "Revitalization of national silk industry".

(ii) A large-scale UNIDO-assistance proposal for PTRI is presently under consideration by the Government [DP/PHI/87/002, "Indigenous fibres - development of their processing technology and use in textiles, Phase I"]. The objective of the project is to determine the most suitable type of pilot plant equipment to be installed at PTRI for the purposes of experimentation in order to develop [in the Phase II project] a technically viable technology for use of selected indigenous fibres, namely banana, pineapple, abaca, maguey and kenaf in the production of textiles and to ascertain the economic feasibility of the technologies developed.

Project No.B-14

Project title: Establishment of a Ramie Research Centre

Co-operating agency: Philippines Textile Research Institute (PTRI)

Objectives: The basic objectives, are to contribute to an expansion and upgrading of the Philippine ramie-using textile industry and to establish competitiveness in the world market, thereby enhancing employment (in the agricultural as well as the manufacturing sector) and foreign exchange earnings.

Project description: Following the recommendations of the UNIDO/UNDP assistance project SI/PHI/82/801 "Programme for Revitalizing the Ramie Industry in the Philippines", a Ramie Research Centre is to be established at the PTRI. Through the Centre, assistance will be provided to the ramie industry in the form of testing and consultancy services on technology development/improvement in ramie fabric production. The Centre is specifically to have following tasks:

- to co-ordinate research activities undertaken by Government agencies and the private sector on ramie fibre production and processing;
- to serve as central agency for the testing and evaluation of raw and degummed ramie fibres and products thereof;
- to maximize the utilization of ramie fibres through the development of new ramie products with the incorporation of other fibres like silk, rayon and others; and
- to undertake research and development work on the improvement of quality fabric through the application of improved processing and finishing techniques.

Background: Ramie is much valued for its fibre which is an established raw material for the textile industry. It has been a commercial crop in the Philippines since 1930 with rather mixed results. The interest in ramie has, however, grown rapidly since 1985 as a consequence of the world preference for natural fibres.

The propagation of the ramie plant is highly susceptible to Philippine agronomical conditions especially in the

southern region of the country. Subject to seven harvests a year, a hectare can yield 2,570 kgs fibres annually.

In terms of exports, the country earned a total of $50 million from 1981 to 1985 or an annual average of $11.6 million from ramie fibre products. Tops and silver fibres contributed the biggest share, while staple fibres contributed the lowest, comprising only 3 per cent of the total exports. An upsurge in demand for ramie fibre set in sometimes in the middle of 1985. Up from 5,000 metric tons in 1985, the country produced 9,114 metric tons of ramie fibres in 1986. This increase was mainly due to estimated plantation of 6,000 hectares in Davao del Norte in Mindanao (merely 600 hectares two years earlier) and in Negros where sugar planters shifted to ramie with the drop in the price and demand for sugar. With the increased ramie production the Philippines replaced Brazil as the second largest producer in the world in 1986 with China as yet the trade leader.

A worldwide oversupply has, however, caused a reduction in price of raw fibre from ₱ 37 kg to ₱ 12 kg at the present time. With the aim to increase the local demand for the ramie fibre, the establishment of further processing facilities to enable the country to process locally the bulk of the fibre production, has become a major concern of the Government as well as the private sector. In the domestic market, the demand for ramie fibres comes largely from textile plants and degumming companies. About 50 per cent of the total production of ramie fibres in the country is covered by the purchases of Ramie Textiles Mills Inc. (RAMITEX) and the raw materials of four degumming plants that have been recently set up. RAMITEX is the largest user of ramie fibres in the country today and is the only plant that completely processes the raw fibres into a degummed state and eventually into combed tops and fabrics.

The ramie industry continuously addresses itself to problems associated with the various aspects of production, processing, marketing and quality of the finished product. The PTRI has been initiating R&D efforts to uplift the ramie industry in terms of technical testing and guidance on technology development. It has completed research on the improvement of the handling of ramie blended fabrics. With the assistance of UNIDO-UNDP (SI/PHI/82/801), PTRI has also concluded fact-finding and diagnostic studies for the carrying out of a programme on ramie cultivation, processing and fabric finishing. Two international experts conducted the diagnostic activities and made recommendation to further develop the industry. The creation of a research centre equipped with facilities for research, pilot processing and testing was recommended.

Special consideration: In view of the urgency and high priority of the Government's request for UNIDO assistance to revitalize and expand the ramie industry which will have a major impact on the country's development, in particular in some economically depressed areas, and the relatively high financial inputs required to achieve the project's objectives, the project is considered suitable for UNIDO's Programme for Direct Support under the Trust Fund Arrangements.

International assistance inputs:[1/]

- International short-term consultants (experts) on ramie processing and finishing (2 x 3 m/m)
- Fellowship training of PTRI staff (4 fellows on ramie processing and finishing and 2 fellows on operation and maintenance of machineries (6 x 3 m/m)
- 3-weeks study visit to an established ramie centre in China (2 PTRI staff)
- Equipment:
  Pilot scale machinery for worsted spinning system, sectional warping, singeing, sizing and finishing (approx. US $2,000,000)

1/ A formal 5-year project proposal, US/PHI/87/188, "Development of novel processing techniques for ramie" is being under consideration for possible UNIDO IDF-funding (total IDF inputs required $2.3 million).

Project No.B-15

Project title: Assistance for the establishment of a common purchasing facility for the Cagayan de Oro Garments Producers Association

Co-operating agency: Bureau of Small and Medium Business Development (BSMBD)

Objectives: The basic objective of the project is to enhance the possibilities of small garment producers in regional areas of the Philippines to become internationally competitive export producers as well as suppliers to the domestic market.

