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STONE

& WEBSTER Management Consultants, Inc.

UNITED STATES
AGENCY FOR INTERNATIONAL DEVELOPMENT (AID)

INDONESIA TECHNICAL REVIEW MISSION FOR:
(1) PLANT MACHINERY & EQUIPMENT
(2) ELECTRONICS INDUSTRY

DECEMBER, 1982



**STONE
& WEBSTER**

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December 17, 1982

Mr. L. E. Stanfield
Contracting Officer
Chief, OTR Branch
Central Operations Division
Office of Contract Management
Agency for International Development
Washington, D. C. 20523

Dear Mr. Stanfield:

The enclosed report presents the results of our investigation into investment, trade & licensing of technology potential by U.S. companies in Indonesia. Our work included the development of supporting data for two broad industrial categories: (1) Plant Machinery & Equipment, and (2) Electronics Industry. Within these broad industrial groups there are 11 specific sub-industries which were researched in order to identify opportunities that warrant further detailed feasibility study.

Toward this end Stone & Webster Management Consultants, Inc., has made a number of observations concerning the market, competitors, trade, constraints & funding sources for the specific projects detailed in this report. We have concluded that Indonesia has some respectable growth plans which deserve further consideration by U.S. firms.

If you should have any questions regarding this report, please call. We appreciate this opportunity to have been of service.

Respectfully submitted,
Stone & Webster Management Consultants, Inc.,

Al Alli

Al Alli
Executive Consultant

Consulting Centers in Boston, Denver, Houston and New York

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CHAPTER I
EXECUTIVE SUMMARY

The Republic of Indonesia has made advances in nearly every aspect of commerce and industry in recent years. Foreign investment has been a major factor. In 1980, 29 foreign investment projects were approved, representing capital costs close to U. S. \$500 million.

Nevertheless, much of the machinery needed for the manufacture of industrial equipment and such consumer products as television sets must still be imported. In its desire to make the nation more self sustaining, the Indonesian government is encouraging foreign investors by establishing priorities and offering incentives over a wide range of products in the fields of (1) plant machinery and equipment and (2) electronics which this study addresses.

The industrial progress made to date is the direct result of a deliberate program. Indonesia has completed two five-year economic plans and is well into its third one, which began in April 1979. With the buildup of raw materials processing, assembly operations and an increasing modern infrastructure, the need for domestic production of plant machinery and equipment for both light and heavy productive industries grows more acute, as does the need for production of metals and such basics as electrical transmission systems and electronic communications equipment.

Indonesia has improved its economy over the past decade, and has thereby raised the standard of living of its population which is about 150 million. The gross domestic product over the last 10 years has increased at an average annual rate of better than 7 percent, and is conservatively forecast

to grow at 6.5 percent annually through 1984. At the same time, per capita income has been, and is expected to continue, growing at 4.4 percent per year, creating a strong and constant demand for consumer products.

Presently Indonesia is a land of many small assembly businesses, which are slowly being supplemented by large enterprises producing such basic materials as iron, steel, aluminum, chemicals, coal, oil and cement. Thus, the nation has a solid foundation upon which to develop a far more sophisticated and diversified manufacturing sector that will reduce the country's dependence upon imports and create jobs for a growing labor force.

As a reflection of the annual industrial growth for the ten industries studied in this report the following table shows the historic (1976-1981) and future (1981-1985) growth rates.

<u>Sectors</u>	<u>1976-1981</u>	<u>1981-1985</u>
1. Oil and Gas	44%	30%
2. Petrochemical	25	25
3. Fertilizer	19	8
4. Cement	28	26
5. Pulp and Paper	45	10
6. Power Generation	3	8
7. Sugar	3	10
8. Palm Oil	11	11
9. Tea	10	4
10. Electronics		
a) Consumer	18	30
b) Professional	12	21
c) Components	73	66

The range of projects given priority is extremely broad, beginning with basic metals production and running to the manufacturing and processing machinery and equipment. Based on our analyses for the two categories under study: (1) Plant Machinery and Equipment, and (2) Electronics Industry, the

following represents the most promising opportunities for U. S. investment, technical transfer or management contract. But, it should be noted that these industry sectors warrant further detailed feasibility study to insure profitability.

1. Structural Steel and Process Equipment
2. Power Generation Equipment
3. Solids Handling Equipment
4. Seamless Pipe Manufacturing
5. Technical Services for Pipe Coating Plant
6. Technical Services for Maintenance and Repair of Oil and Gas Process Plant Installation
7. Drill Pipe Manufacturing
8. Technical Services for Inspection and Testing of Offshore Oil and Gas Equipment Installation
9. Compressor Manufacturing
10. Electronic Component Manufacturing

There are no constraints to U. S. firms interested in investment opportunities in Indonesia. Investors should use the U. S. Embassy Economic/Commercial Section as a guide to the various government agencies. In addition, a great deal of patience is required when dealing with Indonesian government agencies, since most of the decision makers are spread so thin that their time is consumed with endless government matters.

Foreign investors in Indonesia have several alternative funding sources which should be investigated as part of a detailed feasibility study. These include:

1. Indonesian Government
2. Private Indonesian Firms
3. Commercial Banks
4. World Bank
5. Asian Development Bank

CHAPTER IIINTRODUCTION

This study was initiated with a goal to develop supporting data for two industrial categories: (1) Plant Machinery and Equipment, and (2) Electronics Industry, for the U.S. Trade and Development Program (TDP) and the government of Indonesia (GOI), in order that a determination may be made as to the feasibility of further study in specific industrial projects. Our study covered the areas of investigation described below.

1. Provide a description of plans and prospects for plant machinery and equipment industries for:
 - Oil field and petrochemical support
 - Cement plants
 - Pulp and paper plants
 - Power generating facilities
 - Sugar mills
 - Palm oil
 - Tea and other agricultural product processing plants
 - Fertilizer plants
2. Provide a description of plans and prospects for development of the electronics industry which includes:
 - Consumer electronics (radio - cassette - recorders, tape recorders, T.V.)
 - Professional electronics (telephone exchanges, radio communications equipment, radio broadcasting equipment, medical equipment)
 - Components (loudspeakers, transistors, integrated circuits, diodes, CRT's).
3. Provide a preliminary estimate of the magnitude of imported goods and services by major project and service category, likely to be required over the next five years to meet GOI goals in this area.

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4. Identify those categories of U.S. goods and services which would be competitive with those of other industrialized countries, and identify the major competing sources.
5. Identify the major conditions and constraints for expanded activity by U.S. firms in these areas through investments, sales, licensing of technology and management contracts.
6. Identify the major sources of funding most likely to be used over the next five years for the expansion and development of manufacturing capabilities in Indonesia for: (1) plant machinery and equipment, and (2) electronics industries.
7. Develop a one to two page project profile for the five to ten most promising opportunities for the participation by U.S. firms in the expansion of : (1) plant machinery and equipment, and (2) electronics industry through investments, technology, or management contracts.
8. Lay out illustrative scopes of work for feasibility studies for potential projects in these areas which would meet the requirements of financing sources, as well as budget estimate to carry out these feasibility studies.

Methodology

The methodology employed in the conduct of this study to meet the objectives outlined in the scope is described below:

1. Published literature and a search of prior similar Stone & Webster Management Consultants, Inc., assignments.

- Conducted a literature search to identify various market factors and forces, trade patterns, competitors, equipment developments, and for each area the potential industry growth.

2. Survey Guide Development

- Based on the specific needs of this assignment, various industry survey guides were developed in order that each organization, within an industry, which was contacted would be asked specific questions by the Stone & Webster Management Consultants, Inc., interviewer.

3. Industry Interviews

- Our investigations were conducted by means of personal and telephone interviews with representatives from various public and private sectors/industries as listed in the table below.

<u>Contract</u>	<u>Number</u>
Government	11
Associations	3
Banks	3
Manufacturers	4
	<u>21</u>

4. Data Analyses

- At the conclusion of these efforts the data developed were analyzed for their accuracy, completeness and relation to the study objectives. Preliminary estimates and conclusions were developed and reviewed with all project team members. Revisions and refinements to industry data were made as required in order to develop our final conclusions.

5. Final Report

- At the conclusion of all the above efforts, a final report was prepared.

CHAPTER IIIINDONESIAN ECONOMIC OVERVIEW

Indonesia is part of the five member organization known as the Association of Southeast Asian Nations (ASEAN) which together assemble tremendous natural resources and a population of more than a quarter of a billion people. They have, for the past several years, achieved one of the highest economic growth rates in the world. Individually and collectively, the countries of ASEAN offer a growing array of economic opportunities - as well as a wide range of incentives to attract foreign investors.

Indonesian Economic Background

Indonesia's economy is basically oriented toward agriculture and the exploitation of its natural resources. While becoming increasingly important to the economy, the manufacturing sector is still in its developing stages.

The agricultural sector employs over 60% of Indonesia's labor force. Small land holders produce mainly food crops for domestic consumption, and rubber, coffee, pepper, tobacco for export. Estates produce rubber, palm oil, coffee, tea, and sugar for export.

The exploitation of natural resources, primarily timber, tin and oil/gas, is the most important source of earnings for Indonesia. Oil company direct taxes payable in 1981/1982 will be approximately US\$ 13 to \$14 billion out of total government revenues of US\$ 22 billion.

The basic planning which guides Indonesia's development is contained in the government's Five Year Development Plans (Repelitas). Indonesia's program of planned development began in 1969 with the First Five Year Development Plan (Repelita I), which emphasized rehabilitation of the economy as its major objective, higher agricultural production, better irrigation and transportation systems. By the last year of the Repelita I in FY 1973/74 (the Indonesia Fiscal Year runs from April 1 to March 31), total development expenditures had reached Rp. \$1,230 billion.

The Second Five Year Development Plan (Repelita II) covering the period FY 1974/75 to FY 1978/79 placed priority on improving the living standards of the people through; better food, clothing and housing; improving and expanding infrastructure; expanding and distributing equitable social welfare benefits; and, providing greater employment opportunities. Total development expenditures for the Repelita II amounted to Rp. \$9,057 billion versus an original budget of Rp. \$5,249 billion. Agriculture continued to receive the highest expenditure with 18.8%.

The Third Five Year Development Plan (Repelita III) covering the fiscal years 1979/80 to 1983/84 projects detailed growth patterns in the major economic sectors with increased emphasis on agricultural and labor intensive industrial growth. Projected expenditure for Repelita III is Rp. \$21,849 billion.

The main goals of the Repelita III are: real economic growth of 6.5% per annum; real per capita income growth of 24% per annum; 3.5% annual growth in

agricultural sector, 11% in the industrial sector; domestic savings 17% of GDP, investment 21% of GDP. It is expected that GDP growth will be closer to 7.5%, and other targets will be met.

Repelita III projects a government plus private investment budget of U.S. \$68.6 billion (see Exhibit III-1). The Government Development Budget of U.S. \$35 billion represents 51% of total investments, while the remaining U.S. \$33.6 billion represents private investments. Obviously this 51%/49% ratio will not apply to all sectors; some, such as education, will have a much higher proportion of government expenditures while others, probably industry, will depend more on private investments. Since there were no data available on the projected ratios (government versus private) for various sectors, the table in Exhibit III-1 therefore shows the Development Budget subdivided into sectors according to Repelita III with the private investment for each sector.

The National Development Planning Agency (BAPPENAS) has prepared a summary "List of Project Proposals - 1982/83", for which feasibility has been established or expected to be established on specific projects within the public sector amounting to U.S. \$10.5 billion (see Exhibit III-2). The government of Indonesia deems these projects to be of high priority for economic, social and regional development, and which will require foreign official assistance and other sources of external financing. A summary of this exhibit is listed on the following page.

Summary of Project Proposals (1982/83)

<u>Sector</u>	<u>Projected Foreign Exchange Expenditure U.S. \$Billion</u>	<u>% Share of Total</u>
Transportation	\$3.4	24.5
Power	3.2	23.0
Agriculture	2.0	14.4
Mining	1.4	10.1
Industry	1.0	7.2
Irrigation	0.8	5.7
Science and Technology	0.3	2.2
Telecommunication	0.2	1.4
Other	<u>1.6</u>	<u>11.5</u>
Total	<u>\$13.9</u>	<u>100.0</u>

As shown above the top eight expenditures (21 total sectors shown in Exhibit III-2) account for more than 88% of total expenditures. The six sectors which are of primary interest under our scope of work (power, agriculture, mining, industry, science and technology, and telecommunication) account for U.S. \$8.1 billion, or about 58%, of total government expenditures during the 1982/83 period. Obviously some additional foreign investment will be required.

According to the government officials that we contacted, Repelita IV, which is presently in the planning and development stage, will continue to promote Indonesian growth, as in the past. Therefore, one significant fact has emerged. There are many large development projects, both in progress and being planned for at least the next five or more years, that the size of the market will not be a limiting factor in the expansion of the Indonesian industrial complex. Rather the availability of required resources will

control its growth, chiefly the scarcity of skilled personnel - especially engineers and technicians. Accordingly the knowledge that the market is large enough for the engineering industry to absorb all available resources at the maximum rate of expansion, is sufficient to plan strategically that industrial expansion.

Indonesia is presently increasing its rate of industrialization, with particular emphasis on primary industries which process raw materials available within the country. These industries are relatively new to Indonesia and as their design, construction and equipment supply is currently dominated by foreign engineering companies, they form a priority target for increased participation by the Indonesian engineering industry.

Indonesian Economic Trends and Regional Performance Comparisons

Compared to other world economies the Indonesian economy has fared rather well, showing some relative strength and continued growth during the 1980 to 1982 period. Growth in real GDP terms in 1981 was about 7.8%, and average per capita income rose over U.S. \$500, as shown in Exhibit III-3.

While recessionary demand in the West has caused serious shortfalls in Indonesian exports of non-oil commodities and, more recently, at least temporary cutbacks in oil exports, substantial foreign exchange reserves and an excellent international credit rating should be sufficient to finance the balance of payments deficits expected over the next 2 to 3 years. Although budgetary revenues may not rise in real terms during the period 1982 to 1984, past budgetary surpluses can be drawn down to keep government

development and investment programs moving ahead. Growth will likely be lower in 1982, perhaps as low as 6 to 6.5%, but this is still good considering the effects of Western recession on interdependent developing economies such as Indonesia.

While the prospect for a continuation of reduced Western demand for oil and non-oil commodities for the near term may influence the pace of government planning and implementation of major projects, there will continue to be opportunities for American business. Major government projects in agriculture, energy, minerals, and heavy industry ensure a growing demand for American consulting expertise and capital equipment. There is also a growing market for raw and processed agricultural products and a wide range of sophisticated equipment for use in private and public laboratories, offices, classrooms, and businesses. Indonesia is an extremely competitive marketplace, however, and the degree of competitiveness for American exporters has been further aggravated recently by a slow depreciation of the rupiah against the dollar and an accompanying appreciation of the rupiah against currencies of major U.S. competitors. In addition, the recent implementation of new government policies and procedures in the area of export counterpurchase, and provisions of sole agency (discussed in a latter chapter) have made export sales to Indonesia more complex and complicated than in the past.

In addition to the economic indicators discussed above, we have assembled some regional performance data comparing Indonesia to the U.S., Japan, and other Pacific Rim and ASEAN countries in such areas as:

- Population Characteristics and Forecast
- Workforce
- Production and Prices
- Public Expenditures
- Foreign Trade

As shown in Exhibit III-4 Indonesia has about 32 million more people than Japan and almost 80 million less than the U.S. but by the year 2000 Indonesia's population is projected at about 212 million people which will be 85 million more people than Japan and only 47 million less than the U.S. Of the 10 countries listed in Exhibit III-4, Indonesia has the largest population under 15 years of age with 44% of its total population under 15 years old.

Indonesia's workforce of 56.5 million is equal to that of Japan and slightly more than one third the size of the U.S. workforce. In comparison to more industrialized nations such as the U.S., Japan, Hong Kong and Singapore which have between 25% to 41% of the workforce in manufacturing, Indonesia only has 11% of its workforce in manufacturing. Most of its workforce (59%) is concentrated in agriculture and fishing.

Comparing Indonesia's GNP to the U.S. and Japan, it represents approximately 2.5% to 5% the size of these nations respectively. But Indonesia's average GNP growth between 1970 to 1980 has been expanding at a faster rate (7.5%) than either the U.S. (3.2%) or Japan (5.4%).

Another comparison of interest is education as a percent of public expenditure - Indonesia has the lowest amount (8%) than any of the other 9 other countries which range between 10% (Hong Kong) to 19% (U.S. & Malaysia).

This may prove to be a future problem since more engineers and technicians will be required to support the planned industrial growth.

EXHIBIT III-1

TOTAL INVESTMENT 1979-1983, DERIVED FROM REPELITA III

<u>Sector</u>	<u>Expenditure 1979-83 (US\$ Billion)</u>			<u>Average Per Year</u>	<u>Sector % of total</u>
	<u>Government</u>	<u>Private</u>	<u>Total</u>		
Communication & Tourism	\$ 5.4	\$ 5.2	\$10.6	\$ 2.1	15.5
Agriculture & Irrigation	4.9	4.7	9.6	1.9	14.0
Mining & Energy	4.7	4.5	9.2	1.9	13.4
Education	3.6	3.5	7.1	1.4	10.3
Regional, Rural, Urban Dev.	3.4	3.3	6.7	1.3	9.8
National Defence & Security	2.4	2.3	4.7	1.0	6.9
Manpower & Transmigration	2.0	1.9	3.9	0.8	5.7
Industry	1.9	1.8	3.7	0.7	5.4
Health, Welfare & Related	1.3	1.2	2.5	0.5	3.6
Natural Resources & Environ.	1.1	1.1	2.2	0.4	3.2
Other Sectors	<u>4.3</u>	<u>4.1</u>	<u>8.4</u>	<u>1.7</u>	<u>12.2</u>
Total	<u>\$35.0</u>	<u>\$33.6</u>	<u>\$68.6</u>	<u>\$13.7</u>	<u>100.0</u>

Source: Repelita III - The Third Five Year Development Plan.

EXHIBIT III-2

SUMMARY OF PROJECT PROPOSALS 1982/83
(In Thousands US \$)

Sector	Foreign Exchange Cost of Projects According to Status of Preparation				
	A	B	A + B	C	A+B+C
Agriculture	\$ 833,523	\$1,011,593	\$ 1,845,116	\$143,377	\$ 1,988,493
Irrigation	827,917	-	827,917	-	827,917
Mining	1,330,114	13,000	1,343,114	80,672	1,423,786
Industry	1,005,045	-	1,005,045	-	1,005,045
Power	1,672,010	1,484,975	3,156,985	-	3,156,985
Transportation	2,707,435	707,100	3,414,535	-	3,414,535
Telecommunication	214,062	-	214,062	-	214,062
Tourism	5,100	-	5,100	-	5,100
Water Supply	210,635	187,800	398,435	-	398,435
Regional Development	44,300	-	44,300	-	44,300
Urban Development	34,331	-	34,331	-	34,331
Information	116,300	-	116,300	-	116,300
Education	179,400	-	179,400	-	179,400
Health	25,000	-	25,000	5,000	30,000
Population	105,333	9,300	114,633	-	114,633
Labor/Manpower	3,500	-	3,500	-	3,500
Trade and Cooperatives	130,500	16,000	146,500	-	146,500
Transmigration	65,000	-	65,000	-	65,000
Science and Technology	343,700	-	343,700	6,123	349,823
Public Administration	237,070	-	237,070	-	237,070
Others	150,810	-	150,810	-	150,810
Total	\$10,241,085	\$3,429,768	\$13,670,853	\$235,172	\$13,906,025

Source: National Development Planning Agency (BAPPENAS)

Notes:

Category A: Projects on which necessary studies have been completed and, in general, feasibility has been established.

Category B: Projects on which studies are underway and feasibility is expected to be established during FY 1982/83, and

Category C: Projects on which essentiality has been recognized and a feasibility study or advanced commitment is being requested.

EXHIBIT III-3

ECONOMIC INDICATORS

	<u>1980</u> ⁽¹⁾	<u>1981</u> ⁽¹⁾	<u>% Change</u> <u>1980/81</u>	<u>Estimated</u> ⁽¹⁾ <u>1982</u>
Population (Midyear-MM)	147	150	2.1	153
GDP (In Constant 1973 Prices - U.S.\$ Billion)	\$17.5	\$18.9	7.8	\$19.3
GDP (Current Prices - U.S.\$ Billion)	\$70.0	\$84.0	20.0	\$98.5
Per Capita GDP	\$476	\$560	17.6	\$644
Consumer Price Index	168	180	7.1	205
Money Supply (Dec. 31 - U.S.\$ Billion)	\$7.9	\$10.4	30.6	\$13.0
Foreign Investment Approvals (Non-Oil) (U.S.\$ Billion)	\$0.9	\$1.0	12.4	\$1.0
Net Official Int'l Reserves (Dec. 31 - (U.S.\$ Billion)	\$6.5	\$6.2	4.3	\$5.0
External Official Debt (Disbursed - Dec. 31 - (U.S.\$ Billion)	\$14.5	\$15.0	3.3	\$16.0
Debt Service (U.S.\$ Billion)	\$1.8	\$2.0	14.8	\$2.3
<u>Government Balance of Payments (U.S.\$ billion)</u> ⁽³⁾	<u>FY 80/81</u> ⁽¹⁾ (Actual)	<u>FY 81/82</u> ⁽¹⁾ (Actual)	<u>%</u>	<u>FY 82/83</u> ⁽¹⁾
Routine Expenditure	\$9.3	\$11.2	20.3	\$10.8
Development Expenditure	\$9.5	\$11.1	17.3	\$13.1
Domestic Revenues	\$16.4	\$19.5	19.4	\$21.2
Development Receipts (External Assts.)	\$2.4	\$2.7	14.4	\$2.8
<u>Official Balance of Payments (U.S.\$ Billion)</u> ⁽³⁾	<u>FY 80/81</u> ⁽¹⁾	<u>FY 81/82</u> ⁽¹⁾ (Estimate)	<u>%</u>	<u>FY 82/83</u> ⁽¹⁾ (Forecast)
Overall Balance (Change in Official Reserves)	\$2.7	\$0.8	-	\$1.2
Current Account	\$0.5	\$3.5	-	\$4.6
Exports, Merchandise	\$22.5	\$23.7	5.5	\$26.4
-Oil & LNG (Gross)	(\$16.9)	(\$19.5)	15.6	(\$21.4)
-Non-Oil	(\$5.6)	(\$4.2)	-24.8	(\$5.1)
Imports, Merchandise	\$17.1	\$21.6	26.1	\$24.6
-Oil & LNG	(\$5.3)	(\$6.8)	30.2	(\$7.7)
-Non-Oil	(\$11.9)	(\$14.7)	24.2	(\$17.0)
<u>U.S. - Indonesian Trade (U.S.\$ Billion)</u> ⁽⁴⁾	<u>1980</u> ⁽¹⁾	<u>1981</u> ⁽¹⁾	<u>%</u>	<u>1982</u> ⁽¹⁾ (Estimated)
Indonesian Exports to the U.S.	\$4.3	\$4.1	-5.1	\$6.2
U.S. Share of Indonesian Exports (%)	19.6	18.3	-	20.0
Indonesian Imports from the U.S.	\$1.4	\$1.8	27.4	\$1.8
U.S. Share of Indonesian Imports (%)	13.0	13.5	-	14.0

Notes:

(1) At exchange rate of U.S. \$1.00 = 625 rupiah for 1980 and 1981.
Exchange rate of U.S. \$1.00 = 650 rupiah used for 1982 estimates and
FY 82/83 budget.

(2) Government debt, including debt of state corporations such as
Pertamina.

(3) Indonesian FY April 1 to March 31. (Source: FY 82/83 Budget).

(4) U.S. trade data for 1980 and 1981 is not consistent with the quoted
above. According to U.S. Dept. of Commerce trade statistics, U.S.
exports to Indonesia were \$1.5 billion in 1980 and \$1.3 billion in
1981. Indonesian exports to the U.S. were \$5.3 billion and \$6 billion
during the same period.

Sources: Bank of Indonesia, Indonesian Central Bureau of Statistics,
Ministry of Finance, Investment Coordinating Board, U.S. Embassy
Estimates.

EXHIBIT III-4

COMPARISON OF REGIONAL PERFORMANCE DATA

	United States	Japan	Hong Kong	South Korea	Taiwan	ASEAN NATIONS				
						Indonesia	Malaysia	Philippines	Singapore	Thailand
Population										
Size (Million) 1981	229.8	117.8	5.1	38.9	18.2	150.0	14.3	48.9	2.4	48.6
% of Average Annual Growth 1975-1981	0.7	0.85	1.2	1.7	2.0	2.0	2.3	2.4	1.2	2.0
Projected Year 2000	258.9	126.5	6.4	51.1	24.0	212.3	20.7	77.6	3.0	75.4
% Under 15 Years	22.0	24.0	28.0	35.0	35.0	44.0	41.0	43.0	30.0	43.0
Workforce										
Total (Million)	151.7	56.5	2.5	14.6	6.6	56.5	5.4	16.4	1.1	21.2
% Commerce, Services	66.0	51.0	41.4	21.5		23.0	17.5	12.1	40.0	15.8
% Manufacturing	32.0	25.0	41.2	19.4		11.0	14.9	10.9	29.6	6.7
% Agric. & Fishing	2.0	10.0	1.3	32.0		59.0	38.4	52.7	1.5	73.8
% Construction	-	9.9	7.8	6.2		2.0	4.9	3.2	5.1	1.4
% Gov't & Public Auth.	-	3.6	5.7	5.2		5.0	17.2	9.7	23.2	2.3
Production & Prices										
GNP (In U.S.\$ Billions)	2,576.6	1,397.0	13.6	59.3	32.3	66.8	23.7	35.4	24.0	32.9
Per Capita Income	11,319.0	8,887.0	2,720.0	1,553.0	2,720.0	439.0	1,763.0	732.0	341.0	708.0
% Avg. GNP Growth 1970-80	3.2	5.4	8.5	8.7	8.5	7.5	8.0	6.2	14.4	7.0
GNP at Mkt. Prices (U.S.\$B)										
-1977	1,722.0	865.0	11.7	N/A	21.7	N/A	13.9	20.7	15.8	20.3
-1978	1,934.9	915.9	12.7	37.0	24.7	34.9	14.9	21.9	17.4	22.1
-1979	2,160.3	1,053.3	14.6	59.0	27.6	47.2	20.2	29.5	19.4	27.8
-1980	2,338.8	1,397.0	15.9	61.0	32.3	49.4	23.7	35.4	22.2	32.9
-1981	2,576.6	N/A	17.2	N/A	N/A	66.8	N/A	N/A	24.0	N/A
Agric. as % of GNP	3.0	5.0	1.0	20.0	1.0	28.0	26.0	24.0	N/A	26.0
Industry as % of GNP	34.0	42.0	27.0	39.0	27.0	38.0	41.0	36.0	34.1	28.0
Gross Capital Formation as % of GNP	17.0	32.0	24.0	30.9	24.0	26.0	29.7	25.3	26.0	26.5
Capital/Output Ratio	1.3	1.7	1.7	1.6	1.7	1.1	2.1	1.1	N/A	1.4
Inflation (CPI) in 1980	13.5	8.0	15.9	28.7	15.9	21.0	6.7	17.8	8.5	19.7
-1981 Estimates	9.8	5.3	14.7	24.9	14.7	13.6	8.4	10.8	5.7	14.9
Money Supply % Growth	6.7	0.8	N/A	18.0	19.1	43.4	17.1	14.1	7.5	15.4

EXHIBIT III-4

COMPARISON OF REGIONAL PERFORMANCE DATA

	United States	Japan	Hong Kong	South Korea	Taiwan	ASEAN NATIONS				
						Indonesia	Malaysia	Philippines	Singapore	Thailand
Public Expenditures										
As % of GNP	21.0	12.0	15.0	19.0	11.0	20.0	29.0	17.0	18.5	16.0
Education as % of Public Expenditure	19.0	12.0	10.0	15.0	18.0	8.0	19.0	14.0	15.3	16.0
Total Expenditure (U.S.\$ MM)										
-1980	600,750	185,000	2,331	9,400	9,111	12,800	7,394	4,846	2,254	4,739
-1981	700,000	203,000	3,310	11,400	N/A	18,600	9,153	5,884	2,919	6,087
Total Revenue (U.S. \$ MM)										
-1980	533,040	185,000	2,823	10,400	9,667	12,800	5,704	4,579	2,422	4,035
-1981	637,000	203,000	4,891	N/A	N/A	18,600	6,687	4,620	3,063	5,217
% Personal Tax	42.5	40.5	N/A	25.1	17.2	1.4	N/A	N/A	34.6	8.1
% Company Tax	16.2	32.1	N/A	8.2	7.9	67.4	N/A	N/A	41.3	9.8
% Customs & Excise	7.4	18.4	N/A	13.1	21.8	9.2	N/A	N/A	13.9	75.0
Foreign Trade										
Total F.T. as % of GNP	18.0	21.0	184.0	67.0	98.0	49.0	100.0	39.0	34.0	47.0
% of Energy Consump. Imp. (Net)	20.0	90.0	100.0	58.0	72.0	2.0	N/A	93.0	100.0	90.0
% of Food Consump. Imp. (Net)	N/A	70.0	85.0	32.0	11.0	10.0	20.0	N/A	3.1	3.0
% of Trade with Pacific Region (Except U.S.\$ Japan)	10.0	25.0	24.0	10.0	14.0	16.0	28.0	14.0	39.9	23.0
% of Trade with Japan	N/A	N/A	14.0	22.0	19.0	43.0	23.0	23.0	13.7	19.0
% of Trade with U.S.	-	22.0	19.0	24.0	29.0	17.0	16.0	25.0	13.5	14.0
Merchandise Exports (U.S.\$ MM)										
-1980	223,970	129,807	11,457	17,500	19,811	17,488	11,924	4,642	19,191	5,791
-1981	250,000	142,240	11,968	20,000	21,600	22,410	13,712	4,718	N/A	6,712
% Manufactured	59.0	97.7	97.6	97.1	91.5	1.3	21.1	N/A	8.3	14.8
% Food & Agric. Products	25.0	1.2	2.4	2.9	8.5	12.2	43.8	N/A	16.2	85.2
% Minerals	6.0	0.9	N/A	NIL	NIL	76.2	34.3	N/A	28.9	NIL
Merchandise Imports (U.S.\$ MM)										
-1980	249,310	140,528	18,765	21,710	19,733	14,233	9,924	6,391	23,771	8,204
-1981	270,000	146,596	22,048	N/A	22,560	18,544	N/A	7,134	N/A	9,366
% Plant & Capital Equipt.	27.0	6.5	14.4	30.1	2.6	27.7	30.5	22.1	29.8	25.9
% Manufactured Consumer	31.0	3.6	26.4	13.7	5.9	15.4	40.2	8.9	14.1	10.4
% Raw Materials & Food	18.0	38.8	52.4	29.9	44.3	18.8	7.7	24.7	12.3	28.3
% Petroleum	24.0	49.8	6.8	16.8	23.8	32.8	8.0	44.1	29.0	21.3
Net Capital Flow (U.S.\$ MM)	-17,400	+1,804	N/A	+800	+1,206	N/A	+969	+390	+1,458	+780
Foreign Reserves (U.S.\$ MM)	18,110	25,232	N/A	6,180	6,260	11,000	10,304	2,840	6,370	5,946
Outstanding Foreign Debt	N/A	NIL	N/A	30,000	N/A	15,210	3,253	13,767	436.1	5,918

Source: Far Eastern Economic Review - "ASIA 1982 Yearbook".

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CHAPTER IVINDONESIAN INDUSTRY OVERVIEW1. Plant Machinery and Equipment

OIL FIELD SUPPORT INDUSTRY

World Markets

The demand for oil field machinery and equipment is directly impacted by the level of planned expenditures for exploration and development by the major oil and gas companies. Despite soft oil markets in 1981, worldwide drilling remained at a high level because oil and gas companies were exploring for new sources of oil and gas to meet future market demand.

The U.S. is a major supplier of oil field equipment, especially for offshore drilling and production systems. Between 1981-86, the U.S. industry is forecasted to have a compound annual growth rate of 7.5%. Exports in 1981 were estimated at \$4 billion, nearly half of this industry's shipments. Offshore drilling is expected to comprise the majority of this world market in 1982 and beyond.

Indonesian Market

Oil is Indonesia's major export. In 1975, petroleum revenues accounted for 73% of the nation's foreign income and 57% of domestic income. The production of oil in Indonesia is as follows:

	<u>1977</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1984</u>
Million Barrels/Day	1.68	1.57	1.6	1.47*	1.83

Source: Financial Times, December 1981

*First three months of 1982.

Indonesia is attractive to oil companies because of the high grade and volume of crude normally found. Indonesia's oil sector received a very high level of investment in 1981 despite the oil-price freeze, creating a large market for drilling rigs and support equipment. There were 197 exploration wells drilled during 1980 and a record 244 drilled in 1981. The soft world oil market reached Indonesia in the beginning of 1982. Production fell in the first 3 months of 1982 from 1.6 mmbd to 1.47 mmbd and then to 1.24 mmbd in March. Indonesian officials are confident that the cutback is temporary. Foreign investments in exploration, development and production are budgeted to jump from \$3.2 billion in 1981 to \$4.2 billion in 1982.

In the first 6 weeks of 1982 alone, six new oil production sharing contracts were signed in Jakarta. This compares with 12 throughout 1981 and 11 in 1980. The six new contracts were signed with:

- . Tesoro Tarakan Petroleum Company, for the exploration and development of a 240-square-kilometer area at Tarakan, East Kalimantan;
- . Elf Aquitaine Indonesie Ritan for an 18,260-square-kilometer area at Ritan, Central Kalimantan;
- . Elf Aquitaine Indonesie Maruwai for a 19,535-square-kilometer area at Maruwai, Central Kalimantan;
- . Union Texas Java Inc. for a 13,640-square-kilometer offshore area at Cilacap, Central Java;
- . Louisiana Land and Exploration Indonesia (Southwest Java) Inc. and Getty Oil (Pelabuhan Ratu) Inc. for a 9,275-square-kilometer offshore area at Pelabuhan Ratu, West Java;
- . Mobil Semayang Inc. for an 18,460-square-kilometer area at Semayang, East Kalimantan.

The main supplier of oil field pumping and related equipment to Indonesia is the U.S. The Indonesian market for extraction-related equipment includes items such as piston pumps, compressors, drilling rigs, chemical pumps, and a wide range of control equipment such as chokes, gages, and other instruments. Sales of cleaning equipment for drilling heads include desanders, centrifuges, shakers, and washers. There is also a good market for field testing equipment such as viscometers and specialized pH meters. Viscometers sold in Indonesia are usually the mechanical, funnel type.

The remote locations of major fields will continue to result in increasing sales of pipeline and related equipment. Primary pipe needs are 12-, 24-, and 36-inch sizes with occasional requirements for 10- and 42-inch sizes.

Major oil support industry projects that the Indonesian Government is currently considering include:

- . Facilities for the maintenance and repair of drilling installations;
- . Inspecting and testing offshore oil and gas equipment;
- . A pipe-coating plant;
- . A leasing service for oil and gas industry equipment;
- . Manufacture of chemicals for the oil and gas industry;
- . Manufacture of oil and gas process equipment and engineered structures, including separators and dehydrators, scrubbers and filters, refinery equipment, carbon-dioxide and hydrogen-sulfide removal equipment, in Cilegon, West Java, or on Batam Island;
- . A rock bit factory;
- . A drill pipe factory;
- . Manufacture of seamless pipe in Cilegon, West Java;

Building 10,000-dwt oil tankers.

PETROCHEMICALS AND FERTILIZERS

World Petrochemical Market

The world petrochemical industry is currently suffering from over-capacity and sluggish markets. This is largely due to the petrochemical industry's dependence on industries severely hurt by world-wide recession, including housing, automobiles, apparel and appliances. Another reason for this over-capacity is because of the world boom in petrochemical construction during the 1970's which was based on anticipations of rapidly increasing demand that was not fully realized. Operating rates for most petrochemical plants currently vary from 60-70% of capacity.

A major transition in world petrochemical production is occurring and is expected to continue throughout the 1980's. Production is changing from domination by U.S. and West European producers to concentration in the Asia/Pacific area and the Mid-east, in the oil and gas rich countries. The table on the following page shows world petroleum projects constructed or planned from 1975 - 1981, by country.

The Asia/Pacific area's share of new projects is almost 30%. Western Europe's share has decreased from 24% in 1975 to 11% in 1981. Utilization rates in Western Europe's petrochemical plants are now about 60% and, if plant closings continue, might only rise to 75-80% by 1986.

Petrochemical Plant Construction
(number of plants)

	<u>1975</u>	<u>1976</u>	<u>1978</u>	<u>1981</u>
North America	163	157	103	94
Western Europe	263	200	133	70
Eastern Europe	135	111	133	94
Middle East & Africa	92	113	108	93
Latin America	152	146	125	85
Asia/Pacific				
Australia	13	2	5	7
Burma	-	-	-	1
China (mainland)	45	48	21	31
Hong Kong	1	-	-	-
India	61	48	29	40
Indonesia	23	15	9	5
Japan	74	52	32	35
Korea	19	14	23	13
Malaysia	1	1	-	-
New Zealand	-	-	-	3
Pakistan	10	10	11	3
Philippines	-	-	1	2
Singapore	2	2	1	5
Sri Lanka (Ceylon)	2	2	2	-
Taiwan	43	19	13	28
Thailand	-	-	1	3
Total Asia	294	213	148	176
Worldwide Total	1,099	940	750	612

Source: Oil and Gas Journal, March 1982

U.S. production of petrochemicals will increase, though exports are expected to decrease as shown in the table below:

U.S. Petrochemical Industry
(million lbs.)

	<u>1975</u>	<u>1980</u>	<u>1981</u>	<u>1985</u>
Production	43,300	61,700	N/A	71,300
Exports	N/A	5,691	4,697	2,682

Source: Chemical Week, Chemical and Engineering News, 1982.

Despite worldwide over-capacity, Mexico, Canada and the Mid-east are planning large capacity expansions during this decade.

The petrochemical industry is capital intensive, energy dependent and has relatively low manpower requirements. It is the most energy intensive manufacturing industry.

Indonesian Petrochemical Market

In 1977 there was only one petrochemical plant in Indonesia, which had an annual production capacity of 20,000 tons of polypropylene. Most of the petrochemical production equipment has been, and is currently imported. A fairly recent development in this industry in Indonesia is its utilization of natural gas supplied by various LNG projects with which they intend to substantially expand their petrochemical industry.

Establishment of a strong upstream petrochemicals industry in Indonesia is well under way, with centers for the production of aromatics, olefins and methanol in various stages of development. In order to fully utilize Indonesia's vast store of natural resources, the Government seeks to develop downstream petrochemicals industries as well, specifically for the manufacture of:

- . Caprolactam
- . Phthalic anhydride
- . Maleic anhydride
- . Phenol
- . Elastomers
- . Melamine

- . Ethylene and polypropylene glycol
- . Penta erythritol
- . Vinyl acetate
- . Oxalic acid and formic acid
- . Chlorinated hydrocarbons
- . Methanol and ethanol-based chemicals
- . Styrene monomers and ethylbenzene
- . Bisphenol A and epoxy resin

Petrochemical Industry Equipment Requirements

The market for petrochemical refining and processing equipment in Indonesia reached \$50 million in 1975 and was expected to grow annually at the rate of 25% to reach \$180 million by 1982. For production of petrochemical complexes, the largest amounts of money are spent on gas turbines, high pressure piping, high pressure valves and fittings, compressors, chemical and process pumps, process control instruments, and various types of special reaction vessels.

The market for various chemical and petrochemical refining equipment during the 1970's is shown by type of equipment in Exhibit IV-1.

Fertilizer World Markets

World production of all fertilizers was 119 million metric tons in 1980, as shown in Exhibit IV-2. Of this amount almost 60 million, or about 50% of output were nitrogenous fertilizers. World production of nitrogenous fertilizers is expected to increase to 71.6 million metric tons by 1985, according to Stone and Webster forecasts. Supply will exceed demand which

is estimated at 66.7 million tons for 1985. The highest volume producers of nitrogenous fertilizers in 1980 were Asia, with an estimated 22% of production, the USSR with 21% and the United States with almost 20%. By 1985 Asia's share of production is expected to increase to 25%, USSR to 25% and U.S. share will decrease to 16%. Asia's nitrogenous fertilizer production has increased from 9.4 to 12.5 million tons between 1977 and 1980 and is expected to increase to 17.8 million tons by 1985. Despite its high production Asia is a net importer of nitrogenous fertilizers and is expected to remain one even after 1985.

As shown in Exhibit IV-2, the main fertilizer producers in Asia are China, Japan and Indonesia, while Korea and Malaysia have smaller industries. Of these countries only Japan, Korea and Indonesia are net exporters.

Indonesian Fertilizer Market

The government plans to increase Indonesia's fertilizer capacity from 500,000 tons in 1975 to almost 4 million tons in 1985, realizing a 7% annual growth. Indonesia has become self sufficient in both urea and triple superphosphate fertilizer with the completion of various fertilizer projects. Production of all nitrogenous fertilizers increased from 500,000 to approximately 2 million metric tons in 1980 as shown in Exhibit IV-2. Production of urea more than tripled from 1976/77 to 1978/79, from 406,000 tons to 1,434,000 tons. In 1978/79 Indonesia exported 18% of its urea production and will increase urea exports after completion of two plants with capacity of 570,000 tons each. Indonesia has recently begun to supply nitrogen fertilizer to the ASEAN market. Other planned fertilizer plants are shown in the following table:

<u>Project</u>	<u>Product</u>	<u>Annual Capacity (1,000 tons)</u>	<u>Completion Date</u>
Pusri DAP (conversion)	DAP	320	NA
Pupuk Kujang	Urea	570	1978/79
Kaltim I	Urea	570	1982/83
Petrokimia Gresik	TSP	330	1978/79
	DAP	80	1978/79
	NPK	50	1978/79
Aceh I	Urea		1985/86
Cilacap	TSP	400	NA

Source: U.S. Department of Commerce.

A favorable attitude toward U.S. made equipment has been created in the Indonesian fertilizer industry through construction of fertilizer plants by U.S. firms, and also through the work of American experts who have served as consultants on fertilizer supply and production. The \$245 million Kellogg contract for construction of the P.T. Kudjang urea plant offered sales opportunities for U.S. equipment suppliers.

CEMENT INDUSTRY

World Markets

World production of cement increased less than 1 percent from 1980 to 1981, from 884 to 888 million metric tons. Declines in world cement consumption and production in 1981 in the industrialized countries, especially in the United States, reflect reduced activity in the construction industry and general weakness in the world economy. Cement is the basic binding ingredient in concrete products. Cement and concrete are used in all types of construction, so the output of these materials varies with the level and mix of construction activity. Housing starts decreased in 1981 in most of the major industrial countries. U. S. cement consumption and production slumped in 1981 to the lowest levels since 1975. In 1982

cement production is expected to remain depressed and may increase only slightly. The major producers of cement are the United States, Europe (primarily Spain and Italy) and Japan. Japan and the U.S. each produced almost 10% of world output in 1978. Korea has a rapidly growing cement industry, which increased production from less than 12 million tons in 1976 to 28.6 million tons in 1981 and plans to increase output to 40 million tons by 1986. Korea should therefore be considered a significant Asian competitor in cement production. Thailand, the Philippines, Malaysia, Singapore and Hong Kong also produce cement. The following table shows world cement production, broken down by Asian countries.

World Cement Production
(000,000 metric tons)

	<u>1976</u>	<u>1978</u>	<u>1980</u>	<u>1981</u>
World	732.5	853.0	884.3	888.0
U.S.	66.7	76.2	68.2	65.0
Japan	68.7	84.9	N/A	N/A
Indonesia	2.0	3.6	N/A	N/A
Korea	11.9	15.1	N/A	N/A
Thailand	4.4	5.0	N/A	N/A
Phillipines	4.2	4.2	N/A	N/A
Hong Kong	.8	1.2	N/A	N/A
Malaysia	1.7	2.2	N/A	N/A
Singapore	1.5	1.6	N/A	N/A

Sources: United Nations, U.S. Department of Commerce, Bureau of Mines.

The U.S. produced 65 million tons or 7% of world cement output in 1981, which decreased from 9% in 1978. The U.S. might experience cement supply problems in the 1980's if high levels of construction activity occur, and increased imports can be expected. They imported 3.5 million tons in 1981, which decreased from 4.8 million tons in 1980. Almost 70% of U.S. cement imports are currently imported from Canada.

Indonesian Market

Indonesia's cement industry has grown very rapidly. Average annual growth in production increased 28% between 1976 and 1979 and capacity could grow at 25% annually between 1980 and 1985 from almost 7 to 14 million metric tons. During 1979/80 Indonesia became a new exporter of cement. By the end of the period Indonesia had seven major cement plants in operation with a total capacity of 6.85 million tons.

Plant Machinery and Equipment Requirements

Five cement plant expansions ranging from 0.5 to 1 million tons are scheduled for completion by 1984/85 as well as five new plants in Sumatra, Java, Sulawesi and Timor. Domestic production of related building materials, including cement asbestos panels and pipes, began in 1976 and was stimulated by the rapid growth in this industry. The total market for concrete and building products production equipment and other construction equipment in 1980 was estimated at over \$81 million, of which \$30 million or 37% would be bought from U.S. firms. There is a continued demand for low cost building materials of all kinds, even though Indonesia produces some of its own materials. In view of the rapidly expanding cement production planned for the coming years, good sales potential exists for equipment to produce concrete block, concrete tiles and concrete pipe. Japanese manufacturers are one of the leaders in supplying Indonesia's need for both construction equipment and building products. Sales of Japanese building products are high because of aggressive advertising and because of high Japanese investment in Indonesian construction.

According to a recent study by the Ministry of Industry in Indonesia, Indonesia currently has machine capabilities to supply 25% to 30% of the

plant machinery and equipment for their cement industry. This figure should escalate to 40% between 1982 and 1985 and 50% between 1985 and 1990.

PULP AND PAPER INDUSTRY

World Markets

The world market for pulp in 1981 was characterized by excess producer inventories and capacities reflecting a soft paper market due to weak growth in world industrial production. Despite current recessionary trends the pulp and paper industry is considered a growth market. The United States is the world's largest producer of paper and board accounting for roughly 35% - 40% of the world's total output. Other major producers are Canada, Sweden, and Finland. Total U.S. production of pulp and paper was 108 million metric tons in 1981 and world production was approximately 307 million tons, as shown in Exhibit IV-3. Japan is the largest producer in Asia, having produced 27.3 million tons in 1979, which is still insufficient to meet domestic consumption of 29.3 million tons. Japan will import almost 70% of its imported forest products from the U.S. in 1982.

Indonesian Market

Though Indonesia possesses the richest forest resources of any country in East Asia it is a net importer of pulp and paper products. Through the rehabilitation and expansion of old plants and the construction of new ones, Indonesia hopes to be self sufficient in paper and pulp production by 1985. The Indonesian Government has decided that the pulp and paper sector of the economy is an area where foreign investment will be encouraged. At present, however, only 10% of pulp demand is produced in Indonesia and only 20 - 25% of paper demand. A plan for the first large scale integrated wood-based

pulp and paper mill in the country is presently being prepared with funding from the World Bank.