Project description: The Cagayan de Oro Garment Producers Association (CGARPA) will pool together their most basic and common material requirements and purchase them in bulk at a lower cost and of required/specified quality either from Manila or Cebu. The project will be implemented as a co-operative trading business to service primarily the needs of the members as well as the general consumers. A survey of the most common materials and suppliers as regards volume and frequency or rate of consumption, will be conducted. On basis thereof the size of capital funding required will be determined. The Association as co-operative will be expected to put up an equity equivalent to 30 per cent of total required capital funding.

Background: In Region X where the garments manufacturing industry is still in its early growing stages, a renewed interest in its development and promotion is being experienced. Particularly, a number of garment producers in Cagayan de Oro are seriously considering venturing into the export market as well as developing a wider domestic market base.

One of the problems besetting the industry is the high cost and sometimes non-availability of textile materials and other supplies. In fact, price differences between Cagayan de Oro and Manila could be as much as 30-50 per cent.

The garment producers at Cagayan de Oro have organized themselves as Cagayan de Oro Garment Producers Association (CGARPA) with more than 100 members, including dress and tailoring shops. The initial and primary target beneficiaries of the proposed common purchasing facility are, however, the mass producers which total approximately 15.

International assistance input: International or local consultant to carry out survey of materials requirements and sources, including possible potential for specialized local production and/or subcontracting arrangements (3 m/m).

Annex 2

Listing of selected PDCP - companies for rehabilitation assessment

1. Aras Asan Timber Co., Inc. (ARTIMCO)
2. Jocardo Manufacturing Corp.
3. Mabuhay Textile Mills, Inc.
4. MVR TV Picture Tube, Inc.
5. Nasipit Lumber Co. Inc. (NALCO)
6. Radio Communications of the Philippines (RCPI)
7. Royal Porcelain Corporation (RPC)
8. SV Agro Industries, Inc.

Background information as follows was provided to the UNIDO/ECFA Mission by PDCP in respect of each of the above companies.

1. ARAS ASAN TIMBER CO., INC. (ARTIMCO)

Company background

Aras Asan Timber Co., Inc. (ARTIMCO) is a domestic corporation duly registered with the Securities and Exchange Commission (SEC) on 17 June 1953 to engage primarily in logging and wood processing operations.

The company's facilities are located in Barrio Aras Asan, Cagwait, Surigao del Sur while its administrative offices are situated at #30 Scout Tuazon St, Diliman, Quezon City.

ARTIMCO holds Timber License Agreement (TLA) No.III-06070003 valid for 25 years from 1 July 1982 to 30 June 2007. This TLA covers a forest concession area of 25,934 hectares of timber land in the municipalities of Marihitog, Bayabas, Togo and Tandag, Province of Surigao del Sur.

Production capacities

Plywood	8,640,000 Bd.Ft./year
Veneer	5,760,000 Bd.Ft./year
Lumber	7,375,000 Bd.Ft./year
Blockboard	885,000 Bd.Ft./year

Existing problems

1. Tight liquidity position.

2. Stiff competition in the foreign market, especially from Indonesia.

3. Highly leveraged.

Proposed solutions to problems

1. Long-term sales contracts with foreign buyers.

2. Fresh equity infusion, this is being done by the existing shareholders in compliance with a BOI requirement.

2. JOCARDO MANUFACTURING CORPORATION

Company background

Jacardo Manufacturing Corporation (JOCARDO) is a manufacturer of polypropylene bags (PP bags) for use as packaging materials for products such as corn, rice, sugar, feeds, flour, bran, coffee and fertilizer. The company was established in 1979 with PDCP's assistance which was in the form of a direct foreign currency loan to finance its importation of machinery and equipment needed in the operations. The manufacturing plant is located on a 1.68 hectare property in Barrio Patubig, Marilao, Bulacan.

Currently, the whole plant's production is being absorbed by its affiliate, Jocardo Merchandising Company, which is engaged in the rise trading business.

Problems

It has been established by a PDCP review team that JOCARDO although operating at maximum efficiency cannot meet the yearly debt-servicing requirements of the company. The company, at a 85 per cent capacity utilization (7.2 million PP bags), can only generate approximately ₱ 2.3 million as compared to its yearly existing amortization of around ₱ 4.2 million. Further aggravating this situation is the fact that JOCARDO is very vulnerable to any depreciation of the peso. While it is not a dollar earner, the loans it is servicing are purely denominated in foreign currency.

Ingredients towards turning around the company

A conversion of the obligations of JOCARDO into a pure peso obligation would materially assist the client in its debt-servicing difficulties. However, PDCP could definitely not afford to shoulder the foreign currency risks attached to the said loans.

In order to assist the client, the team has placed all of its large current installments under payment arrangement over a period of 18 months.

An expansion of the plant facilities to further increase the revenue generating capability of the company can be explored. However, the financing of this particular project must be through pure peso sources.

3. MABUHAY TEXTILE MILLS, INC.

Company background

Mabuhay Textile Mills, Inc. (MATEX) is engaged in the manufacture and distribution of acrylic yarn, ladies stockings and assorted hosiery for men, women and children and has started commercial operations since December 1957. Its principal office and plant facilities are situated in Malinta, Valenzuela, Bulacan.

The company has been a client of PDCP since 1967 and a recipient of five PDCP loan accommodations, all of which are in line with the company's expansion programmes. All of the aforementioned direct loans have matured already and the only curent outstanding PDCP financial assistance to MATEX is a guarantee for the loan of $2.0 million from Baring Sanwa Ltd.

Problems encountered

MATEX has, since 1984, experienced intermittent labour strikes which ultimately brought its manufacturing facilities inoperational. The last of these strikes took more than a year to be resolved (from 11 March 1986 to 18 March 1987). It should be noted that during the duration of the aforementioned strike, the plant was flooded thus damaging all of the company's machinery and equipment. Presently, the owners of the company are undertaking reconditioning and repair of the plant facilities in order to bring them back in good operating condition. These events have contributed to the very tight financial position of the company.