Plant Machinery and Equipment Requirements

The size of the import market for both pulp and paper mill equipment and pulp and paper production equipment, as shown in Exhibit IV-4, was approximately U.S. \$4.9 million in 1975, \$7.7 million in 1976 and an estimated \$29 million in 1980, with Japanese and West German suppliers dominating the market (61% and 28% shares respectively, in 1976). The U.S. had only a 2% share of this market in 1978. The Indonesian Government plans that 10% of machinery requirements be supplied by Indonesian firms by the end of 1982 and 30% by 1990.

Both new and used pulp and paper machines are expected to be purchased as the expansion and rehabilitation of existing plants proceeds. Specific equipment needs include headboxes, presses, dryers, calendars, reels, winders, vacuum systems, pulpers, and processing instrumentation. A number of the new, privately owned paper mills that are being planned will require machines for producing such specialty paper products as cigarette paper, cups, boxes, and paper tubing. Since Indonesia is becoming more concerned with the dangers of water pollution, particularly in those areas adjacent to agricultural lands and fisheries, there should be a growing need for processes and equipment for recycling pollutants and processing of effluents.

Current top priority pulp and paper projects include the following:

- . An integrated forest-based industry in East Kalimantan;
- . A dissolving pulp and rayon plant in South Sumatra;

An integrated pulp and paper project in South Sumatra;

A newsprint mill in West or Central Java.

POWER GENERATION

Supply and Demand in Indonesia

The rapid economic growth in the 1970's in Indonesia led to a high level of energy consumption that increased at about 10.5% annually along with an annual GDP growth of 8.1%. Electric power demand increased 12.4% annually between 1970-1978 and, according to a recent Bechtel report, will increase 11.6% on average for the next 25 years. It is projected that by 2003, 75% of urban households and 41% of rural households will be electrified, compared with 34% and 3% respectively in 1978. Also projected is that commercial consumption will increase 217% to 252% by 1990.

Electric power supply in Indonesia has not been able to meet this rapidly increasing demand. Installed capacity in Indonesia in 1981 was about 4,874 Mw of which the public utility (PLN-Perusahaan Umum Listrik) supplied 56% and private end user electrical installations operated by industries and others supplied the rest. During the 1977 - 1981 period, annual capacity growth was 18.8% for utilities and 13.5% for private users. Private generation construction in Indonesia began as a result of consistently short supply by PLN.

The long term generation expansion plan as shown in Exhibit IV-5 provides for increasing capacity of all forms of electric power. Nuclear and coal plants are expected to provide most of the additional electric power and gas and hydroelectric power capacity will also expand considerably. It should

be noted that the planned capacity additions shown in Exhibit IV-4 may not fully materialize. Experience has shown that planned electric capacity in Indonesia is not always realized because of insufficient technology and skills, lack of funds, and construction delays.

Investment

Under the current and future government plans or Repelitas, investment in electric power supplies is considerable. Investment is expected to grow from U.S. \$1.4 billion annually during Repelita III to \$2.3 billion during Repelita V to \$3.7 billion annually during Repelita VII.

The foreign portion of this total investment is currently about 70% or \$1 billion, but is expected to decrease to between 34% and 42% or \$1.3 and \$1.6 billion respectively by 2003.

Exhibit IV-6 shows the value of imports of electric power systems into Indonesia between 1975 and 1980. Country shares of exporting generation, transmission and distribution equipment to Indonesia during this period were as follows:

Indonesian Imports of Electric Power Systems (country shares)

<u>Supplier</u>	<u>1975</u>	<u>1977</u>	<u>1980</u>
U.S.A.	15%	7%	14%
Japan	25%	16%	45%
Germany	33%	19%	16%
Netherlands	5%	49%	2%
Others	22%	9%	23%

Source: Central Bureau of Statistics

In 1980, Japan had the largest share of this market with 45%, followed by Germany with 16% and the U.S. with 14%. In earlier years Germany had a larger market share than Japan and the U.S.

Electric Power Equipment and Materials Requirements

Domestic electrical machinery and equipment production has increased every year as shown in the following table.

Electrical Equipment Production (No. of Units)

<u>Equipment</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
Electric motors	1,200	396	150	563	N/A	563
Transformers	840	1,200	1,170	1,400	1,375	2,331
Electric panels	200	31,000	30,300	36,000	4,194	10,239
Generators	N/A	N/A	N/A	3,268	4,832	7,271
Welding generators	N/A	N/A	N/A	49	111	1,078
Gen-sets	N/A	N/A	26	75	138	142

Source: Ministry of Industry, Indonesia, 1981.

Domestic manufacturers of electric power systems primarily assemble imported components. As of December 1981 there were at least 21 assembling companies though no manufacturer could produce electrical power equipment from base material to final product. There are five registered diesel engine assemblers in Indonesia with a combined production capacity of 74,500 units per year. Twenty (20) companies are registered to produce low and medium voltage electric panels, switchboards, transformers and electric auxiliaries. These companies undertake mainly metal fabrication and assembly work on various purchased components. Most of them fabricate and assemble the panels according to customer specifications.

Based on past demand for electrical equipment and future generation plans, the demand for electrical equipment until 1990 is estimated in the following table.

Projected Demand for Electrical Equipment

<u>Year</u>	<u>Electric Motor (HP)</u>	<u>Transformers</u>		<u>Generators</u>	
		<u>Medium Capacity (KW)</u>	<u>Large Capacity (KW)</u>	<u>Medium Capacity (KW)</u>	<u>Large Capacity (KW)</u>
1981	115,251	2,176,650	232,000`	423,630	1,391,250
1982	119,455	2,421,100	263,000	468,120	1,399,125
1983	123,659	2,665,500	293,000	512,670	1,405,250
1984	127,862	2,909,900	324,000	557,190	1,412,075
1985	132,066	3,154,400	354,000	601,740	1,418,900
1986	136,270	3,398,800	385,000	646,260	1,425,550
1987	140,474	3,643,200	425,000	690,780	1,432,375
1988	140,881	3,887,600	446,000	735,330	1,438,850
1989	144,678	4,132,000	477,000	779,850	1,446,200
1990	153,086	4,376,500	508,000	824,400	1,453,025

Source: Ministry of Industry, Indonesia, 1981.

The long term energy plan will require large quantities of steel and cement by 2,003, as shown in the following table.

<u>Material</u>	<u>Quantity</u>
Cement	245 - 263,000 metric tons
Steel	2.2 - 2.4 million metric tons
Semi-finished steel products	1 million metric tons
Fabricated steel products	30,000 - 35,000 metric tons

Source: Bechtel National, 1980.

As many as 1 million new workers will be needed by the energy sector by 2003. This includes at least 1,200 engineering graduates, 2,000 trained supervisors and managers and between 2,000 - 12,000 technicians and skilled craftsman annually. Training programs for these workers are crucial to meet the labor demands of this industry.

SUGAR INDUSTRY

World Markets

World production of sugar is estimated at 97.3 metric tons and consumption at 93 tons for 1982. Sugar production increased at an average annual rate of 7% between 1975 and 1980 and is expected to increase 4% annually between 1980 and 1985. Production by 1985 is estimated at over 100 million tons, as shown in Exhibit IV-7. Major producers and exporters are the EEC, Brazil and the U.S., and in Asia, Thailand and the Phillipines. India was the world's largest producer in 1981/82 and produced an estimated 8.8 million tons, almost 10% of world output, due to higher sugar prices which led to a 20% increase in cane area and production. Production is expected to decrease in 1982/83 to 7.6 million tons. Taiwan is a smaller producer but is a net exporter and China, Malaysia, Japan and Korea are all net importers of sugar. Sugar prices are currently at their lowest in 10 years and the International Sugar Organization has recently authorized producers to increase stocks to boost market prices back to profitable levels. Recent figures point to a world surplus stock of over 37 million tons, or 40% of current world production. Sugar consumption is expected to increase at an average 1.5% per year in the industrialized countries and at a higher rate in the developing countries.

Indonesian Market

Indonesia was the world's largest sugar exporter before World War II, during which time most of the sugar mills in the country were destroyed which made Indonesia a net importer. The Sugar Council in Indonesia is establishing an integrated program to rebuild the country's position in world sugar trade.

Between 1976 and 1981 Indonesian sugar production increased at about 3% annually. Between 1981 and 1985 it is estimated that production will increase 10% annually, so that by 1986 Indonesia can be self sufficient in sugar consumption. Indonesian sugar prices are well above world market prices reflecting Indonesia's relatively high cost of producing sugar and their determination to become self sufficient by insuring profitability for sugar producers. Industry experts do not feel that their sugar sales would be competitive in world markets. Indonesian sources estimate that consumption will increase at 7.75% during the next few years, increasing consumption to 2.6 million tons by 1985.

Plant Machinery and Equipment Requirements

The Indonesian government plans to complete 18 sugar mill projects during the Fourth Repelita, 1984/85 - 1989/90. Contracts for the construction of six of the 18 projects have been awarded to Japanese, Taiwanese, Pakistani, Indian and British companies, and another 6 have been tendered. Most of the new factories, each with a milling capacity of 3,000 to 6,000 tons of cane per day, will be built outside Java. The government is also in the process of modernising 47 old sugar factories. Domestically, there are at least two state-owned machine shops which produce crushers, milling equipment, and centrifuges for use in the sugar industry. An Indonesian holding company has recently established a plant in Bardury to produce sugar industry equipment and machinery.

PALM OIL INDUSTRY

World Markets

World production of palm oil was 4.7 million tons in the 1980 - 81 season as

shown in Exhibit IV-8, an increase of almost 5% over the prior year. Production of palm oil increased significantly in Malaysia to 2 million tons. In 1977 Malaysia was the world's largest producer with 28% of total production, Nigeria was second with 26% and Indonesia third with 11%. By 1981 Malaysia produced about 45% of total production. The Phillipines and China are also large producers of palm oil. In 1977 Malaysia had 67% of the world export market, Indonesia 21%. Malaysia is actively marketing its palm oil to foreign governments and has announced recent import commitments from India, Sudan, Nigeria, Kenya and Egypt, that total almost 800,000 metric tons. The USSR, Japan, Africa and India are importers of palm oil. World prices in 1981 increased to an average \$655 per ton, compared to \$584 in 1980 and \$654 in 1979.

Indonesian Market

After 20 years of stagnation, the Indonesian palm oil industry began to grow. Indonesian palm oil production had an average annual increase of about 11% between 1970 and 1978. At that time Indonesia exported 86% of its palm oil production. Domestic consumption in the form of soap, margarine and cooking oil has since taken a larger share of production causing exports to decrease. Between 1978 and 1981 production increased 22% average annually from 505,000 to 844,000 tons, which was 18% of total world production. Exports in 1981 were 235,000 tons which was only 28% of total production. Exports of palm oil are expected to increase in 1982 to between 250 - 350,000 tons. The government is planning a \$4 billion investment in this industry, hoping to double current output by 1990. Industry experts expect output will grow at 10% per year.

Palm oil production is very labor intensive. Seeds and sometimes saplings are hand planted and fruit bunches are handpicked and transported to the palm oil factory by cart or train.

TEA AND OTHER AGRICULTURAL INDUSTRIES

World Tea Markets

The major world producers of tea are India, Sri Lanka, China and Indonesia who together, produce over 60% of world tea output. World tea production for 1982 is estimated at 1.87 million metric tons, compared to 1.88 million tons in 1981, as shown in Exhibit IV-9. Droughts in early 1982 in all major producing countries except China created this decline in production. The major importers of tea are the United Kingdom, the United States and Pakistan, who respectively consume about 25%, 11% and 9% of all tea imported for consumption. In Asia, Thailand tea imports increased from 686 metric tons in 1977 to 900 tons in 1979. Generally, in the last several years, world supply has been greater than demand. This year, because of droughts, there is a shortfall in supplies from nearly all tea producers which has led to increases in world tea prices.

Indonesian Tea Market

Indonesia produced 107,000 tons of tea in 1981, or 6% of world output, according to Exhibit IV-9. This is expected to decrease significantly (about 10%) in 1982 due to volcanoes in two major tea estates in West Java. Exports of tea in 1981 were 83,200 tons or 70% of tea production and were valued at \$95 million which was 2% of Indonesia's non-petroleum exports. Tea exports are expected to decrease 18% in 1982 to 68,000 tons. Indonesia exports tea primarily to the U.S., Pakistan and Singapore - - respectively

about 20%, 18% and 13% of their tea exports. The U.S. imports about 15% of their tea imports from Indonesia. World tea production has been increasing at about 2-4% per year while prior to this year, Indonesian tea production had increased about 10% annually over the last ten years. Black tea production in Indonesia is expected to stabilize when volcanic activity subsides and green tea production, which is consumed domestically, is expected to increase.

Other Agricultural Products

Historical production trends and consumption projections of other agricultural products are provided in Exhibit IV-10. The fastest growing crops between 1970 and 1981 with the highest average annual growth rates were rice (6%), soybeans (5.5%), groundnuts (7.5%) and green peas (46%). Rice production increased every year since the beginning of the current Repelita in 1979. This year, production is expected to increase to 23 million tons.

Agricultural Machinery and Equipment

The market for agro-industry equipment in the 1970's is provided in Exhibit IV-11.

The items with major sales potential have been cultivating machinery, tractors, harvesting equipment and agricultural pumps. American and Japanese firms are the leading suppliers, particularly in tractors, pumps and irrigation equipment. In mid-1976, in tractor sales to Indonesia, Japan had a 17% market share, U.S., 17%. In pumps and irrigation equipment, Japan had a 38% share compared to U.S. 19%, and in cultivating machinery, Japan had 50% of the market, U.S., 30%.

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2. Electronics Industry

The electronics industry is broken down into three major groups: consumer, professional and electronic components. World markets for professional electronics are currently strong. Consumer and electronic component markets are currently weak due to world recessionary trends but are expected to grow as the world economy strengthens. In Indonesia, domestic production and consumption of consumer electronics is levelling off and professional and component electronics production are being increased to meet rapidly growing demand.

CONSUMER ELECTRONICS

The products classified in this group include televisions, radios, stereo components, recorders and videotape players.

World Markets

The major manufacturers of consumer electronics are Japan, Hong Kong, the U.S. and Korea. Germany is a large producer of stereo components. Japan is a market leader in all product groups in this category. Color televisions are the principal product of the United States in this category, though they encounter severe competition and import color receiver printed circuit boards from the Far East. The U.S. imported over \$6 billion of consumer electronics in 1981, primarily video cassette recorders and television receivers from Japan, Taiwan and Korea. Between 1980 and 1990 Korea plans to expand this industry by constructing 230 additional consumer electronic plants.

The increasing use of video products and systems is expected to dominate the consumer electronics market with Japan remaining a market leader.

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Indonesian Market

Indonesia currently imports more consumer electronics than it produces, as shown in Exhibit IV-12. Since the early 1970's, the number of consumer electronic assembly companies in Indonesia has grown rapidly. The industry now has the capability to produce a wide variety of products, ranging from simple radio receivers to sophisticated color televisions.

Production of consumer electronics increased 47% between 1976 and 1978, from 1.7 million units to 2.4 million units, as shown in Exhibit IV-12. Most of the necessary components are imported and the nature of the industry is characterized by many small assembly plants that use an even greater number of different brand components. The production of black and white television sets and radio cassette recorders increased dramatically in the late 1970's as shown in the chart below. Average annual production growth rates from 1975-1978 were 82% for black and white televisions and 38% for radio cassette recorders.

Annual Production of Consumer Electronics
(000)

<u>Items</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>
Radio Receivers	1,071	1,100	1,091	1,280
Radio-Cassette-Recorders	227	325	550	488
Amplifiers	32	32	55	70
Black & White Television Sets	165	210	503	573
Color Television Sets	0	3	24	38

Source: BPPT

The value of domestic production grew an average of 60.4% between 1974-1977 while domestic consumption rose 54.7% and imports 54.4%. Indonesia's capability of meeting domestic consumption of these products increased from 44.7 of total consumption to 51.6 during this period.

The Indonesian Government is planning to increase the value of consumer electronics production by 1984 to 157% over 1979 production value and plans to supply 61% of domestic consumption by 1984, verses 53% in 1979.

PROFESSIONAL ELECTRONICS

The equipment classified under this heading includes radio and TV communication equipment, telephone exchanges, electronic computers, electric medical equipment and instrumentation systems. They are used in commercial, military and industrial applications.

World Markets

The major producers of radio and television communication systems are Japan, the U.S., Taiwan and Germany. This market is currently strong, primarily from government defense procurements and also as a result of developing countries strengthening their telecommunication infrastructures. Demand and production of this equipment is increasing in the United States as a result of increased defense spending. The U.S. exports about 9% of total product shipments, mainly to Canada and West Germany. The U.S. maintains a trade surplus in this industry as shown in the chart below, though imports of radio apparatus and parts from Japan are increasing.

U.S. Professional Electronics (U.S. \$000,000)

	Production	Consumption	Imports	Exports
1981	\$26,789	N/A	\$1,741.3	\$2,304.9
1980	\$26,669	N/A	\$1,138.9	\$1,971.4
1977	\$20,827	N/A	N/A	N/A

Source: U.S. Department of Commerce

The electromedical equipment market is dominated by U.S. and European manufacturers. In the U.S., electromedical industry shipments in the 1981-86 period are expected to grow at an annual real rate of 6.2%. The instrumentation market is also expected to grow due to the spread of electronic intelligence and despite a current slowed growth rate caused by the recession.

Indonesian Market

The Indonesian government is planning to considerably increase production of professional electronics during the 1980's. In 1978 there were only four local companies active in this business, two producing telephone exchanges and two producing radio communication equipment. The value of communications systems produced in Indonesia is expected to increase from \$200,000 in 1976 to almost \$140 million in 1986. Consumption during this period is also expected to increase, from \$118 million to \$293 million, as shown in the table below.

Indonesian Professional Electronics (U.S. \$000,000)

	<u>Production</u>	<u>Consumption</u>	<u>Imports</u>	<u>Exports</u>
1986	\$139.6	\$292.5	\$153.9	\$1.0
1981	74.7	164.9	91.0	0.8
1980	56.1	148.3	92.6	0.4
1976	0.2	117.9	117.7	0

Sources: U.S. International Marketing Centre, Singapore, U.S. Department of Commerce.

The development of this industry initially suffered because financing of professional electronic plants was often tied to purchase of equipment manufactured by the financing country. The result was importation of

equipment from many countries with different standards and specifications. The Government has since uniformly standardized this industry. Standards and requirements of communications equipment sold in Indonesia are stipulated by Perumtel, the Government owned telecommunications authority.

Equipment Requirements

Currently, about 30-45% of the total market for communications systems in Indonesia is supplied by local manufacturers. Of the 55-70% purchased from foreign suppliers, Japan has the largest market share followed by Germany, the U.S. and France. In 1980 the U.S. had approximately 10% of the market. The U.S. is a strong competitor in test and measurement equipment and in video and radio broad-casting equipment and is weak in telephone equipment.

Most of the local production of communications electronics uses technology obtained from joint ventures with foreign manufacturers.

The test and measurement equipment with the best sales opportunities for U.S. suppliers, according to a recent U.S. Department of Commerce report, are:

- . digital test equipment
- . spectrum analysers
- . telephone test sets
- . microwave modulators
- . FET multimeters
- . FET/VOM meters, and,
- . signal operating equipment.

ELECTRONIC COMPONENTS

Included in this category are electron tubes, semiconductors, capacitors,

resistors, electronic coils, transformers, connectors, switches and others. Electronic components serve an increasing variety of end-user markets in commercial, industrial, military and consumer applications. The three broad categories of electronic components are active components (devices capable of controlling voltages or currents for amplification or switching action in a circuit), passive components (not capable of providing amplification), and other components.

World Markets

Japan, Malaysia, the U.S., Germany and Singapore are major manufacturers of electronic components. U.S. shipments decreased in 1981 as a result of the recession. Japan and the U.S. dominate the semiconductor market. Japan exported over \$5 billion of electronic components in 1980 and imported about \$1.3 billion. The world market is currently depressed due to excess capacity in the industry and reduced demand in Europe and the U.S. Exhibit IV-13 shows U.S. shipments of electronic components to world markets.

The U.S. exports active components primarily to the Far East, specifically Malaysia, Singapore, the Phillipines and Korea, and to Europe.

The following chart shows the shares of the major importers of U.S. active electronic components, extrapolated from dollar volume export statistics.

World Shares of U.S. Active Electronic Component Imports

	<u>1980</u>	<u>1981</u>
Malaysia	17%	21%
Singapore	12%	12%
Phillipines	8%	11%
Korea	6%	7%
Other Far East	17%	16%
Europe	21%	13%
Other	19%	20%
Total	<u>100%</u>	<u>100%</u>

U.S. exports of passive components are primarily to Europe and Latin America. The majority of active components imported into the U.S. are from Malaysia, Singapore and the Phillipines. Passive components are imported primarily from Japan, Mexico and Taiwan. Korea has plans to build 496 new electronic component plants by 1990 and is expected to be a major competitor in this industry in Asia.

Indonesian Market

The Indonesian Government plans rapid growth for the electronic components industry, as shown in Exhibit IV-14, to meet growing consumption. Consumption is expected to increase from 639 million units in 1980 to 1.76 billion units by 1985, an annual growth rate of 35%. The primary objectives for developing this industry are import substitution and growth based on the relatively low wages of Indonesian labor. The following table shows the breakdown of electronic component production between 1975 and 1978.

Annual Production Of Electronic Components
(000)

<u>Items</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>
Loudspeakers	N/A	637	600	700
Transistors	5,200	N/A	1,300	N/A
Integrated Circuits	N/A	100,000	115,000	203,000
Light Emiting Diodes	N/A	4,312	4,200	N/A
Cathode Ray Tubes	N/A	13	29	55
IF Transformers	N/A	N/A	N/A	103

Source: BPPT

Semiconductor components (transistors, circuits and diodes) are manufactured in Indonesia by foreign companies exclusively for re-exportation to their

parent countries. Singapore, Japan, the Phillipines and the U.S., all produce semiconductor components in Indonesia. Continued foreign investment is being encouraged in this industry.