Ingredients needed to turn around the company

In order to reduce the costs of its outstanding obligations, MATEX has negotiated with Solidbank for the possible take-out of the advances made by PDCP to Baring Brothers on behalf of MATEX, with an effective cost of 36 per cent per annum. The accommodation from the said commercial bank shall be in the form of a medium-term loan with interest at market rates (13 per cent per annum during the preliminary negotiations). As security for the proposed loan, Solidbank required a joint mortgage over MATEX plant and equipment currently motgaged to PDCP which PDCP's Board of Directors has already approved in its meeting of 15 September 1987. The implementation of this package was expected to take place before the end of 1987 or at the latest on January 1988.

This move of MATEX to lower the effective cost of its obligations together with the programme of improving its overall plant operations and in view of the improved industry prospects, MATEX is expected to remain viable and better able to meet its loan obligations.

4. MVR TV PICTURE TUBE, INC.

Company background

MVR TV Picture Tube, Inc. (MVR) was established in 1964 for the manufacture and distribution of electronics, engineering, and industrial equipments and all kinds of products and merchandise. However, since its commercial opeations, MVR has limited its product line to TV picture tubes. A change in ownership and management occurred in 1977. Immediately following the takeover, the new group initiated the rehabilitation of the facilities. In 1980, MVR undertook an expansion of its existing black and white TV picture tube manufacturing facilities through the acquisition of another automatic conveyorized exhaust machine and a backward integration for the local assembly of glass envelopes and electron gun.

The company's plants are sitated at Pioneer Corner William Streets and F. Pasco Avenue, Barrio Santolan, Pasig, Metro Manila while its administrative office is located in Del Monte Avenue, San Francisco Del Monte, Quezon City.

Existing plant facilities

MVR's existing facilities include those for the production of black and white TV picture tubes of cathode ray tubes (CRT), sealing the CRT glass bulbs and assembly of electron guns.

The limiting factor in MVR's production capacity are the exhaust machines. At rated capacity, based on 12 inches to 14 inches picture tube, MVR can produce 60,000 units of picture tubes a month. MVR operates 24 hours a day, 25 days a month.

In the year 1985, MVR initiated its CRT project for computer monitors. Presently, the company has developed display CRT Model 310-KJB31 and is capable of producing any type of display CRT.

The major raw materials used in MVR's production are imported. The glass bulbs, electron gun parts, and chemicals are obtained from Japanese suppliers while the "getters" are imported from Italy. The only local component in the picture tubes are the metal bonding strips and the CRT base.

Problems

1. The present policies of the Board of Investment (BOI) prohibit MVR from importing raw materials as the company has had nil export receipts to warrant said importation.

2. The company's capacity utilization is low (roughly 10 per cent) due to the aforesaid BOI policy and the slack in the domestic demand for CRTs.

3. The company is not competitive in the export market.

Proposed solutions to the problems

1. Sale of one idle production line; and/or

2. Look for parties interested to enter into a purchase contract with MVR on a raw materials consignment basis.

5. NASIPIT LUMBER CO., INC. (NALCO)

Company background

Nasipit Lumber Co. Inc. (NALCO) is a duly registered domestic corporation established in 1946 to "carry on a general lumber and timber land business in all of the branches thereof".

The company's logging and processing facilities are located in Nasipit, Agusan del Norte while the administrative office is found at 5th Floor, Maritima Building, Dasmarinas St., Manila.

Two other companies, namely Anakan Lumber Co., Inc. (ALCO) and Philippine Wallboard Corporation (PWC), are affiliated with NALCO with basically the same executive officers and directors managing the three companies. Anakan Lumber Co. (ALCO) logs and extracts trees from the forest concession and transports these to the processing plant of NALCO. Philippine Wallboard Corporation manufactures hardboard (lawanit). PWC uses the wastes of NALCO and ALCO as the raw materials for the production of the lawanit.

NALCO has Timber License Agreement No.39-4 valid up to 30 June 2007, which covers a forest concession of 98,310 hectares. In addition, ALCO has Timber License Agreement No.28-B valid up to 30 June 2004, which covers a forest concession of 59,834 hectares.

Problems

1. Low logging capacity/output due to lack of logging and road building equipment.

2. Tight liquidity position.

3. Highly leveraged; has difficulty in debt-servicing.

Proposed solutions to the problems

1. Fresh infusion of funds either from equity or from subordinated loans of at least ₱ 50 million.

2. Increase production volume.

6. RADIO COMMUNICATIONS OF THE PHILIPPINES (RCPI)

Company background

RCPI, a private domestic corporation established on 12 April 1955, is engaged in nationwide radio telecommunication operations, offering such services as telegraph, telex, long-distance telephone service, leased telegraph service, and marine communication service. The company currently operates 460 outlets and message centres which are strategically spread throughout the Philippines.

Problems

The company is encountering the following problems:

1. Heavy competition. RCPI is up to present engaged in a stiff competition with another large telecommunications firm which has captured a substantial share in the telegraph market. This competitor has also gained a big portion of the telex market. Heavy competition, coupled with a weak demand for the services, has led to a decrease in company revenues and poor profitability during the last three years.

2. Increase in opeating expenses. For the last three years, RCPI's cost of operations has been increasing by an average of about 15 per cent annually, particularly due to increased costs of salaries, wages, and other employee benefits which constitute approximately 50 per cent of total operating costs.

3. Heavy debt service burden. The series of peso devaluations have resulted in a heavy debt service burden for RCPI, whose loan obligations are all denominated in foreign currency.

4. Tight liquidity. The poor financial performance of the company, especially during the last three years, has led to a tight liquidity position. As a result, RCPI cannot service on time due loan obligations, and it cannot expand or modernize its equipment to compete effectively in the telecommunications market.

Assistance required

RCPI needs the following forms of assistance:

1. The company needs additional infusion of funds, ₱ 10 million before the end of 1987 and ₱ 160 million for the next five years to support its turnaround/rehabilitation programme, particularly in the area of telex services and expansion of its backbone and network operations. This would mean the entry of a new investor, whether local or foreign, in RCPI.