EXHIBIT IV-1

INDONESIA: SIZE OF THE MARKET FOR CHEMICAL AND
PETROCHEMICAL REFINING AND PROCESSING EQUIPMENT
(U.S. \$000)

	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1980</u>
Pumps for Chemical and Petrochemical Production					
Domestic production	-	-	-	-	100
Imports:					
United States	5,980	5,900	7,500	8,600	17,800
Japan	2,500	3,700	4,700	-	-
West Germany	400	800	1,000	-	-
United Kingdom	630	650	850	-	-
Netherlands	60	550	700	-	-
Italy	120	150	190	-	-
Others	1,000	1,450	1,900	-	-
Total	<u>10,690</u>	<u>13,200</u>	<u>16,840</u>	<u>20,280</u>	<u>37,200</u>
Total Market	10,690	13,200	16,840	20,280	37,300
Control and Measuring Instruments for Chemical/Petrochemical Production					
Domestic Production	-	-	-	-	1,000
Imports:					
United States	1,450	1,660	1,680	1,815	3,200
Japan	1,150	1,300	3,200	-	-
West German	450	600	500	-	-
Netherlands	150	320	130	-	-
United Kingdom	300	470	170	-	-
France	180	40	175	-	-
Others	50	60	425	-	-
Total	<u>3,730</u>	<u>4,450</u>	<u>6,280</u>	<u>7,275</u>	<u>14,010</u>
Total Market	3,730	4,450	6,280	7,275	14,010
Valves and Taps for Chemical/Petrochemical Production					
Domestic Production	-	-	-	-	100
Imports:					
United States	1,600	1,800	2,100	3,200	5,100
Japan	1,450	1,600	2,800	-	-
United Kingdom	600	1,300	1,400	-	-
West German	200	150	100	-	-
Netherlands	350	250	430	-	-
Italy	50	150	450	-	-
Others	800	700	120	-	-
Total	<u>5,050</u>	<u>5,950</u>	<u>7,400</u>	<u>9,190</u>	<u>15,200</u>
Total Market	5,050	5,950	7,400	9,190	15,300
Separation and Filtering Equipment for Chemical/Petrochemical Production					
Domestic Production	10	50	100	120	200
Imports:					
United States	142	500	200	480	970
Japan	788	2,134	3,300	-	-
West Germany	400	490	610	-	-
Singapore	-	200	245	300	-
United Kingdom	100	125	156	-	-
Australia	50	65	80	-	-
Other	200	250	310	-	-
Total	<u>1,880</u>	<u>3,809</u>	<u>4,916</u>	<u>6,070</u>	<u>12,140</u>
Total Market	1,890	3,859	5,016	6,190	12,340
Other Chemical/Petrochemical Production Equipment					
Domestic Production	20	50	80	300	3,200
Imports:					
United States	2,958	1,370	3,730	4,600	8,320
Japan	2,252	5,462	6,610	-	-
West Germany	866	765	1,430	-	-
United Kingdom	721	434	1,000	-	-
France	128	776	720	-	-
Switzerland	8	455	430	-	-
Others	225	407	440	-	-
Total	<u>7,158</u>	<u>9,669</u>	<u>14,360</u>	<u>17,600</u>	<u>32,000</u>
Total Market	7,178	9,719	14,440	17,900	35,200
Total Market Size	28,538	37,178	50,016	60,835	114,150

Source: U.S. Department of Commerce.

EXHIBIT IV-2
FERTILIZER INDUSTRY
(000,000 - Metric Tons)

	World		Indonesia		Nitrogenous Fertilizers							
	All Fertilizer ⁽²⁾	Nitrogenous ⁽²⁾	All Fertilizer	Nitrogenous	U.S. ⁽²⁾	Asia ⁽³⁾	China ⁽²⁾	Japan ⁽²⁾	Korea ⁽²⁾	Malaysia ⁽²⁾	Phillipines ⁽²⁾	Thailand ⁽²⁾
1980												
Production	118.9	59.8	N/A	2.0 ⁽⁴⁾	11.2	12.5	9.1	1.5	.8	.04	.04	-
Consumption	111.7	57.2	N/A	.6 ⁽²⁾		10.3	14.1	10.6	.4	.1	.2	.2
Export	34.5	12.1	N/A	.1 ⁽²⁾	2.4		.02	.7	.3	-	-	-
Imports	33.5	12.4	N/A	.01 ⁽²⁾	2.3	N/A	1.5	.04	-	.1	.2	.2
Capacity			2.8 ⁽⁴⁾	2.4 ⁽⁴⁾								
1977												
Production	100.3	47.6	N/A	.5 ⁽⁴⁾	9.8	9.4	5.2	1.2	.5	.04	.05	-
Consumption	96.2	46.4	N/A	.4	9.7	11.2	5.9	.7	.4	.09	.2	.1
Exports	26.6	8.5	N/A	1.1	1.1	N/A	-	.7	.04	-	-	-
Imports	26.2	8.8	N/A	.01					-	.05	.06	.1
Capacity			1.6 ⁽¹⁾	N/A								

Notes:

- (1) Central Bureau of Statistics, Indonesia.
- (2) U.N. Food and Agriculture Organization, Fertilizer Yearbook 1980.
- (3) SWMCI Fertilizer Market Study, June 1981.
- (4) U.S. Dept. of Commerce, Overseas Business Reports, 1977, 1981.

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EXHIBIT IV-3

PULP AND PAPER INDUSTRY
(000,000 Metric Tons)

	<u>World</u>	<u>U.S.</u>	<u>Indonesia</u>	<u>Japan</u>
1981				
Production	306.6 ^{E(5)}	108.1 ⁽²⁾	N/A	N/A
Consumption	N/A	112.0 ⁽²⁾	N/A	N/A
Exports	N/A	7.4 ⁽²⁾	N/A	N/A
Imports	N/A	11.3 ⁽²⁾	N/A	N/A
1980				
Production	300.0 ^{E(5)}	105.0 ⁽²⁾	0.2 ^{E(1)}	N/A
Consumption	N/A	N/A	0.5 ^{E(1)}	N/A
Exports	N/A	4.6 ⁽²⁾	-	N/A
Imports	N/A	N/A	0.3 ^{E(1)}	N/A
1979				
Production	285.0 ⁽³⁾	101.0 ⁽³⁾	0.18 ⁽¹⁾	27.8 ⁽³⁾
Consumption	276.2 ⁽³⁾	107.7 ⁽³⁾	0.44 ⁽¹⁾	29.3 ⁽³⁾
Exports	17.6 ⁽⁴⁾	5.2 ⁽⁴⁾	-	N/A
Imports	N/A	N/A	0.26 ⁽¹⁾	N/A
1976				
Production	255.6 ⁽³⁾	93.8 ⁽³⁾	0.07 ⁽¹⁾	24.9 ⁽³⁾
Consumption	248.4 ⁽³⁾	98.1 ⁽³⁾	0.32 ⁽¹⁾	25.4 ⁽³⁾
Exports	N/A	N/A	-	N/A
Imports	N/A	N/A	0.25 ⁽¹⁾	N/A

Notes:

- (1) U.S. Department of Commerce, Overseas Business Reports, May 1981.
- (2) U.S. Department of Industrial Economics, U.S. Industrial Outlook, 1982.
- (3) OECD, The Pulp and Paper Industry in the OECD Member Countries, 1979. World statistics were increased by 20% to reflect non-OECD production.
- (4) American Paper Institute, Wood Pulp and Fiber Statistics 1979-80, November, 1981.
- (5) Estimated from U.S. output. Assumes U.S. accounts for 35% of world production.

EXHIBIT IV-4

INDONESIA: PULP AND PAPER MANUFACTURING EQUIPMENT IMPORTS
(U.S. \$000)

	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1980</u>
Pulp and Paper					
Production Equipment					
United States	\$ 193	\$ 31	\$ 17	\$ 30	\$ 200
Japan	70	2,237	2,348	N/A	N/A
West Germany	347	690	1,111	N/A	N/A
Taiwan	220	197	108	N/A	N/A
China	77	119	149	N/A	N/A
Hong Kong	13	29	49	N/A	N/A
Sweden	22	1.9	156	N/A	N/A
United Kingdom	N/A	35	121	N/A	N/A
Switzerland	N/A	5	16	N/A	N/A
Others	72	46	59	N/A	N/A
Total	<u>\$1,014</u>	<u>\$3,048</u>	<u>\$3,016</u>	<u>\$3,690</u>	<u>\$6,260</u>
Pulp and Paper Mill					
Machinery					
United States	\$ 17	\$ N/A	\$ N/A	\$1,350	\$3,100
Japan	229	798	670	N/A	N/A
West Germany	82	80	283	N/A	N/A
Taiwan	136	227	536	N/A	N/A
Australia	4	N/A	15	N/A	N/A
United Kingdom	24	13	N/A	N/A	N/A
Sweden	2	2	1	N/A	N/A
Netherlands	3	8	368	N/A	N/A
Others	16	67	19	N/A	N/A
Total	<u>\$ 520</u>	<u>\$1,177</u>	<u>\$1,892</u>	<u>\$3,990</u>	<u>\$22,830</u>
Total Market Size	<u>\$1,534</u>	<u>\$4,585</u>	<u>\$4,908</u>	<u>\$7,680</u>	<u>\$29,090</u>

Source: U.S. Department of Commerce

EXHIBIT IV-5
LONG TERM JAVA ELECTRIC POWER GENERATION PLAN

Year	Total Cumulative Number of Unit Expansion										Capacity (MW)							
	COAL			Gas Turb.	Nuclear			Geo	Hydro	Pump STRG	Coal	Nucl.	Gas Turb.	Geo.	Hydro	Pump STRG	Total	LOLP
	400 MW	600 MW	800 MW	100 MW	600 MW	1,000 MW	1,300 MW	30 MW			MW	MW	MW	MW	MW	MW	MW	%
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
1985	-	-	-	-	-	-	-	1	-	-	-	-	-	30	-	-	30	0.07
1986	-	-	-	-	-	-	-	2	-	-	-	-	-	60	-	-	60	0.04
1987	-	-	-	-	-	-	-	3	-	-	-	-	-	90	-	-	90	0.25
1988	1	-	-	1	-	-	-	4	1	-	400	-	100	120	200	-	700	0.232
1989	2	-	-	2	-	-	-	5	3	-	800	-	200	150	460	-	1,610	0.178
1990	2	1	-	2	-	-	-	6	5	-	1,400	-	200	180	1,010	-	2,790	0.169
1991	2	2	-	2	-	-	-	7	7	-	2,000	-	200	210	1,220	-	3,630	0.353
1992	2	2	1	-	-	-	-	8	9	1	2,800	-	200	240	1,520	200	4,960	0.429
1993	2	2	3	2	-	-	-	8	9	2	4,400	-	200	240	1,520	400	6,760	0.375
1994	2	2	4	6	-	-	-	8	9	2	5,200	-	600	240	1,520	400	7,960	0.747
1995	2	2	6	6	-	-	-	8	9	2	6,800	-	600	240	1,520	400	9,560	1.039
1996	2	2	8	9	-	-	-	8	9	2	8,400	-	900	240	1,520	400	11,460	1.014
1997	2	2	9	10	-	-	2	8	9	2	9,200	-	1,000	240	1,520	400	14,960	1.221
1998	2	2	9	11	-	-	4	8	9	2	9,200	-	1,100	240	1,520	400	17,660	1.227
1999	2	2	9	11	-	-	5	8	9	2	9,200	-	1,100	240	1,520	400	18,960	1.257
2000	2	2	9	11	-	-	7	8	9	2	9,200	-	1,100	240	1,520	400	21,560	1.302
2001	2	2	9	11	-	-	9	8	9	2	9,200	-	1,100	240	1,520	400	24,160	1.530
2002	2	2	9	13	-	-	11	8	9	2	9,200	-	1,300	240	1,520	400	26,960	1.611
2003	2	2	11	13	-	-	12	8	9	2	10,800	-	1,300	240	1,520	400	26,860	1.741
2004	2	2	11	13	-	-	14	8	9	2	10,800	-	1,300	240	1,520	400	32,460	1.660
2005	2	2	12	14	-	-	17	8	9	2	11,600	-	1,400	240	1,520	400	37,260	1.932
2006	2	2	12	17	-	-	20	8	9	2	11,600	-	1,700	240	1,520	400	41,460	1.970

Names of hydro projects: 1. Jatigede 1 4. Jatigede 2 7. Cirata 1
 2. Saguling 5 5. Saguling 5 & 7 8. Saguling 8
 3. Maung 1 6. Maung 2 9. Cirata 2

Source: Ministry of Industry, Republic of Indonesia, Engineering Industry Development in Indonesia, 1981.

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EXHIBIT IV-6
IMPORTS OF ELECTRIC POWER SYSTEMS
 (US\$ 1,000)

	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
<u>Generation Equipment</u>						
U.S.A.	\$ 18,645.850	\$ 20,315.105	\$ 3,905.457	\$ 13,770.015	\$ 22,361.100	\$ 13,739.219
Japan	25,037.416	14,623.703	15,239.765	13,299.183	14,182.920	15,299.205
Germany	40,885.547	27,227.868	21,146.239	19,588.769	17,250.632	18,572.770
Netherlands	6,169.953	12,855.871	76,089.533	16,967.227	2,998.787	1,516.182
Others	23,448.890	11,248.163	6,957.410	10,441.726	19,107.113	14,265.124
Sub Total	<u>\$114,182.650</u>	<u>\$ 86,270.710</u>	<u>\$123,338.400</u>	<u>\$ 74,066.920</u>	<u>\$ 75,900.540</u>	<u>\$ 63,392.500</u>
<u>Transmission - Distribution Equipment</u>						
U.S.A.	3,509.700	9,077.200	7,713.390	5,150.010	9,034.750	6,811.417
Japan	10,699.406	19,024.080	10,830.300	7,138.335	6,074.186	48,561.350
Germany	6,488.617	6,999.750	9,679.500	3,229.560	2,631.090	4,828.320
Netherlands	515.860	1,524.760	2,889.280	1,029.150	570.995	1,468.950
France	3,331.360	5,537.600	1,213.790	9,673.440	8,637.560	10,062.120
United Kingdom	1,291.040	279.550	239.650	586.997	936.180	1,264.980
Others	5,484.129	4,990.190	5,412.740	5,116.568	11,642.219	5,836.297
Sub Total	<u>\$ 31,320.112</u>	<u>\$ 47,433.130</u>	<u>\$ 37,978.560</u>	<u>\$ 31,924.060</u>	<u>\$ 39,526.980</u>	<u>\$ 78,833.434</u>
Total	<u>\$145,502.762</u>	<u>\$133,703.840</u>	<u>\$161,317.050</u>	<u>\$105,990.980</u>	<u>\$115,427.520</u>	<u>\$142,225.934</u>

Source: U.S. Department of Commerce, Market & Research Brief on Electric Power Systems and Energy Conservation Equipment in Indonesia, 1981.

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EXHIBIT IV-7
SUGAR INDUSTRY
(000,000 Metric Tons)

	<u>World</u>	<u>U.S.</u>	<u>Indonesia</u>	<u>Phillipines</u>	<u>China</u>	<u>Thailand</u>	<u>Taiwan</u> ⁽⁴⁾	<u>Malaysia</u> ⁽⁴⁾	<u>Japan</u> ⁽⁴⁾	<u>Korea</u> ⁽⁴⁾
1985 (Projected)										
Production	100.3 ⁽⁵⁾	N/A	1.9 ⁽¹⁾	2.6 ⁽⁵⁾	N/A	N/A	N/A	N/A	0.8	N/A
Consumption	104.7 ⁽⁵⁾	N/A	2.6 ⁽³⁾	1.1 ⁽⁵⁾	N/A	N/A	N/A	N/A	4.0	N/A
Exports	N/A	N/A	-	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Imports	N/A	N/A	.7 ⁽³⁾	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1982 (Estimated)										
Production	97.3 ⁽²⁾	5.5 ⁽³⁾	1.4-1.5 ⁽³⁾	2.4 ⁽³⁾	2.7 ⁽³⁾	2.5 ⁽³⁾	N/A	N/A	0.8	N/A
Consumption	93.0 ⁽²⁾	N/A	2.1-2.3 ⁽³⁾	1.3 ⁽³⁾	N/A	N/A	N/A	N/A	2.7	N/A
Exports	N/A	N/A	-	1.3 ⁽³⁾	N/A	1.8 ⁽²⁾	N/A	N/A	-	N/A
Imports	N/A	N/A	.6- .7 ⁽¹⁾	N/A	N/A	N/A	N/A	N/A	1.9	N/A
1980										
Production	84.4 ⁽⁴⁾	5.0 ⁽³⁾	1.2 ⁽⁴⁾	2.3 ⁽³⁾	2.2 ⁽⁴⁾	1.1 ⁽³⁾	0.8	0.1	0.8	-
Consumption	87.6 ⁽⁴⁾	9.3 ⁽⁴⁾	1.4 ⁽⁴⁾	N/A	3.6 ⁽⁴⁾	N/A	0.5	0.6	3.0	0.5
Exports	26.7 ⁽⁴⁾	0.6 ⁽⁴⁾	-	1.8 ⁽⁴⁾	0.2 ⁽⁴⁾	0.4 ⁽⁴⁾	0.3	-	-	N/A
Imports	26.6 ⁽⁴⁾	3.8 ⁽⁴⁾	.4 ⁽⁴⁾	N/A	1.0 ⁽⁴⁾	0.1 ⁽⁴⁾	-	0.5	2.2	0.7
1978										
Production	90.6 ⁽⁴⁾	5.1 ⁽⁴⁾	1.1 ⁽⁴⁾	2.3 ⁽⁴⁾	2.3 ⁽⁴⁾	1.7 ⁽⁴⁾	0.8	0.1	0.6	-
Consumption	86.2 ⁽⁴⁾	10.0 ⁽⁴⁾	1.6 ⁽⁴⁾	N/A	3.7 ⁽⁴⁾	N/A	0.4	0.5	2.9	0.5
Exports	25.0 ⁽⁴⁾	0.02 ⁽⁴⁾	-(4)	1.1 ⁽⁴⁾	0.1 ⁽⁴⁾	1.0 ⁽⁴⁾	0.4	-	-	N/A
Imports	24.9 ⁽⁴⁾	4.3 ⁽⁴⁾	0.2 ⁽¹⁾	N/A	1.4 ⁽⁴⁾	N/A	-	0.4	2.3	0.6

Notes:

- (1) Ekonomi Indonesia, October 1-15, 1982
- (2) Economic News, October 8, 1982
- (3) U.S. Dept. of Agriculture, Foreign Agricultural Service Reports, March 31, 1982, May 5, 1982, November 10, 1982.
- (4) International Sugar Organization, Sugar Yearbook 1980.
- (5) Foreign Agricultural Service, Report on World Sugar Supply and Demand 1980 - 1985, May 1978.

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EXHIBIT IV-8
PALM OIL INDUSTRY
Metric Tons

	<u>World</u>	<u>Indonesia</u>	<u>Malaysia</u>	<u>Phillipines</u>	<u>China</u>
1981					
Production	4,700,000 ⁽⁴⁾	844,000 ⁽⁶⁾	2,100,000 ⁽⁴⁾	N/A	N/A
Consumption	N/A	609,000 ⁽⁶⁾	N/A	N/A	N/A
Exports	N/A	235,000 ⁽²⁾	N/A	N/A	N/A
1980					
Production	4,486,000 ⁽⁴⁾	670,000 ⁽⁶⁾	2,000,000 ⁽⁴⁾		
Consumption	N/A	N/A	540,000 ⁽⁴⁾		
Exports	N/A	N/A	N/A		
1979					
Production	4,391,000 ⁽³⁾	483,000 ⁽¹⁾	1,210,000 ⁽³⁾	782,000 ⁽³⁾	162,000 ⁽³⁾
Consumption	N/A	68,000 ⁽⁵⁾	N/A	N/A	N/A
Exports	N/A	415,000 ⁽⁵⁾	N/A	N/A	N/A

Notes:

- (1) Central Bureau of Statistics, Indonesia.
- (2) Foreign Agricultural Service Reports, March, November 1982.
- (3) UN, Yearbook of Industrial Statistics, 1979. World statistics include all crude vegetable oils. Malaysia statistics include coconut oil production.
- (4) Far Eastern Economic Review, Asia 1982 Yearbook.
- (5) U.S. Dept. of Commerce, Overseas Business Reports: Indonesia, 1977.
- (6) Economist Intelligence Unit, Quarterly Economic Review of Indonesia, 2nd Quarter 1982.

EXHIBIT IV-9
TEA INDUSTRY
(Metric Tons)

	<u>World</u>	<u>India</u>	<u>Indonesia</u>	<u>China</u>	<u>Taiwan(3)</u>	<u>Japan(3)</u>
1982						
Production	1,870,000(1)	558,000(1)	96,000 ^E (1)	355,000(1)	N/A	N/A
Consumption	N/A	N/A	32,200 ^E (1)	N/A	N/A	N/A
Exports	N/A	N/A	68,000 ^E (1)	N/A	N/A	N/A
Imports	N/A	N/A	-	N/A	N/A	N/A
1981						
Production	1,880,000(1)	N/A	107,000(1)	N/A	N/A	N/A
Consumption	N/A	N/A	32,000(1)	N/A	N/A	N/A
Exports	N/A	N/A	83,200(1)	N/A	N/A	N/A
Imports	N/A	N/A	-	N/A	N/A	N/A
1977						
Production	1,725,000(3)	556,300(3)	76,000(2)	252,000(3)	26,303	102,301
Consumption	1,106,000(3)	326,700(3)	24,700(3)	170,200(3)	N/A	N/A
Exports	811,400(3)	229,600(3)	51,300(3)	81,800(3)	20,780	3,514
Imports	736,000(3)	-	-	-	N/A	N/A
1975						
Production	1,290,600(3)	487,100(3)	56,800(3)	N/A	26,092	105,448
Consumption	1,050,000(3)	267,700(3)	10,800(3)	N/A	N/A	N/A
Exports	751,400(3)	219,400(3)	46,000(3)	61,300(3)	20,116	2,210
Imports	709,000(3)	-	-	N/A	N/A	N/A

Notes:

- (1) U.S. Dept. of Agriculture, Foreign Agricultural Service Report, August 26, 1982, September 15, 1982.
- (2) Central Bureau of Statistics, Indonesia.
- (3) International Tea Committee, Annual Bulletin of Statistics, 1980.

EXHIBIT IV-10

INDONESIAN AGRICULTURAL PRODUCTION: 1970 - 1981
(000 metric tons)

<u>Year</u>	<u>Rice</u>	<u>Maize</u>	<u>Cassava root</u>	<u>Sweet Potato</u>	<u>Soybean</u>	<u>Ground nut</u>	<u>Green pea</u>	<u>Vegetables</u>	<u>Fruits</u>
1970	13,140	2,825	10,478	2,175	498	281	40	1,832	3,332
1971	13,723	2,606	10,690	2,211	516	284	53	2,067	3,435
1972	13,183	2,254	10,385	2,067	518	282	66	2,120	3,906
1973	14,607	3,690	11,185	2,387	541	290	71	2,295	4,249
1974	15,276	3,011	13,031	2,469	589	307	70	2,293	4,731
1975	15,185	2,903	12,546	2,433	590	380	62	1,889	3,743
1976	15,845	2,572	12,191	2,381	522	341	70	1,641	2,725
1977	15,876	3,143	12,488	2,460	523	409	86	1,833	3,624
1978	17,625	4,029	12,902	2,083	617	445	100	1,927	2,709
1979	17,872	3,605	13,751	2,194	679	424	102	1,861	3,512
1980	20,246	4,012	13,521	2,193	642	475	144	1,994	4,102
1981	22,200	4,300	14,100	2,111	801	518	243	N/A	N/A

INDONESIAN AGRICULTURAL CONSUMPTION: 1984 - 2000
(000 metric tons)

<u>Food Products</u>	<u>1984</u>	<u>1988</u>	<u>1990</u>	<u>2000</u>
Rice	20,580	23,519	25,024	34,888
Wheat	759	906	N/A	1,278
Maize	4,802	6,250	6,825	9,172
Cassava root	17,792	21,107	22,392	30,093
Sweet potato	3,555	4,348	5,117	7,146
Groundnut	635	840	1,016	2,194
Soybean	1,141	1,631	1,902	3,742
Green pea	176	279	329	648
Vegetables	7,367	10,934	12,285	20,011
Fruits	4,059	5,179	6,608	10,763

Source: BPS

EXHIBIT IV-11

AGRICULTURAL MACHINERY MARKET
(U.S. \$000)

	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1980</u>
Cultivating Machinery					
Domestic production	N/A	N/A	N/A	15	75
Imports:					
United States	510	256	504	601	900
Japan	489	980	1,124	N/A	N/A
United Kingdom	120	86	168	N/A	N/A
West Germany	50	45	80	N/A	N/A
Netherlands	N/A	25	17	N/A	N/A
Italy	N/A	6	17	N/A	N/A
Australia	N/A	N/A	17	N/A	N/A
Others	60	2	34	N/A	N/A
Total	1,229	1,400	1,961	2,016	3,032
Total Market	1,229	1,400	1,961	2,016	3,032
Agricultural Tractors					
Domestic Production	N/A	N/A	N/A	50	.100
Imports:					
United States	56	150	290	490	996
Japan	143	250	330	N/A	N/A
Taiwan	88	170	300	N/A	N/A
United Kingdom	63	110	220	N/A	N/A
Netherlands	26	60	400	N/A	N/A
West Germany	20	40	95	N/A	N/A
Others	190	280	375	N/A	N/A
Total	586	1,060	2,010	2,870	5,888
Total Market	586	1,060	2,010	2,920	5,988
Harvesting and Similar Equipment					
Domestic Production	N/A	N/A	N/A	25	75
Imports:					
United States	194	210	80	380	620
United Kingdom	75	300	225	N/A	N/A
West Germany	75	198	150	N/A	N/A
Japan	204	150	290	N/A	N/A
France	N/A	130	120	N/A	N/A
Australia	35	130	90	N/A	N/A
Others	317	602	545	N/A	N/A
Total	900	1,720	1,500	2,500	4,130
Total Market	900	1,720	1,500	2,500	4,130
Other Agricultural Machinery					
Domestic Production	N/A	N/A	10	15	60
Imports:					
United States	28	66	750	400	952
Japan	460	500	770	N/A	N/A
Taiwan	137	150	100	N/A	N/A
United Kingdom	82	88	90	N/A	N/A
Netherlands	57	60	40	N/A	N/A
West Germany	22	24	40	N/A	N/A
Others	14	17	25	N/A	N/A
Total	800	905	1,825	2,100	3,260
Total Market	800	905	1,825	2,100	3,260
Dairy Related Machinery					
Domestic Production	N/A	N/A	N/A	N/A	N/A
Imports:					
United States	29	52	60	70	95
Netherlands	68	82	80	N/A	N/A
Denmark	11	30	30	N/A	N/A
West Germany	N/A	10	10	N/A	N/A
Japan	N/A	5	5	N/A	N/A
United Kingdom	16	6	5	N/A	N/A
Others	7	N/A	N/A	N/A	N/A
Total	132	185	190	210	300
Total Market	132	185	190	210	300
Other Animal Husbandry Equipment					
Domestic Production	N/A	N/A	N/A	N/A	N/A
Imports:					
United States	82	118	124	150	220
Netherlands	71	137	130	N/A	N/A
West Germany	4	38	27	N/A	N/A
Japan	77	30	74	N/A	N/A
Denmark	26	37	40	N/A	N/A
United Kingdom	62	12	45	N/A	N/A
Others	3	5	6	N/A	N/A
Total	325	372	446	536	790
Total Market	325	372	446	536	790
Total Market Size	3,972	5,642	7,932	10,282	17,500

Source: U.S. Department of Commerce.

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EXHIBIT IV-12
CONSUMER ELECTRONICS

	U.S.		Indonesia	
	# (000,000)	\$ (000,000) (3)	# (000,000)	\$ (000,000) (3)
1984 (Projected)				
Production	N/A	N/A	N/A	\$1,747
Consumption	N/A	N/A	N/A	2,853
Exports	N/A	N/A	N/A	N/A
Imports	N/A	N/A	N/A	N/A
1981				
Production	N/A	\$11,148 ^{E(2)}	N/A	N/A
Consumption	N/A	N/A	N/A	N/A
Exports	14.3(1)	1,045(1)	N/A	N/A
Imports	227.6(1)	6,503(1)	N/A	N/A
1977				
Production	N/A	\$ 8,415(2)	2.2	\$ 433
Consumption	N/A	N/A	N/A	840
Exports	N/A	N/A	N/A	34
Imports	N/A	N/A	N/A	410
1976				
Production	N/A	N/A	1.7	\$ 267
Consumption	N/A	N/A	N/A	669
Exports	N/A	N/A	N/A	2
Imports	N/A	N/A	N/A	401

Notes:

(1) U.S. Bureau of Industrial Economics.

(2) Standard and Poor Industry Survey: Electronics, January 14, 1982.

(3) BPPT.

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EXHIBIT IV-13

U.S. FACTORY SHIPMENTS OF ELECTRONIC
COMPONENTS TO WORLDWIDE MARKETS
(U.S. \$000,000)

<u>Product</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
Active Components, Total	\$ 4,666	\$ 5,154	\$ 8,301	\$ 8,201	\$19,181
Electron Tubes, Total	1,233	1,296	1,451	1,586	1,782
Receiving Tubes	140	144	134	106	86
Power & Special Purpose	456	519	585	682	727
TV Tubes	637	633	732	799	959
Semiconductors, Total	3,433	3,858	4,860	8,815	8,399
Transistors	621	831	870	782	806
Diodes & Rectifiers	390	394	457	557	613
Integrated Circuits	2,032	2,464	2,261	4,671	6,357
Other	390	390	462	595	623
Passive Components, Total	1,589	1,842	2,137	2,500	2,045
Capacitors	608	744	897	1,050	1,299
Resistors	449	477	804	647	863
Passive Networks	47	81	82	111	118
Coils & Transformers	485	560	654	791	975
*Other Components	\$ 4,629	\$ 6,037	\$ 8,002	\$ 9,844	\$12,138
Grand Total	<u>\$10,884</u>	<u>\$13,033</u>	<u>\$16,440</u>	<u>\$20,644</u>	<u>\$26,364</u>

*Includes electronic connectors and other electronic components not elsewhere classified.

Source: Bureau of Industrial Economics, U.S. Department of Commerce.

EXHIBIT IV-14
ELECTRONIC COMPONENTS

	<u>U.S.</u>		<u>Indonesia</u>	
	<u>#</u> (000,000)	<u>\$</u> (000,000)	<u>#</u> (000,000)	<u>\$</u> (000,000)
1981				
Production	N/A	\$26,782(1)	N/A	N/A
Consumption	N/A	N/A	780.7E(5)	N/A
Exports	3,364(1)	4,725(1)	N/A	N/A
Imports	21,107(1)	3,995(1)	N/A	N/A
1980				
Production	N/A	\$25,364(2)	410.4(5)	\$100.0(3)
Consumption	N/A	N/A	639.1(5)	44.3(3)
Exports	3,591(1)	4,988(1)	N/A	90.0(3)
Imports	10,093(1)	4,363(1)	N/A	34.3(3)
1976				
Production	N/A	\$10,884(2)	105.0(4)	\$ 25.0(3)
Consumption	N/A	N/A	N/A	20.2(3)
Exports	N/A	N/A	N/A	24.0(3)
Imports	N/A	N/A	N/A	19.2(3)

Notes:

- (1) U.S. Bureau of Industrial Economics.
- (2) Standard and Poor Industry Survey, January 14, 1982.
- (3) U.S. Department of Commerce, Overseas Business Reports.
- (4) BPPT.
- (5) Indonesian Ministry of Industry, Engineering Industry Development in Indonesia, September 1981.

CHAPTER V

INVESTMENT OPPORTUNITIES

According to the government officials we contacted the next Indonesian five year plan, Repelita IV, will promote increased development of local industry for plant machinery and equipment plus electronics. This is a logical outgrowth of the fact that larger amounts of imports will be required to :

(1) maintain equipment in existing industries, plus (2) provide new equipment for the future industrial growth being planned (See Chapter IV). Therefore, it is likely that the opportunity for trade will be diminished (in the long-term), for those industrial plant machinery and equipment plus electronics systems/components which are developed and manufactured in Indonesia. The government is determined in this endeavor to increase Indonesian industrial development and technology, plus local employment; and will protect these industries with government financial participation or presidential decree's.

Plant Machinery and Equipment/Electronics Industry Opportunity

This section of the report provides a description of the plans and prospects for development of plant machinery and equipment/electronics industry in Indonesia. These would include plant machinery and equipment for the following industries:

1. Oil and gas field support industries,
2. Petrochemical support industries,
(a) Fertilizer plants,
3. Cement plants,
4. Pulp & paper plants,
5. Power generating facilities,
6. Sugar mills,
7. Palm oil,
8. Tea and other agricultural product processing plants.

For the electronics industry a similar breakdown is included, as follows:

1. Consumer electronics,
2. Professional electronics,
3. Components.

In Chapters III and IV we have provided insights into (1) government/private industry planned investments, (2) industry overviews directed at the nine industry groups shown above, with information regarding past, present and future capacities with specific construction plans where applicable, and (3) exports/imports - comparing the world with Pacific Rim and ASEAN countries. Before proceeding to the technical review of these two broad industry categories, it is important to identify and understand the supply/demand characteristics as they presently exist and estimate what the future prospects are likely to bring. Various analyses and reports have been prepared by both government agencies and private consulting firms to determine Indonesia's present (1) plant machinery and equipment and (2) electronics industry capability. Unfortunately a number of problem exist in attempting to correlate these data. Among the major constraints are:

- (1) Indonesian Central Bureau of Statistics data in most cases are not identified in terms of discrete pieces of machinery, equipment (sub-system) or component but rather in tons of material, or rupiahs,

- (2) Reference sources are not always identified for verification.
- (3) Analyses performed are not comparable since the industries and time periods selected are not the same. Even with these inaccuracies and constraints it is relatively unimportant whether these analyses are not exact (i.e. - present Indonesian production capabilities are 10% or 20%); but rather the future industrial growth targets planned for by government officials call for a more than tripling of existing industrial manufacturing capabilities over the next 20 year period. This positive factor is more significant in that it provides a barometer of the future plans and expectations of the GOI. Therefore, our analyses attempt to use these data and reflects our interpretation of this information, and what its future impact and potential means to Indonesia and U.S. companies interested in trade or investment.

Plant Machinery and Equipment - Indonesia's ability to meet local demand for plant machinery and equipment, for the eight industries selected in this study (see list page V-1), is apparently lower than the government would like based on the level of present imports. To promote this industrial development (as discussed in Chapter III), the GOI is providing investment funds in its future plans (Repelitas) to insure a steady development of plant machinery and equipment capability within Indonesia. A review of existing capabilities is shown in Exhibit V-1. According to government and U.S. Embassy publications there are currently between 28 to 30 companies, with 32 facilities, engaged in the manufacturing of plant machinery and equipment in Indonesia.

Most knowledgeable individuals expect total plant machinery and equipment demand, between now and 1985, will remain relatively level at about 1,000 tons/year. Thereafter, it is estimated to increase at an average annual rate of between 3% to 4%, to the year 2000. Approximately 40% of this demand will be for the oil and gas, and coal mining industry. The remaining 60% will be for general industrial demand.

Indonesia's present capability and future plans to supply plant machinery and equipment to the nine selected industries are shown in Exhibit V-2. As developed by the Ministry of Industry, the exhibit shows that between 1980-1982 the industrial capability of Indonesian manufacturers to produce plant machinery and equipment to meet local demand averaged between 15% to 25%. By the year 2000 this capability is expected to triple to about an average 60% of local demand. A further breakdown of demand by industrial sector and the amount of investment required to the year 2000 are shown in Exhibits V-3 and V-4 respectively.

Identification of specific plant machinery and equipment needed to support the Indonesian industrial growth, for the selected nine industries, requires the use of an engineering concept which defines the building blocks, or sub-systems in a process plant. This method is not new and as shown in Exhibit V-5 we have listed the five major categories of sub-system equipment which are used in the product processing of the selected industries. These sub-system equipment categories are listed below:

- A. Structural Steel
- B. Process Equipment
- C. Solids Handling Equipment
- D. Power Generation & Transmission
- E. Process Control Systems and Instrumentation

These sub-systems can now be analyzed, characterized and studied in broad terms independent of the industry in which they may be used. Exhibit V-5 also provides a rough size of market for each type of equipment. This was developed by counting the number of industries requiring each type of equipment (frequency of use). This value is used later for a plant machinery and equipment ranking.

The overall Indonesian plant machinery and equipment capability has been assessed by the Ministry of Public Works through the use of fifteen manufacturing factors (See Exhibit V-6). These have been expressed numerically by giving points to each manufacturing factor as follows:

(1) A=1; (2) B=2; (C) C=3. The detailed results of these analyses are shown in Exhibit V-7, column 1 which shows the ease of manufacturing score for every item of equipment. The equipment is further segregated into three classes as follows:

<u>Class A</u> (Score range 15-23)	Products which are or could be made now in Indonesia. These items are relatively straight forward and have been made on a regular basis by many manufacturers.
<u>Class B</u> (Score range 24-34)	Products which are more complex and have been made by relatively few Indonesian manufacturers. By selectively upgrading some plant, and improving management and operator skills, these products could be made by a larger number of Indonesian manufacturers.
<u>Class C</u> (Score range 35+)	Products which are more complex than A and B and have rarely, if ever, been made in Indonesia. To make these products would usually require technology transfer, plus considerable upgrading of plant, operator and management skills.

The resulting ranked list shown in Exhibit V-7 where the ease of manufacturing (Column 1) is subtracted from the size of market (Column 2);

the difference indicates the overall rank order of importance (Column 4) to the Indonesian manufacturing industry.

Obviously a more sophisticated and rigorous approach, with appropriate selection criteria, must be employed to determine which types of equipment should be produced in Indonesia. A detail economic feasibility study would have to be performed (as described in Chapter IX) prior to any final decisions could be made. A typical abbreviated list of types of criteria to be studied in the equipment selection process is shown in Exhibit V-8 covering the following six topics:

1. Economic
2. Technological
3. Resources
4. Market
5. Socio-Economic
6. Government Policy

As noted earlier in this chapter the demand for specific types of equipment are very difficult to assess due to the lack of data. (i.e.-Indonesian Central Bureau of Statistics keeps only tonnage data). Therefore, considering the method developed here, it is sufficiently accurate for identification and planning purposes. Further analyses could be performed by weighting each industry to take into account the number of new facilities likely to be constructed and by considering the number of each item required in a new facility and the frequency of replacement in existing facilities. It becomes apparent that a much larger effort would be necessary to get the data for either of these refinements, clearly not within the scope of this study.

As a point of information another Indonesian practice which should be reassessed at this point is that of purchasing turnkey projects or packaging - the breakdown of a project into a few major contracts. In numerous cases a complete package is sourced abroad because it is said to be "high technology" when in fact many of the required services and equipment are, or could be, available in Indonesia. This practice is difficult to stop, particularly in a turnkey project with foreign financing, but steps must be taken to slow and reverse this trend in order to develop these capabilities within Indonesia.

Estimate of Goods and Services Required - The demand for plant machinery and equipment over the period 1980 to 2000 has been assessed by the Ministry of Industry. Unfortunately this estimate includes one industry not included in the scope of our study (bridges), and excludes the oil and gas, and petrochemical industries. Therefore, based on over interviews and field investigation the data shown in Exhibit V-9 reflects the best estimate of plant machinery and equipment required over the forecast period. The specific plant machinery and equipment shown in the exhibit are those which either placed high in the ranking list of Exhibit V-8 or were expressed as priority equipment by those interviewed.

According to State owned utility (PLN) long term planning - to the year 2000 - electric power facilities in the form of power generating facilities, transmission and distribution will add an additional 41,460MW. The power generation and transmission electrical equipment need is also shown in Exhibit V-9. In the next five years the required equipment to meet this expected growth is estimated at \$1 billion.

Based on our review the needs and opportunities for plant machinery and equipment or services in the selected industry groups are identified in Chapter VI - Project Profiles.

Electronics Industry - The Indonesian electronics industry may be broadly characterized as one which has: (a) too many manufacturers and excess capacity in consumer electronics, (b) lack of sufficient long-term projects to support existing manufacturers in professional electronics, and (c) the need for qualified manufacturers of components for both domestic consumption and export. These industry sectors have grown over the years and been supported by the government in the form of both financial investment and through Presidential decree's. The three major electronics sectors: (a) consumer electronics, (b) professional electronics, and (c) components each show different problems and opportunities.

- (a) Consumer Electronics: At the present time there are 99 manufacturers in this group, of these only 75 are active companies with 60% to 90% of their manufacturing plant capacity being utilized. The remaining 24 companies are inactive.
- (b) Professional Electronics: Similarly this sector with less than a dozen organizations has proven capability with design and manufacturing of professional equipment. One organization, L.E.N. (National Electronic and Electrical Research Institute), a government research institute, is involved in research and development in electronics, such as computers, communications, and components, etc. L.E.N. is presently involved in the following activities:

- Basic and applied research to support the Indonesian electronics industry,
- Research in basic material in order to introduce some local material resources into the electronics industry,
- Providing consultant and engineering services to local industry,
- Supporting the electrical industry.

In conjunction with these activities they have over the years been engaged in the manufacture of transmitters, satellite equipment and other electronic/electrical systems. These manufacturing activities appear to be in direct competition with the other manufacturers in this industry sector. The remaining organizations, public and private, compete for manufacturing work which presently appears to be insufficient to utilize existing resources and capacities.

(c) Components: This sector has two large integrated circuit manufacturers who are basically value-added operations that export all their products for integration into sub-assemblies or major systems. Each of these organizations has a production capacity of 300 thousand pieces per year. Other organizations in this industry produce limited amounts of components (i.e.,-printed circuit boards) for their own applications.

The Indonesian electronics industry has both opportunities and challenges which must be overcome before its national goals can be fully realized, and foreign investors can be convinced of its potential. The apparent underutilized facilities in the consumer electronics sector produce products which are not competitive in the world markets, while creating jobs in

Indonesia, it creates an environment which cannot be supported indefinitely by government degree and subsidies. Similarly the professional electronics and components sectors require further development to permit effective utilization of local resources, knowledge and production capabilities. The government officials we contacted have come to realize that this opportunity can only come to fruition through the development of a comprehensive Electronics Industry Strategic Plan which identifies national goals and objectives, and provides for the logical development of the various sectors in an integrated industry plan.

The electronics industry average annual compounded growth over the 1975 to 1980 period ranged between 4.5% to 18% for the three sectors as summarized below and detailed in Exhibit V-10.

<u>Products</u>	<u>Average Annual Compound Growth</u>
A. Consumer	
- Radios	0.7%
- Radio - Cassettes	22.0
- Amplifiers	25.0
- TV	
. B/W	31.0
. Color	14.7
	<u>18.0%</u>
B. Professional	
- Telephones	<u>4.5%</u>
C. Components	
- Integrated Circuits	0.5%
- Loud Speakers	22.0
- Picture Tubes	19.3
	<u>14.0%</u>
Total Average	<u>12.0%</u>

As shown in Exhibit V-11 approximately 54% of the electronics industry's domestic consumption is supplied by local producers. The remaining portion of this consumption (46%) is satisfied by imports. The growth in the value of the electronics industry, for the period 1974 to 1979, is detailed in Exhibit V-11 and summarized below.

	<u>Average Annual Compounded Growth</u>
Domestic Consumption	29%
Domestic Production	33%
Imports	23%
Labor Force	29%

Estimate of Goods and Services Required - The demand for electronics equipment and services over the period 1980 to 2000 has been assessed by the Ministry of Industry. Consumer electronics demand is expected to grow at an average annual rate of 15% to 20% over this period. Since this sector presently has excess manufacturing capacity and there are approximately 24 inactive companies, further investment in this sector must be selective. For example compressors used in both air conditioners and refrigeration appear to have multiple use and therefore a better than average opportunity, based on replacement and future demand growth. The demand for these consumer products is closely correlated with the per capita income growth and industrial, commercial and private sector construction programs planned for the future.

Average annual growth in the professional electronics area, from Repelita III (1979/80-1983/84) to Repelita IV (1984/85-1988/89), for the six categories shown in the table below will range from 1.6% to 42%. Telephone and digital equipment represent about 85% of this sectors demand. The detailed numbers are shown in Exhibit V-12.

<u>Type of Equipment</u>	<u>Average Annual Compounded Growth</u>
Telephone	23%
Analog	1.6%
Digital	42%
Telex	32%
Data	14.9%
Transmission	10.6%

The demand for electronic components in Indonesia are rather extensive based primarily on consumer product growth. As shown in Exhibit V-13 the average annual growth for the five components listed will be about 22%. Resistors and capacitors represent more than 60% of the demand in 1990, while printed circuit boards represents about 23%.

Based on our review the needs and opportunities in the electronics industry for equipment and services in the three selected industry sectors are identified in Chapter VI - Project Profiles.

EXHIBIT V-1

PLANT MACHINERY & EQUIPMENT SUPPLY/DEMAND
 CHARACTERISTICS & FORECAST
 (Thousands of Tons)

	1973	1975		1980		1981		1985	1990	1995	2000
	(1)	(1)	(3)	(2)	(3)	(2)	(3)	(4)	(4)	(4)	(4)
1. Indonesian Production	22	27 to 39	35 to 47	35 to 47	35 to 55	100 to 200	250 to 375	450 to 600	450 to 600	875 to 1,050	
2. Imports	25	27 to 239	-	281	590 to 275	500 to 400	500 to 375	450 to 300	175 to -	-	
3. Industrial Demand	47	54 to 278	-	328	625 to 330	600	750	900	1,050	1,050	
4. % Supplied by Indonesia	-	-	-	14.3	6 to 16.7	20 - 30	35 - 50	50 to 65	85 to 100	100	
5. Oil & Gas Industry Demand	-	-	-	395	-	400	500	600	700	700	
6. Total Demand	-	-	-	1,020	-	1,000	1,250	1,500	1,750	1,750	
7. % Supplied by Indonesia	-	-	-	3.5	-	10 to 20	20 to 30	30 to 40	50 to 60	60	

- Sources: (1) Ministry of Industry, "Engineering Industry Development In Indonesia", 9/81
 (2) Ministry of Public Works, "High Technology Project Development", 5/82
 (3) Ministry of Industry, "Pengembangan Industri Mesin & Peralatan Pabrik (IMPP)" 9/82
 (4) SWMCI Estimates & Forecast

EXHIBIT V-2

**INDONESIAN PLANT MACHINERY AND EQUIPMENT
MANUFACTURING CAPABILITIES IN SELECTED INDUSTRIES(1)**

<u>Period</u>	<u>Oil & Gas Field Support Industries</u>	<u>Petrochemical Support Industries</u>		<u>Cement Plant</u>	<u>Pulp & Paper Plants</u>	<u>Power Generating Facilities</u>	<u>Sugar Mills</u>	<u>Palm Oil</u>	<u>Tea & Other Agricultural Product Processing Plants</u>
		<u>Petrochemicals</u>	<u>Fertilizer Plant</u>						
1980 - 1982	10% - 15%	10% - 15%	10% - 15%	25% - 30%	10% - 15%	20% - 25%	55% - 60%	15% - 20%	15% - 20%
1982 - 1985	20%	20%	20%	40%	20%	30%	70%	30%	30%
1985 - 1990	30%	30%	40%	50%	30%	40%	80%	40%	40%
1990 - 1995	40%	40%	50%	60%	40%	50%	85%	50%	50%
1995 - 2000	50%	50%	60%	70%	50%	60%	90%	60%	60%

Note:

(1) Percent of national needs produced locally.