2. Technical assistance, either in the form of new telecommunication equipment, such as telex machines and teleprinters, technical consultancy services, preferably in the field of telecommunications, or a combination of both.

3. A repackaging of the company's foreign currency loans of about ₱ 90 million to minimize foreign exchange losses.

7. ROYAL PORCELAIN CORPORATION (RPC)

Company background

Royal Porcelain Corporation (RPC) is a private domestic corporation duly registered with the Securities and Exchange Commission (SEC) on 23 August 1971. RPC is primarily engaged in the manufacture of porcelain dinnerwares and related ceramic products. The company uses the registered trademark "Royal China" on all its products.

RPC is registered with the Board of Investment (BOI) under the Investment Incentives Act (R.A.5186) as a Preferred Poineer Enterprise for the production of decorated porcelain dinnerware. The company operates at an average of 12 million pieces annual production or at 100 per cent capacity utilization. The company is a recipient of a PDCP foreign currency loan amounting to US $1.1 million granted in 1976 to finance the company's acquisition of additional machinery and equipment for the expansion of its existing facilities to manufacture decorated porcelain dinnerware.

RPC is headed by Alejandro B. Ty, is also Chairman of the Board and President. RPC's administrative offices are located at 704 del Monte Avenue, Quezon City while its manufacturing facilities are situated at Novaliches, Quezon City.

Problems

RPC's major difficulty encountered from its operation is in the technical process of production. The company is presently utilizing 80 per cent local material input and 20 per cent imported materials which they source heavily from Noritake suppliers. Using local input material to the mixture of ceramic ingredients resulted in various defects ranging from high level of impurities to poor ceramic strength. Also, RPC is developing further technical competence in the process or manufacture of ceramic products so as to increase and maintain high quality standard of its product lines. It is looking for training and actual job development for its workers to enhance their technical expertise to achieve the above objective.

Assistance

Possible assistance for RPC should be in the form of training and skills development in terms of technical know-how in the process of ceramic making. Moreover, efficient plant maintenance and mixing procedures using indigenous materials should be introduced to achieve optimum plant efficiency and high quality standard of its products.

8. SV AGRO-INDUSTRIES INC.

Company background

SV Agro-Industries, Inc., a company organized in 1977, is engaged in the manufacture of farm machineries and equipment with the Turtle Power Tiller, a patented and submersible farm equipment, as its primary product. The company was granted a ₱ 1.220 million loan by PDCP in 1978 for the expansion of its power tiller manufacturing facilities through the construction of a factory building and acquisition of additional machineries and equipments.

SV Agro is basically a family corporation of the spouses Aniano and Magdalena Villaruz. The company's office is located in Jaro, Iloilo while the manufacturing facilities are located in Pavia, Iloilo. The company is registered with the Board of Investments on a preferred non-pioneer status.

Company problems

Accumulation of accounts receivable. Of total sales of SV Agro, 60 per cent is on a cash basis while 40 per cent is on installment payable within 120 days. The collection period, however, often stretches to as much as 6 months due to the inability of the farmers who purchased the tiller units to pay on time. For the fiscal period ending July 1986, total sales of SV Agro amounted to ₱ 7.547 million while the level of receivables was at ₱ 3.078 million, which is 40 per cent of sales. Efforts of SV Agro to tie up their sales with financing from rural banks/other institutions have not proved successful to date.

Lack of working capital. Internal funds of the company have always been limited due to the company's financing of its receivables from farmers. In addition, the company is saddled with a substantial level of debt from both PDCP and DBP. Debt servicing has been very low with payments to banks hardly enough to update interest for the period. Although SV Agro is experiencing a high demand for its products both locally and in the export market, average monthly production could not be increased due to the constraints in working capital.

Management. SV Agro's management is focused primarily on marketing on the one hand and the technical aspect on the other. This style of management had adverse effects on financial management, particularly in prioritization of cash outflows.

Assistance required

Source of working capital. The company has an immediate need for a ₱ 5 million working capital line to finance an increase in production. In addition, assistance from local/rural banks will be needed so that receivables from farmers can be discounted/refinanced.

Technical assistance. The company will benefit from a joint venture/ licensing/technical agreement with local/foreign groups as it can provide the technical know-how on production of their patented amphibious product while an interested party can provide the financing.

Annex 3

The Philippine Productivity Movement

A. HISTORY AND BACKGROUND

The Philipipne Productivity Movement is a non-stock, non-profit corporation, established on May 19, 1986, to foster, encourage and promote productivity, by providing an institutional and multisectoral framework to attain greater efficiency and effectiveness in the use of resources through a concerted and sustained national productivity program. It operates through core groups drawn from major sectors of the economy.

The PPM, earlier known as the National Productivity Movement, was launched during the Third National Productivity Congress in October 1984 - a brainchild of the delegates to the Second Congress in 1983. Nurtured by the Philippine Chamber of Commerce and Industry, it received support from the National Productivity Commission, the Productivity and Development Center of the Development Academy of the Philippines, the National Manpower and Youth Council, and other government agencies and private sector associations.

From a handful of productiivty crusaders, the movement has 105 associations and organizations affiliated with it and will continue to grow as the years go by. The programs and activities of the Movement are implemented through a network of staff from the different sectors and committees.

B. PROGRAM

- **Annual National Productivity Congress**

The Movement aims to conduct a National Productivity Congress at least once a year to provide a venue for various sectors to draw and exchange views and opinions on enhancing productivity in various socio-economic sectors and in the entire nation. Organized in cooperation with government agencies and private sector associations, the Congress adopts a theme which imparts a productivity message to both. Pre-congress workshops are held in various regions of the country.

- **Productivity Awareness/Education Campaign**

The Movement has an active program which promotes the productivity concept, as well as its thrusts and objectives through comprehensive awareness and education campaigns.

- **Speakers and Consultants Bureau**

The Speakers and Consultants Bureau consists of speakers well-versed on productivity and available to give lectures at meetings of civic groups, local chambers, schools, societies and companies.These lectures provide the overview and sectoral concerns about productivity.

- **Training Courses and Seminar**

Specific training courses and seminars are held to instruct participants on how to assess and improve productivity performance in their organization/companies. Resource persons, who come from local and international organizations, are provided by the speakers bureau.

- **Study Missions**

Observation trips and study missions to Asian countries are organized by the Movement to enable participants/members and concerned parties to gain an understanding of operations, strategies, and activities of the Productivity Movement outside the Philippines.

- **Development of Productivity Indicators**

The Movement supports the establishment of an adequate data base on productivity indicators, preferably on the sectoral level. This supplies the necessary information for evaluation of one's performance in relation to others.

- **Program on New Technologies**

The Task Force on High Technology makes a special point of maintaining the link between business and industry for the pursuit of new technologies such as microelectronics, biotechnology, telecommunication systems and new energy sources, at the same time promoting joint ventures between local and foreign firms

- **Countryside Productivity Development**

The Movement assists small and medium scale industries in the countryside to promote productivity improvement and boost the performance of these local enterprises

C. ORGANIZATION

(Please See Organizational Chart)

SECTOR

- Academe
- Agriculture and Natural Resources
- Civic Groups
- Government
- Industry
- Labor
- Management
- Professions
- Technical Productivity Associations
- Trade and Services

COMMITTEES

- Education and Training
- Membership Development
- Promotions and Information
- Secretariat and Special Projects
- Speakers and Consultants Bureau
- Technology
- Ways and Means

- Regional
- National Productivity Congress

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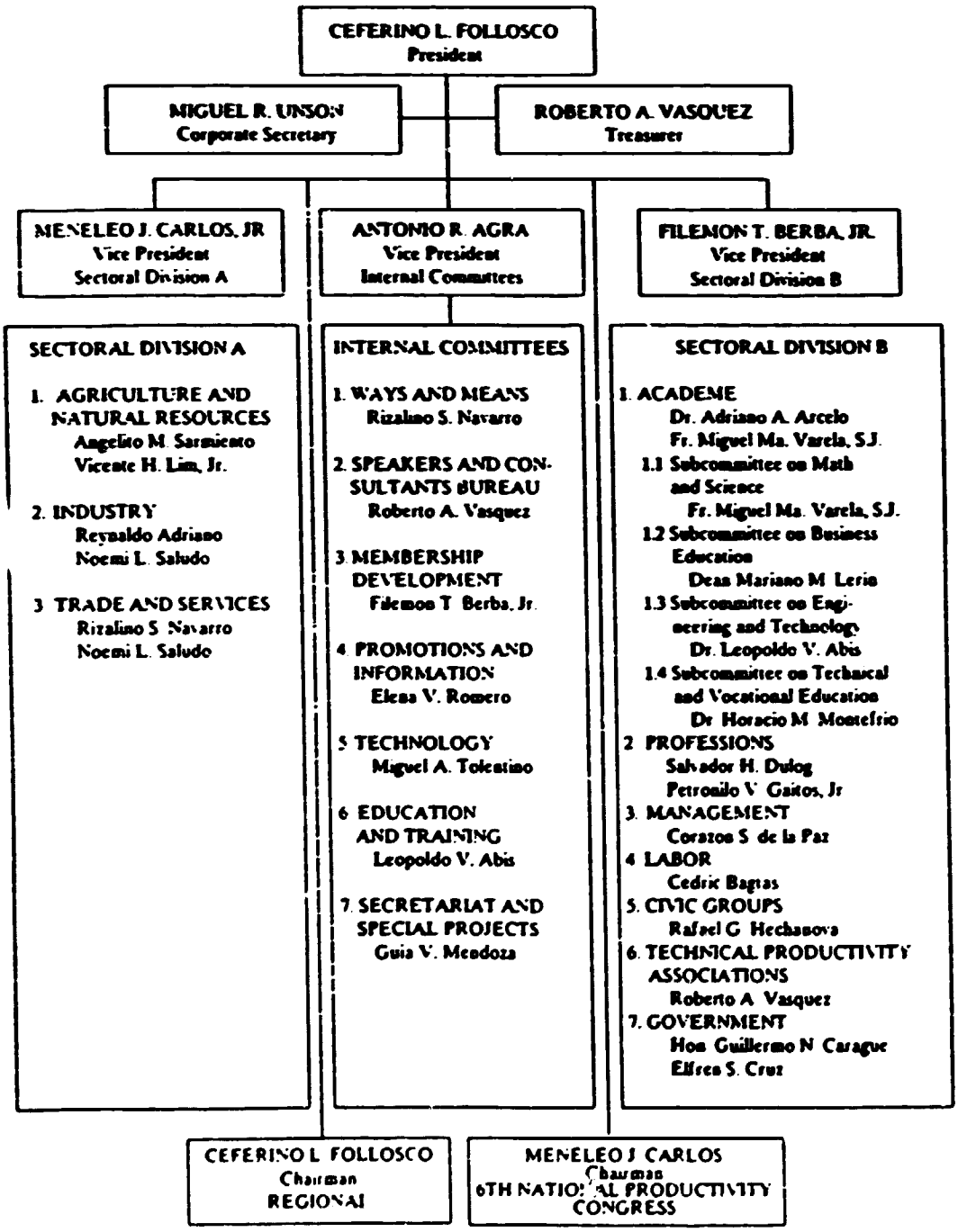
ORGANIZATIONAL CHART



Major Institutional Sponsors

PHILIPPINE CHAMBER OF COMMERCE AND INDUSTRY

"The Voice of Philippine Business"

In 1978, the Chamber of Commerce of the Philippines (founded in 1903) and the Philippine Chamber of Industries (organized in 1950) merged to become the Philippine Chamber of Commerce and Industry (PCCI). Letter of Instruction 780 dated December 7, 1978 recognized the PCCI as the single voice and official representative of the private business sector in its relationship with the government.