Source: Ministry of Industry, "Pengembangan Industri Mesin & Peralatan Pabrik (IMPP)", 9/82

EXHIBIT V-3

SUMMARY OF PLANT MACHINERY & EQUIPMENT
 REQUIREMENTS TO THE YEAR 2000
(Thousands of Tons)

<u>Industry Sector</u>	<u>1985</u>	<u>1990</u>	<u>1995</u>	<u>2000</u>
Structural Steel	333	417	500	583
Process Equipment	278	347	417	486
Vendor Items	<u>389</u>	<u>486</u>	<u>583</u>	<u>681</u>
Total	<u>1,000</u>	<u>1,250</u>	<u>1,500</u>	<u>1,750</u>

Source: Ministry of Industry, "Pengembangan Industri Mesin & Peralatan Pabrik (IMPP)", 9/82

EXHIBIT V-4

INVESTMENT REQUIRED TO THE YEAR 2000
(Billions of Rupiahs)

<u>Industry Sector</u>	<u>Repelita</u>		
	<u>IV</u>	<u>V</u>	<u>VI</u>
Structural Steel	\$ 5.1	\$ 7.6	\$ 9.1
Process Equipment	81.9	121.6	145.1
Vendor Items	<u>37.9</u>	<u>57.4</u>	<u>68.5</u>
Total	<u>\$124.9</u>	<u>\$186.6</u>	<u>\$222.7</u>

Source: Ministry of Industry, "Pengembangan Industri Mesin & Peralatan Pabrik (IMPP)", 9/82

TYPES OF PLANT MACHINERY AND EQUIPMENT REQUIRED
IN SELECTED INDUSTRIES

Industry Sub-System Equipment	Oil & Gas	Oil	Petrochemical		Cement	Pulp &	Power	Sugar	Palm	Tea & Other	Frequency of Use
	Extraction	Refining Incl. (LPG/LPG)	Petrochem.	Fertilizer	Plants	Paper Plant	Generating Facilities	Mills	Oil	Agricultural Product Processing Plants	
A. Structural Steel	X	X	X	X	X	X	X	X	X	X	(10)
B. Process Equipment											
1. Heat Exchangers											
(a) Shell & Tube	X	X	X	X				X	X	X	(7)
(b) Fin		X	X	X				X		X	(4)
(c) Air Cooled	X	X	X								(3)
(d) Cooling Towers	X						X				(2)
(e) Waste Heat Rollers	X				X						(2)
(f) Air Heater							X				(1)
(g) Condensers (Vac.)	X		X	X			X	X		X	(6)
(h) Liquid Preheaters	X			X				X		X	(4)
(i) Plate Exchangers		X (Only LPG)									(1)
2. Heat Generating/Combustion											
(a) Rollers - Package	X								X	X	(3)
- Tubular	X	X	X	X			X	X	X		(7)
- Waste Heat	X	X (Only LPG)	X	X	X		X			X	(7)
- Heaters		X (Only LPG)	X	X				X		X	(5)
- Furnaces		X (Only LPG)	X								(2)
- Kilns											
. Rotary					X						(1)
. Beehive								X			(1)
3. Gas/Liquid/Slurry/Storage											
(a) Cylinders		X	X							X	(3)
(b) Pipelines	X	X	X	X	X	X	X	X		X	(8)
(c) Tankage	X	X	X	X	X	X	X	X	X	X	(9)
(d) Silos/Bunkers			X	X	X	X	X	X	X		(7)
4. Valves: (Isolating, Relief, Non Return, Control)	X	X	X	X	X	X	X	X	X	X	(9)
5. Gas Liquid Separation											
(a) Distillation/Stripping Absorption Columns			X	X	X			X		X	(5)
(b) Evaporating Vessels		X	X	X				X		X	(5)
(c) Separation Vessels		X	X	X						X	(4)
6. Gas Solids Separation											
(a) Drying - Spray			X	X							(2)
- Rotary			X		X			X		X	(4)
- Tunnel			X								(1)
- Extrusion			X								(1)
- Press									X		(1)
7. Liquids - Solids Separation											
Crystallization											
(a) Forced Circulation				X				X		X	(3)
(b) Draft Tube								X		X	(2)
(c) Evaporative										X	(1)
8. Separation											
(a) Cyclones			X	X		X					(3)
(b) Mechanical Centrifical											
(c) Bag Filters			X	X		X		X	X	X	(6)
(d) Scrubbers			X		X			X			(4)
(e) Electrostatic						X		X			(2)
(f) Impingement						X					(1)
(g) Air Filters						X					(1)

TYPES OF PLANT MACHINERY AND EQUIPMENT REQUIRED
IN SELECTED INDUSTRIES

Industry	Sub-System Equipment	Oil & Gas Extraction	Oil Refining Incl. (LNG/LPG)	Petrochemical		Cement Plants	Pulp & Paper Plant	Power Generating Facilities	Sugar Mills	Palm Oil	Tea & Other Agricultural Product Processing Plants	Frequency of Use
				Petrochem.	Fertilizer							
9.	Other Separation											
	(a) Thickeners							X	X	X	X	(4)
	(b) Clarifiers								X		X	(2)
	(c) Floation									X		(1)
10.	Water Treatment											
	(a) Filter Vessel						X	X	X	X		(4)
	(b) Storage Tank						X	X	X	X		(4)
11.	Filtration											
	(a) Pressure									X		(1)
	(b) Pressure Leaf								X			(1)
	(c) Continuous Rotary				X				X		X	(3)
	(d) Vacuum							X	X		X	(3)
	(e) Continuous Vacuum Disc.							X	X		X	(3)
	(f) Centrifuges								X		X	(2)
12.	Gas Compression Transport											
	(a) Compressor Gas	X	X	X	X			X				(5)
	(b) Vacuum Pumps	X	X	X				X	X		X	(6)
	(c) Cylinders		X	X	X							(3)
	(d) Road/Rail Vehicles		X	X	X							(3)
13.	Liquid Transport											
	(a) Pumps Centrifical	X	X	X	X		X	X	X	X	X	(9)
14.	Slurry Transport											
	(a) Corrosion &/or Wear Resistance Required							X	X			
	(b) Pumps - Centrifical &/or Positive Displacement							X	X		X	(4)
C.	Solids Handling											
	(a) Conveyors		X	X		X	X	X	X	X	X	(8)
	. Pneumatic Conveyors			X		X		X	X			(4)
	. Stacker/Reclaimer					X		X	X			(3)
	. Ship or Car Loaders				X		X	X	X	X	X	(5)
	. Feeders						X	X	X		X	(5)
	. Weighers			X		X	X	X	X	X		(7)
	. Packaging Equipment			X	X		X	X	X		X	(5)
	. Road/Rail Vehicles			X	X	X	X	X	X	X	X	(8)
	. Cranes/Fork Lifts					X	X	X	X		X	(5)
	(b) Storage											
	. Silos			X		X			X			(3)
	. Bins Elevated			X			X		X	X	X	(6)
	. Bunkers							X	X			(2)
	. Covered Ground Storage			X	X	X	X	X	X		X	(6)
	. Open Ground Storage			X	X	X	X	X	X		X	(5)
	. Size Reduction - Crushers				X	X		X		X		(4)
	. Impact Mills				X	X						(2)
	. Roll Crushers/Mills				X	X	X					(2)
	. Shredders				X	X		X		X		(4)
	. Ball Mills				X	X						(2)
	. Beaters						X					(2)
	. Extruders			X	X			X				(2)
D.	Power Generation & Transmission											
	(a) Transformers	X	X	X	X	X	X	X	X		X	(9)
	(b) Transmission Lines					X	X					(7)
	(c) Switchgear	X	X	X	X	X	X	X	X	X	X	(9)
	(d) Motors	X	X	X	X	X	X	X	X	X	X	(10)
	(e) Gearboxes	X	X	X	X	X	X	X	X	X	X	(10)
	(f) Mechanical Drives	X	X	X	X	X	X	X	X	X	X	(10)
	(g) Steam Turbines							X	X			(2)
	(h) Diesel/Gas Engines	X	X	X	X	X						(5)
E.	Process Control Systems & Instrumentation	X	X	X	X	X	X	X	X	X	X	(10)

EXHIBIT V-6

MANUFACTURING EVALUATION CLASSIFICATIONS

<u>Factors</u> (a)	<u>Class of Manufacturing</u>		
	<u>Class A</u>	<u>Class B</u>	<u>Class C</u>
Made Before	Regularly	Often	Rarely
Design Availability	Freely	Limited	Usually under licence only
Manufacturing Code	No	Sometimes	Yes
Nature of Drawing	Simple	Semi-complex	Complex
Existing Machines	Suitable	Some new machines required	Extensive machine replacement necessary
Existing Operator	Available	Some training required	Extensive training required
Manufacturing Process	Simple	More demanding	Complex
Manufacturing Accuracy	Low	Medium	High
Material of Construction	Mild steel	Certificated carbon steel	Boiler plate stainless steel, aluminium
Repetitive Nature	Frequent	Sometimes	Usually one of
Factory Control Systems	Simple	More demanding	Complex
Material Availability	Short leadtime	Medium leadtime	Long leadtime
Quality Control	No	Sometimes	Yes
Non-Destructive Testing	No	Sometimes	Yes
Pressure Testing	No	Low pressure	High pressure

Note:

(a) See page 2 and 3 of this exhibit for explanation of factors.

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EXHIBIT V-6

Made Before - Equipment which has been made previously by Indonesian Manufacturer's. A measure of this capability is the frequency of manufacturer.

Design Availability - Indonesian manufacturers obtain designs from their own staff, by using consulting engineers or by operating under license to foreign companies.

Manufacturer's Code - Implies quality requirements and specified standards of manufacture. Inspection by an outside authority may also be involved.

Nature of Drawings - Most Indonesian manufacturers are able to produce shop detail drawings, or work with which they are familiar. Drawings of more complex items will require drafting training and more experience or the use of consultants.

Existing Machines - Almost all manufacturing shops have plant which is adequate for straightforward work. More complex work involves new processes and modernization of manufacturing machines.

Existing Operator Skills - Indonesian manufacturers currently have skilled operators experienced in the use of certain types of machine. The introduction of more complex machinery will require development of new skills.

Manufacturing Processes - A measure of the number and complexity of manufacturing processes required to be carried out.

Manufacturing Accuracy - Existing plant is often very old and inaccurate. While it may be adequate for simple work, equipment for high technology process plants requires greater accuracy than is currently obtainable.

Materials of Construction - The techniques of manufacturing mild steel are well known in Indonesia. Use of different quality materials (e.g. aluminium and stainless steel) requires more exacting manufacturing procedures.

Repetitive Nature - Work which involves making many items which are the same or similar has advantages:

- Engineering effort is common to many units.
- Volume production techniques can be employed.
- Plant layout can be adjusted to increase efficiency.
- Unit costs of manufacturing tend to decrease.

EXHIBIT V-6

Factory Control Systems - Simple work needs simple control systems. As manufacturing becomes more complex to meet increasingly stringent operating conditions the need for more demand control systems increases.

Material Availability - Mild steel is usually available in stock or at short notice. Higher quality or special materials are ordered specifically for a job and delivery lead-times may become significant.

Quality Control - Simple manufacturing has no quality requirement but as quality of manufacturing increases, controls must be introduced to ensure that customer requirements are monitored and achieved.

Non Destructive Testing - Is a means of monitoring quality of manufacturing (welding in particular) and its use increases with increase in equipment service operating conditions - i.e. with increasing complexity of manufacturing.

Pressure Testing - Increasing test pressures imply increased difficulty of manufacturing, because higher pressure equipment requires special materials and manufacturing techniques.

EXHIBIT V-7

PLANT MACHINERY & EQUIPMENT RANKED IN ORDER OF IMPORTANCE TO THE INDONESIAN MANUFACTURING INDUSTRY

<u>Equipment</u>	<u>Ease of Manufacturing</u> ⁽¹⁾	<u>Frequency of Use From Exhibit V-5</u>	<u>Difference</u>	<u>Rank Order of Importance</u>
<u>Class "A"</u>				
Structural Steel	15	10	5	1
Solids Handling-Conveyors	18	8	10	2
Covered Ground Storage	16	6	10	3
Open Ground Storage	16	5	11	4
Pipelines	19	8	11	5
Storage Tanks	19	4	15	6
Cyclones	20	3	17	7
Sedimentation Tanks	19	2	17	8
Flotation Units	19	1	18	9
Clarifiers	20	2	18	10
Cooling Towers	23	2	21	11

Note: (1) Ministry of Public Works Assessment Data.

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EXHIBIT V-7

PLANT MACHINERY & EQUIPMENT RANKED IN ORDER OF
IMPORTANCE TO THE INDONESIAN MANUFACTURING INDUSTRY

<u>Equipment</u>	<u>Ease of Manufacturing⁽¹⁾</u>	<u>Frequency of Use From Exhibit V-5</u>	<u>Difference</u>	<u>Rank Order of Importance</u>
<u>Class "B"</u>				
Power Transformers	24	9	15	1
Road/Rail Vehicles	24	8	16	2
Certifical Pumps	26	9	17	3
Silos	24	7	17	4
Bunkers	24	7	17	5
Mechanical Drives	28	10	18	6
Bag Filters	25	6	19	7
Gearboxes	32	10	22	8
Transmission Lines	24	2	22	9
Tank Type Crystalizers	25	3	22	10
Shredders	28	4	24	11
Crushers	28	2	26	12
Filter Vessels	30	4	26	13
Impact Mills	28	2	26	14
Gas Cylinders	30	3	27	15
Diesel/Gas Engines	33	5	28	16
Pressure Filtration	30	1	29	17
Ball Mills	31	2	29	18
Beaters	31	2	29	19
Electrostatic Separation	33	2	31	20
Evaporative Crystalization	33	1	32	21

Note: (1) Ministry of Public Works Assessment Data.

EXHIBIT V-7

PLANT MACHINERY & EQUIPMENT RANKED IN ORDER OF
IMPORTANCE TO THE INDONESIAN MANUFACTURING INDUSTRY

<u>Equipment</u>	<u>Ease of Manufacturing⁽¹⁾</u>	<u>Frequency of Use From Exhibit V-5</u>	<u>Difference</u>	<u>Rank Order of Importance</u>
<u>Class "C"</u>				
Switchgear (Elec.)	34	9	25	1
Electric Motors	36	10	26	2
Isolating Valves	38	9	29	3
Relief Valves	40	9	31	4
Non-Return Valves	40	9	31	5
Solids-Weighers	39	7	32	6
Pneumatic Conveyors	36	4	32	7
Liquid Preheaters	37	5	32	8
Cranes/Fork Lifts	38	5	33	9
Evaporative Vessels	34	1	33	10
Control Valves	43	9	34	11
Solids-Feeders	39	5	34	12
Solids-Packaging Equipment	39	5	34	13
Air Heaters	39	5	34	14
Pump-Centrifical or Positive	39	4	35	15
Continuous Rotary Filtration	38	3	35	16
Shell & Tube Heat Exchangers	43	7	35	17
Process Control Systems & Instr.	45	10	35	18
Rotary Drying	38	2	36	19
Tubular Boilers	43	7	36	20
Separation Vessels	40	4	36	21
Ship or Car Loaders	41	5	36	22
Tunnel Drying	37	1	36	23
Heaters	41	5	36	24
Waste Heat Boilers	41	7	37	25

Note: (1) Ministry of Public Works Assessment Data.

EXHIBIT V-7

PLANT MACHINERY & EQUIPMENT RANKED IN ORDER OF IMPORTANCE TO THE INDONESIAN MANUFACTURING INDUSTRY

<u>Equipment</u>	<u>Ease of Manufacturing</u> ⁽¹⁾	<u>Frequency of Use From Exhibit V-5</u>	<u>Difference</u>	<u>Rank Order of Importance</u>
<u>Class "C" - (Continued)</u>				
Furnaces	39	2	27	26
Centrifuges	39	23	37	27
Filtration-Contin. Vac. Disc.	40	3	37	28
Crystallization-Forced Circ.	40	3	37	29
Extruders (Solids)	39	1	38	30
Solids-Stackers/Reclaimer	41	3	38	31
Package Boilers	41	3	38	32
Crystallization-Draft Tube	40	2	38	33
Kilns-Rotary	40	1	39	34
Kilns-Beehive	40	1	39	35
Vacuum Pumps	45	6	39	36
Scrubbers	43	4	39	37
Absorption Columns	44	5	39	38
Gas Compressors	45	5	40	39
Extrusion Drying	41	1	40	40
Press	41	1	40	41
Fin Heat Exchangers	44	4	40	42
Steam Turbines	42	2	40	43
Vacuum Filtration	43	3	40	44
Air Cooled Heat Exchangers	44	3	41	45
Gas-Liquid Separation Vessels	45	4	41	46
Spray Drying	43	2	41	47
Gas Trans. Road/Rail Vehicle	45	3	42	48
Plate Heat Exchangers	44	1	43	49
Pressure Leaf Filter.	45	1	44	50

Note: (1) Ministry of Public Works Assessment Data.

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EXHIBIT V-8

EQUIPMENT SELECTION CRITERIA

1. Economic
 - (a) Capital investment required
 - (b) Working capital requirements
 - (c) Returns on capital invested
 - (d) Cost of item
 - (e) Added value
2. Technological
 - (a) Availability of expertise
 - (b) Rate of technological change
 - (c) Technology leaders
3. Resources
 - (a) Manpower
 - Availability of trained people
 - (b) Materials
 - Availability
 - Skills needed/available to handle each material
 - Ease of fabrication
 - Lead times
 - Equipment needed/available to handle each material
 - (c) Manufacturing
 - Existing capacity & capability
 - Lead time for upgrading
 - . Plant
 - . Operator skills
 - . Quality control
 - . Management skills
 - (d) Utilization of resources
 - Productivity
4. Market Outlook
 - (a) Size of present/future market
 - (b) Stability of market
 - (c) Competitors
 - (d) Potential for exports
5. Socio-Economic
 - (a) Number of Jobs created
 - (b) Impact on living standards
 - (c) Environmental impact
6. Government Policy
 - (a) Does government protect local production by imposing duties.
 - (b) Duties levied on materials.

EXHIBIT V-9

ESTIMATE OF PLANT MACHINERY AND EQUIPMENT DEMAND

<u>Type of Plant Machinery & Equipment</u>	<u>1981</u>	<u>1982</u>	<u>1985</u>	<u>1990</u>	<u>1995</u>	<u>2000</u>
	-- (Thousands of Tons) --					
Structural Steel	296	300	333	417	500	583
Process Equipment						
Piping	174	160	114	137	-	-
Tanks	165	155	105	129	-	-
Utility Boilers	61	59	41	48	-	-
Pressure Vessels	15	15	9	13	-	-
Heat Exchangers	9	12	5	10	-	-
Casting, Bins, Hoppers						
Silos, Ducting	3	7	2	4	-	-
Solids Handling	7	12	2	6	-	-
	<u>434</u>	<u>420</u>	<u>278</u>	<u>347</u>	<u>417</u>	<u>486</u>
Vendor Items	<u>290</u>	<u>290</u>	<u>389</u>	<u>486</u>	<u>583</u>	<u>681</u>
Total	<u><u>1,020</u></u>	<u><u>1,010</u></u>	<u><u>1,000</u></u>	<u><u>1,250</u></u>	<u><u>1,500</u></u>	<u><u>1,750</u></u>
Power Generation/Trans.						
Electric Motors (HP)	115,251	119,455	132,066	153,086		
Transformers						
•Medium Capacity (KW)	2,176,650	2,421,100	3,154,400	4,376,500		
•Large Capacity (KW)	232,000	263,000	354,000	508,000		
Generators						
•Medium Capacity (KW)	423,630	468,120	601,740	824,400		
•Large Capacity (KW)	1,391,250	1,399,125	1,418,900	1,453,025		

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EXHIBIT V-10
ELECTRONICS INDUSTRY GROWTH

<u>Products</u>	<u>Unit</u>	<u>1975</u>	<u>1979</u>	<u>1980</u>
A. <u>Consumer:</u>		- - - - -	Thousands	- - - - -
- Radios	Pieces	1,071	1,019	1,111
- Radio-Cassettes	Pieces	227	561	617
- Amplifiers	Pieces	32	94	99
- TV				
. B/W	Pieces	165	575	631
. Color	Pieces	-	85	99
B. <u>Professional:</u>				
- Telephone	Pieces	20	18	25 (1)
- Central Telephones	Set	24	<1	3
- Radio Communications	Pieces	2	2	2 (1)
- Satellite Ground Stations	Pieces	N/A	N/A	<1
C. <u>Components</u>				
- Integrated Circuits	Pieces (2)	N/A	401,036	410,169
- Diodes	Pieces	N/A	N/A	N/A
- Variable Resistors	Pieces	N/A	N/A	N/A
- Loud Speakers	Pieces	N/A	78	134
- Picture Tubes (CRT)	Pieces	N/A	39	60

Notes: (1) Preliminary estimates

(2) Export

Source: Ministry of Industry, "Pengembangan Industri Mesin and Peralatan Pabrik (IMPP)", 9/82

EXHIBIT V - 11

ELECTRONICS INDUSTRY GROWTH
(Billions of Rupiahs)

<u>Description</u>	<u>1974</u>	<u>1977</u>	<u>1979</u>
Domestic Consumption	\$67.9	\$165.9	\$245.0
Domestic Production	\$31.2	\$86.7	\$132.0
Imports	\$37.1	\$79.8	\$114.1
Exports	\$ 0.3	\$ 0.7	\$ 1.1
Value Added	\$ 7.8	\$22.1	\$34.2
Labor Force (X1000)	8.6	24.7	31.0

Note: (1) Based on 1977 fixed market price.

Source: Ministry of Industry "Pengembangan Industri Mesin and Peralatan Pabrik (IMPP)", 9/82.

EXHIBIT V - 12

DEMAND FOR TELECOMMUNICATIONS EQUIPMENT

<u>Type of Equipment</u>	<u>Unit</u>	Repelita III	Repelita IV
		1979/80 - 1983/84	1984/85 - 1988/89
		-----	-----
		Thousands	
Telephone	Set	119	343
Analog	Set	73	79
Digital	Set	47	268
Telex	Set	3	12
Data	Terminal	1	2
Transmission	Channel	5	8

Source: Ministry of Industry, "Penhembangan Industri Mesin and Peralatan Pabrik (IMPP)", 9/82.

EXHIBIT V - 13

DEMAND FOR ELECTRONICS COMPONENTS(1)

<u>Type of Component</u>	<u>Forecast Demand</u>		
	<u>1980</u>	<u>1985</u>	<u>1990</u>
	----- Million -----		
Resistors	212	580	1,599
Capacitors	177	489	1,348
Inductors	41	114	314
Semiconductor Devices	65	179	494
Printed Circuit Boards	144	396	1,091

Notes: (1) Component demand forecast above will be used in the following end products:

- Radios
- Radio - Cassettes
- Amplifiers
- T.V. (B/W and Color)
- Radio Communications

Source: Ministry of Industry, "Pengembangan Industri Mesin and Peralatan Pabrik (IMPP)", 9/82.

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CHAPTER VI

PROJECT PROFILES

This section contains the project profiles we feel hold the most promising opportunities for U.S. investment, technology transfer or management contract, in (1) plant machinery and equipment, and (2) electronics industry. But, it should be noted that these warrant further detailed feasibility study to insure profitability. The list of project profiles included as exhibits in this section are:

- Exhibit VI-1: Structural Steel and Process Equipment
- Exhibit VI-2: Power Generation Equipment
- Exhibit VI-3: Solids Handling Equipment
- Exhibit VI-4: Seamless Pipe Manufacturing
- Exhibit VI-5: Technical Services for Pipe Coating Plant
- Exhibit VI-6: Technical Services for Maintenance and Repair of Oil and Gas Process Plant Installation
- Exhibit VI-7: Drill Pipe Manufacturing Facility
- Exhibit VI-8: Technical Services for Inspection and Testing of Offshore Oil and Gas Equipment Installations
- Exhibit VI-9: Compressor Manufacturing Facility
- Exhibit VI-10: Electronic Component Manufacturing Facility

To promote foreign investment in Indonesia the government has provided a package of incentives for prospective investors. A detailed list of incentives are provided for in Exhibit VI-11 and include the following eight programs:

- (1) Tax Holiday
- (2) Investment Allowance
- (3) Loss Compensation
- (4) Accelerated Depreciation
- (5) Exemption From Dividend Tax
- (6) White Washing of Capital
- (7) Exemption From Capital Stamp Duty
- (8) Additional Tax Incentives

EXHIBIT VI-1

STRUCTURAL STEEL AND PROCESS EQUIPMENTBackground

To meet the increasing demand for engineered structures and process equipment for domestic industrial growth (i.e. - oil and gas, petrochemical-fertilizer, cement, etc.), the existing Indonesian industrial complex must be expanded both in number and capacity.