The PCCI is an organization composed of business units representing entrepreneurial activity, commerce, manufacturing and processing industries, services, and business associations. It serves as the forum for the development of a consensus of the business community on matters of economic significance. PCCI is the recognized official representative of the private sector in international business forums.

Objectives

The main objectives of the Chamber are:

- to foster closer relations, understanding, and cooperation among the commercial and industrial sectors of the economy by unifying them into one strong and solid union for the better enhancement of economic growth and development.
- to serve as the forum for the development of a consensus of the business community on matters of economic significance.
- to serve as the institutional framework of the entire private business community.
- to initiate, submit recommendations and/or assist in the formulation, development, implementation and evaluation of plans, policies, programs and all other activities that will promote and enhance the interests and growth of private business, consistent with the public welfare and the country's economic de velopment objectives.
- to act as the primary liaison and channel of communication on matters and issues which are of common concern to the business community and government,
- to promote self-regulation and provide for mediation and arbitration for prompt and equitable settlement of domestic business disputes and for this purpose secure appropriate expertise as necessary;
- to conduct, assist and encourage compilation of data, research, and studies for use in the formulation and development of socio-economic plans policies programs and related activities, and
- to help enhance the country's role and status in the community of nations It establishes and maintains harmonious relationships with private sector organizations of other countries as well as foreign and international institutions and in this connection, to provide for mediation and arbitration of international business disputes

Productivity & Development Center

Development Academy of the Philippines

THE PRODUCTIVITY & DEVELOPMENT CENTER of the Development Academy of the Philippines, as the National Productivity Organization of the Philippines, has created a lifeline of productivity concepts and techniques to improve the productivity level of the country in support of national development. Building its thrusts around existing Philippine economic conditions, the PDC gives due consideration to socio-economic and cultural concerns which affect the productivity level of the country. As such, the efforts of PDC have been most visible in the development, adaptation and implementation of innovative software aimed to improve the productivity of all the economic sectors.

Committed to productivity improvement, the PDC views progress in the context of maximizing the use of resources - man, method, capital, materials and machine - to produce more and better outputs.

Expanding the concept of productivity, the PDC puts emphasis on enhancing the productivity of resources as a means to improve the productivity of the enterprise. As such, PDC believes that enhancing the productivity of the enterprise will lead to the improvement of the quality of working life.

PROGRAM OBJECTIVES

Predicating its efforts toward increasing Philippine productivity, to accelerate national economic development, the PDC evolved three major program objectives:

- to promote productivity consciousness in all levels of society,
- to effect actual productivity increase at the enterprise level, and,
- to develop and strengthen the institutional infrastructure vital to continue productivity enhancement.

Translating these institutional objectives into its work program, the PDC addresses its concern to the following areas:

- the development of people's enterprise;
- the promotion and support of the industry sector based on agricultural products;
- the development and implementation of the productivity improvement schemes for the industrial and service sectors, and
- the management of critical resources

NATIONAL PRODUCTIVITY COMMISSION

In 1980, the National Tripartite Conference of labor, management and government, represented by the Trade Union Congress of the Philippines (TUCP), the Employer's Confederation of the Philippines (ECOP) and the Ministry of Labor and Employment, respectively, resolved and recommended to the President the creation of the National Productivity Commission (NPC). The President subsequently issued Executive Order No. 615 creating the NPC as an agency attached to the National Economic and Development Authority (NEDA). The Commission's objective was to improve sectoral and national productivity in order to raise the quality of life of Filipino workers and strengthen the country's competitiveness in the world market.

On January 30, 1987, pursuant to Executive Order No. 126 issued by President Corazon C. Aquino, the NPC was transferred from NEDA to the Department of Labor and Employment.

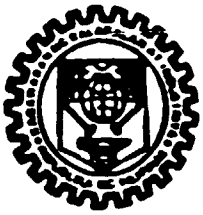
The National Productivity Commission is a tripartite body whose functions include

- Mobilization of labor management cooperation into a national productivity movement;
- Undertaking continuous study of the factors that affect productivity and determining the nature and extent of their influence on productivity improvement;
- Formulation of policies and programs to increase productivity and to implement standardized productivity improvement programs for industry.
- Conducting researches and studies and disseminating results thereof for the effective development of programs and schemes on productivity improvement, and
- Assisting employers and workers in having a better understanding of the close relationship between productivity, wages, and other economic factors and their effects on particular industries

Under the reorganized NPC, the Commission is composed of the Secretary of Trade and Industry as Chairman, the Secretary of Labor and Employment as Vice-Chairman, the Secretary of Agriculture and Food and two representatives each from workers and management, as members. The Executive Director, who heads the NPC Secretariat, is an ex-officio member of the Commission and the chief operating officer. He is assisted by a Deputy Executive Director and a group of professional, technical , and administrative personnel to carry out the mandate of the Commission

The major program areas of the NPC include the following

- Policy Development and Advocacy
- Productivity Awareness
- Coordination and Networking



DEPARTMENT OF TRADE AND INDUSTRY

The Department, in conjunction with the private sector, shall be applying its energies to the prime issue of creating job opportunities toward resolving the twin problems of unemployment and poverty.

It shall do so guided by a working philosophy of "Service to People", realizing that as it was the people that placed the new Government in power, so must that power be placed in service to the people.

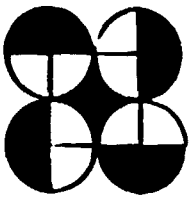
In that spirit, the Department embarks on a working agenda consisting of five guiding principles and five implementing strategies.