As an example in the oil and gas industry there are more than 38 foreign oil companies, 21 of which are already producing. Pertamina, the government owned oil company, is also producing oil and gas in five areas throughout Indonesia, while also operating eight refineries, two LNG plants and several LPG plants. Three more oil refineries are being constructed and two additional oil refineries are being planned. Similar expansions planned for in the other eight industries detailed in Chapter IV - "Indonesian Industry Overview", clearly documents Indonesia's growth prospects.

The expansion programs described above will require engineered structures and process equipment to support industry development plans. These include:

1. Engineered structures such as offshore platforms, loading arms, mooring systems, drill rig structures, wellhead equipment, manufacturing facilities, etc.
2. Tanks
3. Pressure Vessels
4. Heat exchangers
5. Castings, bins, hoppers, silos, ducting.

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EXHIBIT VI-1

Based on oil and gas industry projects alone (in 1981/82) which are estimated to cost approximately US \$8 billion, current demand for the five product categories listed above are estimated to have a value of US \$2 billion. About 90% of this demand will be satisfied by foreign imports. Foreign investment in Indonesia is therefore encouraged and will be protected against foreign competition.

Project Profile

- | | |
|--------------------------|---|
| 1. Product Mix | : Engineered structures and process equipment |
| 2. Annual Capacity | : Estimated at 400,000 tons per year or US \$2 billion. |
| 3. Proposed Location | : Cilegon and Batam. |
| 4. Marketing | : Domestic and ASEAN countries. |
| 5. Type of Collaboration | : Joint venture based on foreign investment law. |
| 6. Raw Materials | : Steel products. |

EXHIBIT VI-2

POWER GENERATION EQUIPMENTBackground

Indonesia has experienced a period of rapid economic growth during the 1970's, which has resulted in a high level of energy consumption of about 10% annually. Electric power demand increased more than 12% annually over this period and is expected to increase an average of more than 11% for the next 25 years. Indonesia's public utility (PLN) has not been able to meet this rapidly increasing electric power demand and presently supplies about 56% of total demand. Local industry has accounted for the remaining portion of electric power generation for their own uses.

Investment in electric power generation under the government Repelitas is expected to rise annually from US \$1.4 billion to US \$3.7 billion over the next 25 years, as shown in the following table.

<u>Repelita</u>	<u>Amount (US Billion)</u>	<u>Period</u>
III	\$1.4	1979/80 - 1983/84
V	\$2.3	1989/90 - 1993/94
VII	\$3.7	1999/2000 - 2003/04

Based on this growth projections the government is interested in reducing imports in generations equipment and would welcome foreign investment in the following types of manufacturing plants.

1. Boilers
2. Transformers
3. Generators
4. Turbines
5. Switchgear

EXHIBIT VI-2

One manufacturer is currently talking to the Indonesian government. The outcome and the nature of these discussions are unknown and therefore we have listed these investment opportunities for other foreign interests.

Project Profile

1. Product mix : Products listed above
2. Annual capacity:
 - (a) Boilers 150,000 tons/year
 - (b) Transformers (Medium capacity) KW = 4 Million
(Large capacity) KW = 500 Thousand
 - (c) Generators (Medium capacity) KW = 800 Thousand
(Large capacity) KW = 1 Million
3. Proposed Location : West Java
4. Marketing: Domestic and Export
5. Type of Collaboration: Joint-venture, based on foreign investment law.

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EXHIBIT VI-3

SOLIDS HANDLING EQUIPMENT

Background

The growth expected in the industries studied shows that solids handling equipment will be needed to support such industries as cement, sugar, palm oil, etc. The type of equipment required include the following:

Conveyors

- Pneumatic
- Stacker/Reclaimer
- Feeders
- Packaging Equipment
- Cranes/Fork Lifts

Storage

- Silos
- Bins
- Bunkers
- Open/Covered Storage

These products are presently imported and foreign investment in Indonesia is therefore encouraged and will be protected against foreign competition.

Project Profile

1. Product Mix: Products listed above.
2. Marketing: Domestic and ASEAN countries.
3. Type of Collaboration: Joint-venture based on foreign investment law.

EXHIBIT VI-4

SEAMLESS PIPE MANUFACTURING

Background

The demand for seamless pipe in Indonesia is continuously increasing, and is estimated to be around 160,000 tons in 1984/1985. Seamless pipe made from carbon steel find large application in the following fields of activity:

1. Petroleum industry as casing, tubing, line pipe and refinery tube.
2. Engineering and mineral industry as mechanical core drill, automobile tube, etc.
3. Boiler industry as superheater tube for medium and high pressure.
4. Industrial tubing for pressure water, gas and steam service in general.
5. Fertilizer and chemical industry as process tubes.
6. Tube-wells as casing tubes.

To meet the seamless pipe demand of 160,000 ton in 1984/1985 and in accordance with the government policy to utilize domestic products as much as possible. The government has emphasized the need for establishing a seamless pipe plant in Indonesia.

The project should have a minimal cost penalty by means of choosing the appropriate technology that should still be applicable for the next ten years, and by using locally available raw material.

Project Profile

- | | | |
|--------------------------|---|---|
| 1. Product mix | : | seamless pipes
Hot: 40-160 mm, 3-10 mm
Cold: 90-220 mm, 2-25 mm |
| 2. Annual capacity | : | 150,000 tons |
| 3. Proposed location | : | Cilegon, West Java |
| 4. Estimated investment | : | + US \$186,000,000.- |
| 5. Marketing | : | domestic |
| 6. Preferred processes | : | hot and cold |
| 7. Type of collaboration | : | Joint-venture, based upon
foreign investment law |
| 8. Raw material | : | Sponge Iron. |

EXHIBIT VI-5

TECHNICAL SERVICES FOR PIPE COATING PLANTS

Background

Due to geographic conditions, Indonesia will need to develop its offshore oil and gas fields to maintain its production level. This expansion will require a good number of submarine pipeline installations. These submarine pipe installations require a pipe coating plant, to ensure the level of quality and corrosion protection. In addition, an increasing number of onshore pipeline installations also require the services of a pipe coating plant.

Currently there is only one coating plant at Batam and the demand can justify additional pipe coating plants for central and Eastern Parts of Indonesia. Domestic pipe coating plants will be protected by the Indonesian Government against foreign competition.

Project Profile

- | | |
|--------------------------|---|
| 1. Project Title | : Pipe coating plant. |
| 2. Type of Collaboration | : Joint venture. |
| 3. Shareholdership | : First year of commercial production
Indonsian: 20% Foreign: 80%
Tenth year of commercial production
Indonsian: 51% Foreign: 49%. |
| 4. Location | : Eastern part of Indonesia. |

EXHIBIT VI-6

TECHNICAL SERVICES FOR MAINTENANCE AND REPAIR OF OIL AND GAS
PROCESS PLANT INSTALLATION

Background

To meet the increasing energy demands for both domestic and export markets, the existing oil and gas industries will have to be expanded both in number and capacity.

Presently there are 8 refineries in operation with total capacity of 527,000 MB/D. Three refineries are under construction which will start operation in 1984 and the fourth refinery is now being planned. In addition to supplying energy for export markets two LNG Plants, one located in Aceh, Sumatra with three trains and the second plant located in East Kalimantan with two trains have been in operation since 1978 and 1977 respectively. Several LPG Plants have also been constructed to meet both domestic and export requirements. Also Aromatic Centre and Methanol plants are being constructed.

A number of highly specialized equipment were installed in the oil refineries, Aromatic Center, Methanol, LNG and LPG Plants such as steam boilers, heat exchangers, cryogenic equipment, compressors, coolers, separators, turbines, etc. which needs regular maintenance and repair to ensure un-interrupted operations.

Project Profile

- | | | |
|--------------------------|---|---|
| 1. Project Title | : | Maintenance and repair of oil and gas process plant installation. |
| 2. Type of Collaboration | : | Joint venture. |
| 3. Shareholdership | : | First year of commercial production
Indonsian: 20% Foreign: 80%
Tenth year of commercial production
Indonsian: 51% Foreign: 49%. |
| 4. Location | : | Outside Java |

EXHIBIT VI-7

DRILL PIPE MANUFACTURING FACILITY

Background

Oil and gas fields in Indonesia are generally located in very remote areas. The production of oil and gas therefore requires a variety of materials and equipments. One of the materials that is in great demand is drill pipes of various sizes and specifications. Since there is no drill pipe manufacturing plant in Indonesia, all demands for such pipe are fulfilled by imports.

The need for drill pipes will be in demand well into the future for drilling operations and for development of new fields.

Project Profile

- | | | |
|--------------------------|---|---|
| 1. Project Title | : | Drill pipe factory |
| 2. Type of Collaboration | : | Joint venture. |
| 3. Shareholdership | : | First year of commercial production
Indonsian: 20% Foreign: 80%
Tenth year of commercial production
Indonsian: 51% Foreign: 49%. |

EXHIBIT VI-8

TECHNICAL SERVICES FOR INSPECTION AND TESTING OF OFFSHORE OIL AND GAS EQUIPMENT INSTALLATIONS

Background

Present crude production from Indonesian offshore oil fields contributes approximately 35 percent of the total crude oil production throughout the country, and its role is expected to increase in the future. Since the crude oil production program was initiated in 1971, there are 110 production platforms, 4 living quarter platforms, 6 floating storages, and 73 others functioning as oil and gas service platforms, LNG facilities and other supporting facilities installed in the Indonesian waters to date. A number of offshore installations are under construction or being fabricated. In addition, utilization of offshore gas discoveries will also require a considerable number of offshore facilities to be installed in the near future.

These offshore facilities and installations will need to be tested and inspected regularly to ensure maximum performance and safety.

Project Profile

- | | |
|--------------------------|---|
| 1. Project Title | : Inspection and testing of offshore oil and gas Equipment Installations. |
| 2. Type of Collaboration | : Joint venture. |
| 3. Shareholdership | : First year of commercial production
Indonsian: 20% Foreign: 80%
Tenth year of commercial production
Indonsian: 51% Foreign: 49%. |

EXHIBIT VI-9

COMPRESSOR MANUFACTURING FACILITY

Background

The growth in the consumer electronics sector is tied closely to such factors as GDP, per capita income, government/foreign investment, and population growth. All of these have been expanding as shown in Chapter III, creating a growing demand for products such as air conditioners and refrigeration units for consumer, commercial and industrial applications.

As the demand for these products expands so will the need for repair and replacement of components within these products grow. One of the components vital to the efficient operation of both the air conditioner or refrigeration unit is the compressor. It is also one of the components that frequently needs repair or replacement. Therefore the need for a manufacturing facility in Indonesia seems to be a logical choice and encouraged by the government.

Project Profile

- | | |
|--------------------------|--|
| 1. Project mix | : Various compressor sizes. |
| 2. Marketing | : Domestic and ASEAN countries |
| 3. Type of Collaboration | : Joint venture based on foreign investment law. |

EXHIBIT VI-10

ELECTRONIC COMPONENT MANUFACTURING FACILITYBackground

The production of consumer electronics consists primarily of assembly of imported kits, where the product designs are specified by the principals. The following list represents annual production of several consumer electronics systems.

	<u>1980</u>
- Radio receivers	1,111,000 units
- TV	
o B/W	631,000 units
o Color	99,000 units
- Cassette recorders	617,000 units
- Audio amplifiers	99,000 units

The professional electronics industry which is still at an early stage of development has had several companies attempt assembly of a series of sophisticated telecommunication equipment, such as: (1) small ground stations, (2) single side band transceivers, (3) TV transmitters, (4) radio transmitters, etc. The components for these professional electronics systems were mostly fulfilled by imports.

The rate of increase in the demand for electronics equipment over the last several years has been in excess of 20% per year. Therefore the demand for electronics components is estimated proportional to this rate.

Justification for promoting the development of an electronic components plant in Indonesia is based on the following background considerations:

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EXHIBIT VI-10

- (1) In accordance with the state and economic policy objectives during the fourth five year development plan (1983/84 - 1988/1989), the industrial sector should have the capability of processing raw materials to produce their own designed capital goods.
- (2) The growth of the electronics industry in recent years has shown a favorable trend which has turned over about Rp \$200 billion per year.
- (3) The demand for electronic components is expected to increase in the future. The following list represents estimates of passive and active components:

	<u>1980</u>	<u>1990</u>
	- Millions of	Pieces- -
Passive Components (R,L,C)	430	3,261
Active Components (diodes, transistors, I.C.)	65	494
Printed Circuit Boards	144	1,091

Project Profile

- | | |
|--------------------------|---|
| 1. Project mix | : Various components as listed below. |
| 2. Annual Capacity | : Resistors = 170 million pieces/year
Capacitors = 170 million pieces/yr
Inductors = 15 million pieces/year
Diodes, I.C. & transistors =
106 million pieces/year
Printed Circuit Boards = 200,000
Sq. meters/year |
| 3. Proposed Location | : Bandung, West Java |
| 4. Marketing | : Domestic and export markets |
| 5. Type of Collaboration | : Joint venture based on foreign investment law. |
| 6. Raw Materials | : Local materials should be consumed as much as possible. |

EXHIBIT VI-11

INCENTIVES TO FOREIGN INVESTORS

(1) Tax Holiday: New enterprises which invest their capital in fields of goods and services which have been given priority by the Government may be granted a tax holiday of at most six years counted from the start of commercial production by the enterprise concerned, according to the following rules:

- | | | |
|--|-----------|--|
| a. Basic Holiday | + 2 years | |
| b. Earning and saving of foreign exchange | + 1 year | (an average of US \$750,000 per year during the first 3 years of production) |
| c. Large amount of capital invested | + 1 year | (Foreign Investment = US \$15,000,000) |
| d. Investment location outside Java | +1 year | |
| e. Special priority given by the Government. | +1 year | |

(2) Investment Allowance: The basis for calculating the Investment Allowance (IA) facility is the amount invested in fixed capital. The size of the investment allowance facility is 20% of fixed capital spread over four years at 5% a year. To calculate the tax due in a particular year, this 5% total can be deducted from taxable income, while the remainder is subject to tax according to prevailing regulations and tariffs. If said deduction results in a loss, such loss may be compensated for by profits in succeeding years without limit of time.

(3) Loss Compensation: Losses suffered in any year during the tax holiday may be compensated for/deducted from profits earned during the ensuing four years. Losses suffered during the first six years after establishment of an enterprise (initial losses) may be compensated for/deducted from the profits in succeeding years, without limit in time.

EXHIBIT VI-11

(4) Accelerated Depreciation: In addition to ordinary depreciation according to the tables based on prevailing tax rules, an enterprise may conduct accelerated depreciation one year only during the first four years, counted from the year of issuance.

(5) Exemption from Dividend Tax: Exemption from Dividend Tax is exemption from tax on the portion of profits paid to share holders. The exemption applies from the time the enterprise begins commercial production. The period the exemption from Dividend Tax is connected to the length of the tax holiday for those enterprise enjoying the tax holiday facility. For enterprises receiving the investment allowance exemption from Dividend Tax is only granted for a period of two years.

(6) White Washing of Capital: Capital invested in an enterprise by Indonesian citizens may enjoy the white washing up to a maximum of the amount of equity capital invested in an investment project approved by the Government. The origins of said capital will not be investigated nor will said capital be the basis for assessment or review of income tax, company tax or property tax. White Washing of Capital is granted provided that the investment is made:

- a. Outside Java
- b. In Java:
 1. In a field eligible for the tax holiday incentive.
 2. In a field eligible for the investment allowance incentive with the condition that a substantial workforce be employed or the total production be exported.

EXHIBIT VI-11

(7) Exemption from Capital Stamp Duty: Exemption from capital stamp duty may be granted for capital invested/paid up to a maximum of the amount of equity capital invested in an investment project approved by the Government.

(8) Additional Tax Incentive: Will be granted additional tax incentive in the framework of Domestic Investment and Foreign Investment based on Government Regulation Number 2 of the year 1981 to projects with the following conditions, absorb a large number of labor or earning a big amount of export earning or locating and opening with infrastructural facilities in a remote areas due to highly risk involvement.

CHAPTER VII
CONSTRAINTS TO U.S. FIRMS

The Indonesian Government welcomes private foreign investment to assist in the development of the country's resources and achievement of its economic potential. It grants tax and other incentives to encourage private foreign investment. The Government also expects foreign investors to respond to the objectives it has established for such investment. Thus, legislation restricts foreign investment in certain sectors, requires Indonesian coownership, and sets up requirements for the development of Indonesian manpower. It also limits the validity period of an investment approval (30 years) but provides opportunity for its extension, if certain standards are met. The implementation of the Foreign Investment Law of January 10, 1967 (Law No. 1 of 1967), as amended by Law No. 11 of 1970 and in 1982 ("Investment Priority List 1982/1983" - See Exhibit VII-1) in respect to tax holidays and other tax concessions, established a favorable investment climate.

The Capital Investment Board (BKPM) is the overall authority for both foreign and domestic investment and should be the first agency approached by most potential foreign investors. Exceptions are in minerals, petroleum, and forestry where special regulations apply and the appropriate departments (the Departments of Mines and Agriculture, and Pertamina the state-owned petroleum company) should be contacted.

In addition to approval by the BKPM, each foreign investment project must have presidential approval. While BKPM has responsibility for handling foreign investment approvals, other departments play important roles in the procedure. The Department of Finance must approve tax, import duty, and other exemptions and financial arrangements, while the department having overall responsibility for the sector in which the investment lies also has an interest in the investment application. The Department of Manpower will have to approve training and other factors affecting manpower. The potential investor will wish to have direct contact with the key government agencies concerned.

The basic procedure established for foreign investment approvals is that the prospective foreign investor submit to BKPM an application for investment, called a "Form A," along with a covering Letter of Intent, outlining the investment proposal. BKPM then evaluates the proposal in coordination with the concerned government departments. If the Form A is approved the investor submits a complete project proposal, Form B, which includes as much detailed information as possible including a list of capital and intermediate goods required, number of foreign and Indonesian employees required, location of the project, financial structure, corporate structure, market analysis, joint venture partner relationship, program for increased Indonesian participation etc. The investor proceeds to establish a limited liability company through an Indonesian notary. The presidential approval, based on recommendations by the BKPM, includes all relevant permits and legal documents, as well as confirmation of the tax relief (although this is subject to change by the tax authorities), and other facilities extended to

the investor by the Government. At a very early stage in the investigation of a likely investment opportunity the investor should consult the U. S. Embassy Economic/Commercial Section and select a local law firm or other consultant firm for advice on documentation and procedures. Foreign branch banks also provide help regarding investment.

The Foreign Investment Law (as shown in Exhibit VII-1) grants investors the rights to remit profits, loan obligations, depreciation, and capital (but not while tax concessions are being given). It also provides assurance against nationalization and gives various tax incentives not always agreed to by the tax authorities. Exemption from corporation and dividend tax for at least 2 and up to 6 years may be given if an investment is in a priority area and meets other criteria in respect to location, size of investment, export earnings, use of Indonesian labor, or other priority objectives. Relief from import duty and sales taxes may be granted on items required for investment, and foreign employees of companies operating under the Foreign Investment Law receive certain duty-free imports.

In 1982 the Indonesian government introduced a series of regulations under the heading of "Export Policy January 1982", which created a countertrade purchase policy in an effort to stem the declining foreign exchange revenues from non-oil exports. Exhibit VII-2 describes this policy in detail including guidelines to tenderers.

In a similar action the Ministry of Industry Decree No. 205/1982, effective as of July 7, 1982, rules that a sole-agency agreement between an Indonesian company and a foreign principal, licensee, or patent owner can be implemented only after obtaining a letter of recognition from the Ministry of

Industry, and can be terminated only with prior approval from both contracting parties. The regulation (see Exhibit VII-3) stipulates general provisions on sole-agency arrangements regarding capital goods and certain industry goods which, according to Indonesian legislation, shall be marketed or distributed through the sole-agent.

The legal forms of business organization in Indonesia are patterned after the Dutch system. The following are among the most common:

1. The limited liability company (Perseroan Terbatas, or P.T.) For most foreign investors, this type of organization is the only relevant form;
2. The full partnership, or Firma in which all partners are personally liable for all obligations of the enterprise;
3. The limited partnership, or Perseroan Komanditer in which one or more are "silent partners" responsible for obligations only up to the amounts of their capital participation, and in which those designated as "managing partners" are personally liable for all of the firm's obligations;
4. The cooperative (common among farmers and other small entrepreneurs);
5. The sole proprietorship or individual enterprise, Perusahaan Perseorangan, in which the owner is personally liable for all obligations of the firm he owns; and
6. The branch of a foreign business firm;
7. Representatative office.

The development of industrial estates is being given high priority by the government since they offer the foreign investor a way around the problems sometimes encountered in obtaining land and land rights, building permits, site formation and other infrastructure facilities such as water, electricity, sewage systems, telephones and other support facilities. There are currently two such industrial estates in operation, with several others at various stages of planning and development.

The Pulogadung Industrial Estate, situated in eastern Jakarta, is a 50/50 joint venture between the Central Government and The Jakarta Municipal government. This industrial estate is entirely managed by P. T. Persero Jakarta Industrial Estate Pulogadung (P.T. Persero JIEP). Aid for the project has come from the World Bank. The total Pulogadung area is approximately 1,400 acres with plans to add about 500 acres northwards.

The second fully operational industrial estate is located at Rungkut in Surabaya East Java. This project is being supported by German loans through the Inter-Governmental Group on Indonesia (IGGI). The land is conveniently situated, close to local transportation facilities and other services, similar to those offered at Pulogadung.

A third industrial estate is under development at Cilicap in Central Java. Called the Cilicap Industrial Estate (CIE), it is expected to be suitable for industries related to the existing cement, pulp and paper, & oil refining projects in the area.

Other industrial estates are in various stages of development or planning at:

- Medan in North Sumatra,
- Semarang in Central Java,
- Ujung Pandang in South Sulawesi, and
- Samarinda in East Kalimantan.

The Batam Industrial Estate, in the Indonesian Riau Archipelago south of Singapore, was originally designed by Pacific Bechtel Inc. of the United States for Pertamina as an integrated industrial center mainly to support the oil industry. Pertamina has since handed over responsibility to the Batam Island Development Authority.

EXHIBIT VII - I

INTRODUCTION

With in the framework of the Presidential Decree No. 33/1981, which has broadened the function and the task of the Investment Coordinating Board, the Board now has issued and improve_{ment} of the Investment Priority List for Foreign Investment - 1982/1983 which has been formulated based on a program deve_{lopment} approach of the various economic sectors.

The List Consist of field of investment open to Foreign In_{vestment} as Governed by Law No. 1/1967 Jo. Law No. 11/1970 - and list of projects in accordance with Sub-Sectors programs.

Jakarta, April 1, 1982.



BADAN KOORDINASI PENANAMAN MODAL

D E C R E E O F
THE CHAIRMAN OF THE INVESTMENT COORDINATING BOARD

N U M B E R : I/1982

CONCERNING

THE PRIORITY LIST FOR DOMESTIC INVESTMENTS, PRIORITY LIST FOR FOREIGN INVESTMENTS, LIST OF FIELDS OUTSIDE THE FOREIGN/DOMESTIC INVESTMENTS LAWS, LIST OF FIELDS CLOSED TO INVESTMENTS, LIST OF FIELDS OF INVESTMENTS WITH REGISTRATION AND LIST OF TOP PRIORITY FIELDS FOR INVESTMENTS

THE CHAIRMAN OF THE INVESTMENT COORDINATING BOARD,

- Considering : a. That it is deemed necessary to review the Investment Priority of the Year 1981 which was issued on the basis of decree of the Chairman of the Investment Coordinating Board No 3/1981 dated October 1, 1981.
- b. That for the above mentioned purpose it is necessary to issued the Priority List for Domestic Investments, Priority List for Foreign Investments, List of fields outside the Foreign/Domestic Investments Laws, List of Fields Closed to Investments, List of fields of Investments with Registration and List of Top Priority fields for Investments.
- In Observance : 1. Bedrijfs Reglementeerings Ordonantie 1934;
2. Law No. 1 of 1967 jo. No. 11 of 1970 concerning Foreign Investment;
3. Law No. 6 of 1968 jo. Law No. 12 of 1970 concerning Domestic Investment ;
4. Decree of the President of the Republic of Indonesia No.54 of 1977;
5. Decree of the President of the Republic of Indonesia No.33 of 1981;
6. Decree of the President of the Republic of Indonesia No.41/M/81;
7. Decree of the Minister of Finance No.Kep.94/MK/2.1971.