These Principles are:

ONE: PARTICIPATION AND CONSULTATION... because no agenda of development can prosper without the involvement of the private sector.
TWO: PRIVATE INITIATIVE... because the Government has no business being in business where the private sector, on its own, can thrive.
THREE: DEREGULATION... because an abundance of paper, procedure and prohibition, put simply, gets in the way.
FOUR: BIAS FOR THOSE WITH LESS... because for too long economic opportunities and resources have been denied to those who can use it more, the small and medium-sized businessmen, the cottage producers, the would-be entrepreneurs.
FIVE: INTEGRITY AND PROFESSIONALISM... because only a truly efficient organization, freed from political pressures, and assured of total human development can be of meaningful service... and because only a stewardship that stands public scrutiny can, in this new order of governance, rally people forward.

Under these five working principles, the Department advances five implementing strategies.

ONE: DEVELOPMENT OF EFFICIENT INDUSTRIES.
TWO: INTENSIFIED PROMOTION OF INVESTMENTS.
THREE: PROMOTION AND DEVELOPMENT OF SMALL AND MEDIUM INDUSTRIES
FOUR EXPANSION OF EXPORTS.
FIVE: INTEGRATED DELIVERY OF DTI SERVICES TO REGIONS AND PROVINCES



DEPARTMENT OF SCIENCE AND TECHNOLOGY

The constitution of the Philippines mandates that the advancement of science and technology shall have priority in national development. In pursuance of this mandate, Executive Order No. 784 stipulates that the Department, formerly known as the National Science and Technology Authority (NSTA) shall ". . . formulate and implement policies, plans and programs for the development of science and technology capabilities and for the promotion of scientific and technological activities. It shall ensure that the results of scientific and technological activities are properly applied and utilized to accelerate economic and social development". As has been done before, it shall continue to review the state and needs of science and technology in the light of the country's development goals.

The Department of Science and Technology has the following functions:

- promote and assist S & T, R & D in all fields.
- promote the development of indigenous technology and adaptation of foreign technology;
- formulate a Comprehensive National Plan for Science and Technology which, upon approval by the President, shall be implemented by all government agencies and instrumentalities.
- prepare and submit to the Department of Budget and Management its budgetary requirements and coordinate the funding and implementation of the Comprehensive National Plan for S & T;
- develop and implement a national delivery system for the effective and efficient utilization of R & D results;
- encourage and facilitate the active participation of the private sector in S &T activities;
- develop and implement, together with other entities concerned a national program for strengthening scientific and development of manpower and building up of appropriate infrastructure and institutions;
- develop and maintain a national information bank on S & T; and
- promote public consciousness in S & T.

Annex 4

List of persons met by the UNIDO/ECFA Mission

23 November - 4 December 1987

DEPARTMENT OF TRADE AND INDUSTRY

Mr. Ceferino L. Follosco, Undersecretary

Ms. Gloria Macapagal Arroyo, Assistant Secretary

Mr. Zafrulla G. Masahud, Director, Bureau of Small and Medium Business Development (BSMBD)

Mr. Augustin, EPZA Manager, Baguio City

Mr. Edgardo N. Yonzon, Office of Undersecretary C.L. Follosco

BOARD OF INVESTMENTS

Ms. Ofelia V. Bulaong, Director

Mr. C.P. Munasque, Director, Transport and Electrical Department

Ms. Ramona Miguel, Director, Agro-Industries Department

Ms. Glory Lleander-Chanco, Director, Organic Chemical Industries, Department

Mr. Agapito Kalingking, Jr., Director, Metals and Mining Department

Ms. Eloisa Atienza Lim, Chief, Investments Promotions Centre

Mr. Benny Catahan (Electronics Department)

Mr. Glen Penaranda (Electronics Department)

Mr. Gonzales (Metal and Mining Department)

Mr. E.G. Ashley, Textiles Consultant to BOI (from Tootal Textiles International Ltd.)

Mr. H.F. Williamson, Garments Consultant to BOI (from Tootal Textiles International Ltd.)

METALS INDUSTRY RESEARCH AND DEVELOPMENT CENTRE (MIRDC)

Mr. Constante V. Ventura, Executive Director

Mr. Eduardo L. Santayana, Assistant Executive Director

PHILIPPINE TEXTILE RESEARCH INSTITUTE (PTRI)

Ms. Zenaida de Guzman, Chief, Technology Research and Utilization Division

DESIGN CENTRE PHILIPPINES

Ms. Minerva P. Franco, Deputy Executive Director

PRIVATE DEVELOPMENT CORPORATION OF THE PHILIPPINES (PDCP)

Mr. Carlos C. Torres, President

Mr. Ben T. Crisostomo, Manager, Special Prcject Department

Mr. Victor S. Torrado, Manager, Special Project Department

Mr. Jasmin J.G. Palma Gil, Manager, Project Management Group

Mr. Kiyoshi Furukawa, UNIDO consultant (NKK-Nippon Kokon K.K.)

TRANSPORT AFFILIATES CORPORATION (TRAFFIC)

Mr. Antonio A. Lopa, Chairman of the Board
Mr. Ruben V. Nunez, President
Mr. Renato A. Ampil, Executive Vice President
Atty Wilfrido E. Sanchez, Director
Mr. Roberto H. Hernandez, Economist

INDUSTRY REPRESENTATIVES

Mr. Earl Hornbostel, General Manager, Crystalsem, Inc.

Mr. Augusto C. Lagman, President, Systems Standards, Inc.

Mr. Julius Labrador, President, Labradon Electronics Corporation

Mr. Quintin A. Palileo, Administrator, Semiconductor Electronics Industry Foundation, Inc. (SEIFI)

Mr. E.C. Cuenco, Manager, National Precision Electronics Corporation

Mr. Balbino C. Geronimo, Agricultural Mechanization Development Programme (AMDP)

Mr. David Ong, Vice President, Tramat Mercantile, Inc. (agricultural machinery)

Mr. Lito M. Ballesteros, Sea Commercial Co., Inc. (agricultural machinery rice mills)

Mr. Henry V. Moran, President, Philippine Automotive Federation, Inc.

Mr. Tony Lorenzana, National Steel Corporation

Mr. Reynaldo A. Adriano, President, Association of Chemical Industries; President, Borden International Philippines, Inc.

Mr. Gonzalo V. Marte, Jr., President, Packaging Institute of the Philippines (PIP)

Mr. Emilio C. Yu, Manila Plastic Products

Mr. Vicente H. Lim, Jr., Philippine Chamber of Food Manufacturers, Inc.

Mr. Sergio R. Ortiz-Luis, Jr., President, Toa Industries Inc.; Vice President, Philfoodex

Mr. H. Zayco, President, Textile Mills Association

Ms. Mary Alice Rodriguez, President, Maxima Garments Inc.

Mr. Jose S. Montano, Jr., United Asian Development and Management Corporation

Mr. Wilfrido E. Sanchez, Principal, SGV & Co.

Mr. Lito Arguelles, Vice President, Marketing, Atlantic, Gulf and Pacific Comapny of Manila, Inc. (AG & P)

Mr. Ruben A. Villanueva, Assistant Vice President, Atlantic, Gulf and Pacific Company of Manila, Inc. (AG & P)

Mr. Heiz Thomann, General Manager, Philgerma Manufacturing Inc., Pangasinan

Ms. Nelly E. Alabanza, Executive Director, Benguetcorp Foundation Inc., Baguio City

UNDP

Mr. T.K. Mangun, Resident Representative
Mr. Meriaty Subroto, UNIDO Programme Officer

ASIAN DEVELOPMENT BANK

Mr. Akira Tsusaka, Director, Industry and Development Banks Department
Mr. Alberto M. Balagot, Manager, Industry and Minerals Division
Mr. Peter C. Brinkmann, Project Economist
Mr. Edu Hassing, Project Engineer

JETRO

Mr. Naohiro Taguchi, Executive Director, Jetro Manila

Addendum

PROJECT/PROGRAMMES IDENTIFIED FOR PRIORITY ATTENTION

Meetings took place in Manila 22-24 September 1988 between the Government authorities and the UNIDO/ECFA Mission team on the recommendations and proposals put forward in the draft Mission Report. Detailed discussions were held regarding each of the technical co-operation project concepts and proposals presented in Annex 1. The Report was cleared with indications as to the projects identified for further development through subsequent Trust Fund arrangements. The conclusions in this respect were as follows:

Project No. A-1: Assistance to the establishment of a Regional Engineering Complex in the Manila area

Priority given to the development of a complex in Carmona, South of Manila.

Project No. A-2: Assistance to promote relocation of Japanese industries in the Philippines

Priority with emphasis on metal working (Should be linked with project proposals A-1, A-3 and A-4).

Project No. A-3: Development of industries in the automotive sector

Very important (Action for implementation being taken).

Project No. A-4: Development of industries in the electronics sectors

Very important (Implementation in progress).

Project No. A-5: Promotion of supporting industries of engineering exports

Project to be developed primarily for small engineering groups.

Project No. A-6: Assistance for developing the support industry capabilities to provide the garment industry with necessary requisites

This proposal is given priority. It is suggested that promotion of joint ventures with Japanese firms also in the fields of dyeing, printing and finishing be included. Such projects would be likely to have important short-term impact.

Project No. B-1: Common facilities for metalworking in selected regional centres

and

Project No. B-2: Assistance to the establishment of an Engineering and Metalworking Industries Estate in Northern Mindanao

These two projects are given priority to be developed in the context of development of "incubation centres". Action is being taken separately for formation of a corporation in Mindanao. (Project No. B-7 might be integrated in Project No. B-1.)

Project No. B-3: Design and making of tools, dies and moulds for die-casting, plastics, etc. and shell moulding

Priority.

Project No. B-4: Upgrading of plating and other metal-finishing technology

To be kept pending (Jetro is providing related assistance).

Project No. B-5: Demonstration and Training Centre for CAD/CAM and Flexible Manufacturing Systems

Important (Project currently being considered for UNIDO/UNDP funding).

Project No. B-6: Production of ductile cast iron in Philippine foundries

Priority.

Project No. B-7: Improvement of smithery technology in stainless steel cutlery and surgical instruments

Priority (possibly in combination with Project No. B-1).

Project No. B-8: Assistance in the establishment of a feldspar beneficiation plant at Ilocos Norte

Priority attached to this by BSMBD. There is a need to establish the feasibility by international consultants. The project is being taken up at the UNIDO/Philippine Investors Forum in Manila in November 1988.

Project No. B-9: Assistance for the establishment of a kiln drying facility in Zamboanga City

One facility is already operating. There is a need for upgrading of the technological process (through provision of short-term specialist services).

Project No. B-10: Assistance for the establishment of a common packaging facility for the Food Processing Association in Cagayan de Oro

Priority for Cagayan or Davao. Feasibility study should be prepared for both if possible.

Project No. B-11: Assistance for the establishment of a Joint Processing Preservation Centre in Jolo, Sulu Province

This might possibly be taken up for financing under the World Bank "pilot project fund".

Project No. B-12: Assistance in the establishment of testing centres for processed food exports

Several testing centres have been or are being established (e.g. in Manila and Cebu). However, there is priority need for establishment of such centres at Davao and Cagayan.

Project No. B-13: Development of a programme for the enhancement of the PTRI capabilities to serve the textile industry

Important. (Ref. UNIDO/UNDP Project DP/PHI/87/002).

Project No. B-14: Establishment of a Ramie Research Centre

Especially important with investigatory study/research on suitable regumming process. It was also suggested that technical co-operation in the area of pineapple fibre development be included in the PTRI proposals (Projects B-13 or B-14).

Project No. B-15: Assistance for the establishment of a common purchasing facility for the Cagayan de Oro Garment Producers Association

Implementation will be done by BSMBD using local resources.

As for the Mission's recommendation regarding the counterpart set up for finalizing arrangements for implementation of the projects, it was agreed that the Philippine Productivity Movement would act as such counterpart agency.