H A S D E C I D E D

- To Withdrew : Decree of the Chairman of the Investment Coordinating Board No.3/1981
- To Stipulate : DECREE OF THE CHAIRMAN OF THE INVESTMENT COORDINATING BOARD CONCERNING THE PRIORITY LIST FOR DOMESTIC INVESTMENTS, PRIORITY LIST FOR FOREIGN INVESTMENTS, LIST OF FIELDS OUTSIDE THE FOREIGN/DOMESTIC INVESTMENTS LAWS, LIST OF FIELDS CLOSED TO INVESTMENTS, LIST OF FIELDS OF INVESTMENTS WITH REGISTRATION AND LIST OF TOP PRIORITY FIELDS FOR INVESTMENTS

A r t i c l e 1

The List of Investment consist of; The priority List for domestic Investments, Priority List for Foreign Investments, List of fields outside the Foreign/Domestic Investments Laws, List of fields closed to Investments, List of fields of Investments with Registration and List of Top Priority Fields for Investments are formulated as stipulated in the rules appended to this Decree.

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BADAN KOORDINASI PENANAMAN MODAL

Article 2

Domestic and Foreign Investment Applications which on the date of enactment of the Priority List of the Investment of the Year 1982/1983 have not yet been approved, shall be subject to the Investment Priority List of April 1, 1982, that is profitable to the Investor, if ;

- a. The application which have been received by the Investment Coordinating Board before the date of issuance of the Investment Priority List of the year 1982/1983.
- b. The reply of letter of intent which have issued by Investment Coordinating Board and still valid on the date of enactment of the Investment Priority List of 1982/1983.

Article 3

Procedure of application, evaluation and finalization on licences for Investment outside the foreign/domestic Investment Laws and Investment with registration handled by Technical Department concerned and/or its authorized Regional Offices.

Article 4

The adjustment of this Priority List referred to article 1 to accommodate recent developments, shall be stipulated 12 (twelve) months after the date of enactment of this Decree.

Article 5

All regulations that included in the Priority List are inseparable from this decree.

Article 6

This Decree commence from April 1, 1982.

Decided in : J A K A R T A

On : May 18, 1982.

THE INVESTMENT COORDINATING BOARD
CHAIRMAN

(IR. SUHARTOYO)

Copies delivered to :

1. The President of the Republic of Indonesia (as a report) ;
 2. The Ministers of the Development Cabinet III ;
 3. The Governor of Bank of Indonesia :
 4. The Director General of the Departments which supervise fields of Investments;
 5. The Governors/Heads of Primary Regions throughout Indonesia ;
-

1. Presentation of Priority List.

1.1. The Priority List consist of columns representing :

- The Number in sequence
- The ISIC Number
- The Code for specific fields
- The Field of Investment
- The Tax Holiday Incentive
- The Investment Allowance Incentive
- The Explanations

1.2. Fields of investment which are not set forth in this list may be understood to be :

- Fields which are closed to foreign investment
- Fields of investment which at the time of preparation of this Priority List had not been identified yet as the field to be promoted.

2. The Technical Rules for applying the Priority List are as follows :

2.1. Institutional Authority for Capital Investment.

Based on Presidential Decree Numbers 33 of 1981 and 54 of 1977, the Investment Coordinating Board is the sole agency responsible for handling capital investment, centralized and coordinated under one roof.

2.2. New Project and Expansion Projects.

This Priority List applies to both new projects and expansions. Expansions will be considered where at least 80% of approved production capacity has been realized and where deemed necessary to achieve a minimum economic size.

An expansion project shall obtain an incentive in the form of investment allowance.

2.3. Improving Incentives.

- A tax holiday can be granted to the foreign investment projects whose products are entirely (100%) for export.
- A field of investment undertaken by a cooperative or by an enterprise which its majority share belong to the cooperative can be granted better allowances than those applicable to other groups.
- Investment in the field of plantation can obtain a special tax holiday of 6 (six) years, depending on the variety and the period from planting till the first production.

2.4. Pre Application Correspondence.

For clarification of a field of investment not specifically referred to in the Priority List or any other information, the investor may address his question in writing to the Investment Coordinating Board cq. the Deputy for Planning and Control, which the intention should provide information covering :

- field of activity;
- methode of production;
- Source of raw materials (domestic/imported)
- total intended investment;
- l o c a t i o n;
- intended market;
- labor to be employed;
- participation of weak economic group including cooperatives.

An affirmative answer of pre application is valid for 3(three) months and it can be extended as long as the field of activity is still open.

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2.5. Investment Application Procedure.

- An investor interested in a field specifically referred to in the Priority List should submit an application prepared according to application Model I/PMA.
- The Investment Coordinating Board will evaluate the application within at most 4 weeks to determine whether it is acceptable or rejected, both with respect to satisfaction of technical and economic requirements.
- A Provisional Approval (SPS) will be issued after the application has been accepted and will be valid for 3 months, with a possibility for extension upon the request of the investor giving reasons which are found to be acceptable, and if the field of activity is still open in the prevailing Priority List.
- A Final Approval (SPT) will be issued after the prospective investor has supplied all the data and information required for the final evaluation.
- Canceled final approval (SPT) could be renewed or substituted by other applicant after consultation with the technical department concerned if the field of activity is not set forth in the Priority List of 1982/1983.

2.6. Manpower.

- A Company is obligated to comply with the prevailing rules and regulation in the province or region concerned, particularly the rules on minimum wages for labor.
- The employing of foreigners to fill management positions and other positions which need skilled labor must be limited in the numbers employed, the types of positions available and the duration of employment.

3. The Participation and cooperation in investment activities.

- 3.1. To protect the weak economic group, it is necessary to avoid competition from the new investment projects in the business of traditional fields which have been done/reserved for the weak economic group.
- 3.2. Principally, foreign investment projects must be set up in the form of joint enterprise with national entrepreneurs according to the following rules :
 - a. At the outset at least 20% of the shares must be held by national entrepreneurs.
 - b. Within 10 years after commercial production, the national share participation must increase gradually to reach at least 51%.

4. Export Rules.

Fields of investment not set forth in the Priority List may still be opened to investment with a tax holiday incentive with the requirement that the total (100%) production be exported and that the project be located outside the customs zone (i.e. in a Bonded Warehouse, in a Private Entrepot or in an Export Processing Zone).

5. Rules on Bonded Warehouse.

Bonded Warehouse are governed by Government Regulation No.20 of 1972 juncto Government Regulation No.31 of 1977 Subject to special rules on customs, imports, exports, traffic in foreign exchange, commodities and investment.

The available areas outside the customs zone are :

- P.T. BONDED WAREHOUSE INDONESIA located in the Port of Tanjung Priok.
- The Batam Island Industrial Zone.
- Several Bonded Areas to be developed, among others, in Jakarta, Central Java and East Java.
- Private entrepot status can be requested complying to the prevailing regulation.

Foreign Investment Rules.

All new foreign investment must constitute a joint venture with an Indonesian partner(s). Expansion may be accomplished through participation of the original partner(s), a new additional partner(s), individuals, cooperatives and through the capital market.

For a period of 5 years at the longest, Non Bank Financial Institutions may hold shares as the Indonesian partner in a ratio of at least 20% (Indonesian shares) : 80% (Foreign shares).

In specific cases, particularly fields of investment that total production is exported and create large employment opportunities, straight investment may be considered.

6. Granting of Tax Incentives.

6.1. Exemption from corporation tax (tax holiday).

New enterprise which invest their capital in fields which have been given priority by the government may be granted a tax holiday of maximum 6 (six) years, starting from the commercial production as specified as follows :

- | | |
|---|--|
| a. Basic tax holiday | 2 years |
| b. Earning of foreign exchange | 1 year (an average of US\$.750.000,- per year during the first three years of production). |
| c. Large (i.e. minimum US\$.15.000.000 ^x) investment. | 1 year ^x to be invested in land, buildings, machineries & equipments. |
| d. Location outside Java | 1 year. |
| e. Special priority due to the government consideration. | 1 year |

6.2. Investment Allowance. (IA).

An Investment Allowance is calculated on a basis of the amount of capital disbursement as stated in the Finance Minister's decree No. KEP 629 / M K / II / 10 / 1970 dated October, 5, year 1970. The total amount of the investment allowance is 20% of the capital disbursement mentioned above, which is divided into 4 (four) years at 5% yearly . In calculating the tax of the year concerned, this amount of 5% may be deducted from taxable profits, while the rest is taxed according to the prevailing regulations/ tariffs.

6.3 Carried...-

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6.3. Carried forward of losses.

Losses sustained by a corporation in a certain year may be compensated / deducted from the taxable profits earned in the 4 (four) subsequent years.

If losses occur during the first 6 (six) years after establishment of a corporation (initial losses), the losses may be deducted / compensated from the profits of the coming subsequent years, indefinitely.

6.4. Accelerated depreciation.

In addition to normal depreciation according to the tables based on prevailing tax rules, an enterprise may conduct accelerated depreciation.

Accelerated depreciation may be claimed in a particular year at the option of the taxpayer within a period of 4 (four) years commencing with the year in which investment expenditure is made and the amount of accelerated depreciation is :

- a. 10% of the expenditures for permanent buildings;
- b. 25% of the expenditures for infrastructure and company equipment which are directly used in the production process.

For companies enjoying a tax holiday the beginning of the four-year option commences in the year following the tax holiday period.

6.5. Exemption from dividend tax.

Dividends paid by a company are not subjected to with-holding tax as long as those dividends are paid during the tax holiday period and if these dividends are exempted in the home country from tax on income or profit. In case a company does not obtain exemption from corporation tax, but only an investment allowance, the duration of the dividend tax exemption is only 2 (two) years.

6.6. Capital amnestion.

Capital invested in an enterprise by Indonesian citizens may enjoy capital amnestion up to a maximum of the amount of equity capital in a project approved by the government.

The origins of said capital will not be investigated nor will said capital be the basis for assesment of review of income tax, corporation tax or property tax.

Capital amnestion is granted providing the invesment is made :

- a. Outside Java ;
- b. In Java :
 - b.1. In a field eligible for the tax holiday incentive;
 - b.2. In a field eligible for the investment allowance incentive with the condition that a substantial work force be employed or the total production to be exported.

6.7. Exemption from capital stamp duty.

Exemption from capital stamp duty may be granted for capital issued/ paid-up to a maximum amount of equity capital in a project approved by the Government.

6.8. Exemption or reduction from import duties and import sales tax.

Exemption or reduction from import duties and import sales tax can be granted upon the import of machineries, equipments and instruments.

6.9. Exemption from duty transfer on the deed of a ship's registration.

The exemption applies for the first registration of a ship in Indonesia and is effected within a period of 2 (two) years since the commencement of commercial production, according to the line of business.

6.10. Additional tax incentive.

Additional tax incentive will be granted in the framework of domestic and foreign investment based on Government Regulation No. 2, 1981 to projects with the following conditions :

- a. Absorbing a large number of labour, or
- b. Earning big amount of foreign exchange , or
- c. Located in remote areas (opening infrastructure and due to highly risk involment).

The amount of corporation tax reduction will be determined by the Minister of Finance depending on the line of business, while the amount of dividend tax reduction is 50%.
This additional tax incentive will be granted for a period of 10(ten) years.

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CARRY FORWARD OF LOSSES
FOR INITIAL LOSSES

P.T. X ESTABLISHED IN 1970		CARRY OVER SYSTEM CORRECT METHOD OF CALCULATION	
		Carry forward of losses :	
I.	FISCAL YEAR 1970 LOSS : Rp. 2.0 Million	Loss of Fiscal Year 1970 with 1971 Profit	- Rp. 2.0 Million + Rp. 3.0 Million <hr/>
		Profit	+ Rp. 1.00Million
II.	FISCAL YEAR 1971 PROFIT : Rp.3.0 Million	Carry Over : 1972 Loss 1973 Loss	- Rp. 2.0 Million. - Rp. 2.5 Million. <hr/>
III.	FISCAL YEAR 1972	Total Loss	- Rp. 4.5 Million
IV.	FISCAL YEAR 1973 LOSS : Rp. 2.5 Million	1974 Profit	+ Rp. 2.0 Million <hr/>
		Remaining Loss	- Rp. 2.5 Million
V.	FISCAL YEAR 1974 PROFIT : Rp. 2.0 Million	Plus 1975 Loss	- Rp. 3.0 Million <hr/>
		Total Loss	- Rp. 5.5 Million
my be carried forward until exhausted without limit of time.			
VI.		INCORRECT METHOD OF CALCULATION	
VI.	FISCAL YEAR 1975 LOSS : Rp. 3.0 Million	1970 Loss 1972 Loss 1973 Loss 1975 Loss	- Rp. 2.0 Million. - Rp. 2.0 Million. - Rp. 2.5 Million. - Rp. 3.0 Million. <hr/>
			- Rp. 9.5 Million.
VII.	FISCAL YEAR 1976 PROFIT : Rp. 1.0 Million	1971 Profit Rp. 3.0 Million. 1974 Profit Rp. 2.0 Million.	+ Rp. 5.0 Million. <hr/>
		Remaining Loss	- Rp. 4.5 Million.

EXHIBIT VII - 2

GUIDELINES ON INDONESIAN GOVERNMENTS
1982 COUNTER PURCHASE POLICY

COUNTER PURCHASE POLICY

1. INTRODUCTION

In January 1982 the Indonesian Government, in an effort to safeguard the declining foreign exchange revenues from non-oil exports, introduced a series of regulations under the heading of "Export Policy January 1982".

Details of the Export Policy January 1982 are available from the Department of Trade and Cooperatives and comes in the form of a group of booklets in English covering :

- a) Export Policy January 1982 which contains a list of all the relevant decrees, regulations and circulars of the various departments involved.
- b) Separate books of importers of Indonesian products covering :
 - France
 - United Kingdom
 - F.R. Germany
 - Netherlands
- c) Books "A1" and "A2" containing lists of Indonesian export commodities availables for additional exports in 1982. The lists contain the type, volume, brief specifications and delivery time for each product available.

Book "A2" issued in March 1982 contains products in addition to those in Book "A1" which was issued in January 1982.

- d) Book "B1" containing a list of Indonesian commodity associations and exporters.

The details of the regulations have been added to and expanded since preliminary announcements were made in December 1981, but broadly they include :

- a) Extended payment terms for foreign buyers in Indonesian exports.
- b) Interim bank financing for exporters at interest rates of 6 and 9% per annum.

COUNTER PURCHASE POLICY

1. INTRODUCTION (continued)

- c) Simplified procedures to expedite the granting of export certificates.
- d) Amendments to foreign-exchange regulations to permit exporters to retain foreign exchange earnings.
- e) From April 1, 1982 Indonesian exporters are required whenever possible to use domestic ports for direct shipment to other countries, by-passing traditional Asian transit ports. National line ships are required to be used whenever Government owned goods are involved.
- f) The compulsory linking of Indonesian Government imports with exports of non-oil and gas (Counter Purchase Policy).

This paper is an attempt to provide some readily discernable facts as to how the latter Indonesian Government Policy of Counter Purchase is to operate.

2. GENERAL OUTLINE OF THE COUNTER PURCHASE POLICY

As from 1 January 1982 every government tender to supply imported goods having a value of more than Rp.500 million (approximately \$US800,000) is to include a commitment by the tenderer to export non-oil Indonesian commodities equivalent to the foreign currency value of all equipment and materials to be supplied by the tenderer.

Further details of specific contracts excluded from the policy, types of goods available for export and other relevant details are provided in "question and answer" format in Attachment 1.

COUNTER PURCHASE POLICY

3. LETTER OF UNDERTAKING

One of the biggest difficulties facing American Companies preparing tenders for contracts that come within the scope of the counter-purchase policy is the letter of undertaking to be submitted with the tender documents. The form and contents of the letter are explicit and leave little scope for manoeuvring by the tenderer (refer to Attachment 2 for a copy of the undertaking). The fact that the letter of undertaking contains an agreement to pay liquidated damages equal to 50% of any short fall in the value of goods undertaken to be exported will obviously make executives unfamiliar with exporting Indonesian products wary about making such a commitment. First they must be assured the goods to be exported are available and can be sold within the requirements of the policy and without significant loss to the company concerned.

Coming to grips with determining the possible cost of complying with the policy appears to be the biggest stumbling block for prospective tenderers.

Government officials have been quoted as saying there will be flexibility in the implementation of the policy. However the flexibility is not evident in the tightly worded paragraphs of the letter of undertaking on which any damages are based. Obviously there will need to be some degree of flexibility on the part of the Indonesian authorities because of problems that may be encountered in the availability and quality of the necessary goods for export. Additional problem may also be encountered by the effect of various international agreements covering some of the exportable products, such as coffee, rubber and tin. (refer Attachment 3 for the current list of goods).

4. GUIDELINES TO TENDERERS

As commented above the letter of undertaking is required to be issued in the full terms and conditions of the counter purchase policy as stipulated. Any negotiations on the terms and conditions will probably take place after the tenders

COUNTER PURCHASE POLICY
QUESTIONS AND ANSWERS

1. Q. When does the policy become operative ?
A. From 1 January, 1982.

2. Q. What contracts are included under the policy ?
A. The policy covers contracts in excess of Rp.500 million awarded by the Government, its various agencies and state-owned firms.

OTHER COMMENTS

Government includes :

Governments, Non-Departmental Government Institutions and State Enterprises which are coordinated under Presidential Decree No.10, 1980.

3. Q. What types of government contracts are specifically excluded from the policy ?
A. The policy does not apply to contracts awarded by the private sector or foreign firms, nor to contracts financed by country-to-country or multilateral concessional loans, nor where it relates to a partnership with Indonesian entrepreneurs or the public sector. Contracts for professional services such as international legal council, accountants and consultants are also excluded along with the purchase of patent licences and certain highly sophisticated technology and military procurements.

OTHER COMMENTS

Additional exclusions :

Minister Soebroto of Department of Mining and Energy was reported in Jurnal Ekuin on February 12, 1982 "the purchase of capital goods for major projects under the administration of the Department of Mining and Energy which have been signed already is not subject to the counter purchase policy."

4. Q. What commodities can be exported to meet the governments counter purchase requirements ?
- A. Agricultural commodities, industrial goods and other goods excluding oil and natural gas. The department of Trade and Cooperatives will periodically draw up a list of the export commodities that are eligible.

OTHER COMMENTS

"List of Indonesian Export Commodities Available for Additional Exports".

Book A1 January 1982) Refer Attachment 3
Book A2 March 1982) for a summary.

5. Q. What is the value of goods to be exported ?
- A. In amount at least equal to the foreign currency value of all equipment and materials to be supplied by the contractor from non-Indonesian sources under the terms of the contract.

The value of the exports is the invoiced purchase price of the products excluding any shipping costs and any taxes or customs duties.

6. Q. From what companies can further details of the commodities available to be exported be obtained ?
- A. A list of exports and commodity associations will be provided by the Department of Trade and will be incorporated in the eligible commodities booklet.

OTHER COMMENTS

"List of Indonesian Commodities Associations and Exporters". Book B1 January 1982.

Also booklets of Indonesian Product importers covering France, UK, F.R. Germany & Netherlands.

7. Q. What form of undertaking to export is required at the time of tendering for a particular government contract ?
- A. As part of the tenderer is required to submit a letter of undertaking. The form and contents of the letter are as per the copy attached.

7. OTHER COMMENTS

Refer Appendix

8. Q. Can you resell the exported goods to a third country ?

A. The goods must be used or resold in each contractor's country of nationality, unless permission is received to send the goods to a third country.

9. Q. Can the goods to be exported to those already earmarked for purchase by another firm ?

A. The goods must be in addition to the normal trade patterns, and in addition to any commitments or other arrangements in effect on the date of the undertaking with respect to the purchase of products.

10. Q. What is the period over which the exports are to be made ?

A. The period is from the date of the award of the contract until final acceptance (or equivalent) of the work and services provided under the contract.

The contractor is to avoid the purchase of the goods to the end of the contract. That is the commodities should be exported progressively throughout the term of the contract.

11. Q. Does the purchase of the export goods have to be by the company tendering for the Government contract ?

A. No. It can be by an affiliated company or by third parties approved by the Department of Trade and Cooperatives.

12. Q. How is the Department of Trade and Cooperatives going to monitor performance of the terms of the undertaking to export ?

A. Copies of all orders and contracts relating to the purchase of products pursuant to the undertaking are to be submitted to the Department.

13. Q. What are the penalty provisions for not complying with the undertaking ?
- A. Failure to comply with the undertaking you will be obliged to pay an amount equal to 50% of the difference between the total value of products actually purchased and the total foreign currency value of all equipment and materials actually supplied.

LETTER OF UNDERTAKING *

Each Tenderer should note that, as part of its Tender it will be required to submit a Letter of Undertaking in the form contained in these Tender Documents. Copies of the "List of Indonesian Export Commodities Available for Additional Exports" and of the "List of Indonesian Commodity Associations and Exporters" referred to in the Letter of Undertaking are available from the Department of Trade and Cooperatives upon request.

After the Tender have been evaluated, one of the Tenderers will be notified that it has been selected for contract negotiations, which, if successful, will lead to contract award. Prior to, and as a condition of, contract award, such tenderer (or any affiliate thereof or other third party acceptable to the Department of Trade and Cooperatives) will be expected to enter into arrangements with one or more Indonesian Exporters, designed to satisfy its obligations under the Letter of Undertaking and otherwise satisfactory to the Department of Trade and Cooperatives. Each Tenderer is urged to initiate discussions with such Indonesian exporters promptly after the submission of its Tender Documents in order not to delay contract award should it be selected for contract negotiations.

"LETTER OF UNDERTAKING"

Department of Trade and Cooperatives
Republic of Indonesia
Directorat General for Foreign Trade
Jalan Abdul Muis 57
Jakarta
INDONESIA

o (Insert name of Department, Agency or
Corporation issuing tender document)

Dear Sirs :

We refer to (describe subject matter of tender) and to our tender document no. _____ submitted on _____ 198_____ pursuant to tender document no. _____ issued by (insert name of Indonesian Department, Agency or Corporation issuing tender document).

If we are selected as (contractor) (supplier) in respect of the above-described tender, we hereby irrevocably undertake during the period from the date of award of the contract relating to such tender until final acceptance (or equivalent) of our work and services thereunder :

1. to purchase, or to cause to be purchased by one or more of our affiliated companies in (insert name of country being nationality of contractor/supplier) or by third parties located in such country acceptable to you agricultural and/or industrial products contained in the most recent "List of Indonesian Export Commodities Available for

Additional Exports" published by the Department of Trade and Cooperatives (hereinafter the "Products") from one or more of the commodity associations or exporters named in the "List of Indonesian Commodity Associations and Exporters" published by the Department of Trade and Cooperatives (hereinafter the "Exporters") in an amount at least equal to the foreign currency value of all equipment and materials to be supplied by us from non-Indonesian sources pursuant to the terms of the above described contract;

2. to use the Products, or to resell the Product for use, or to cause the Products to be used or resold, in (insert name of country being nationality of contractor/supplier), unless with your specific authorization we are permitted to use the Products, or to resell the Products for use, or to cause the Products to be used or resold, in any other country;

3. to purchase the Products, or to cause the Products to be purchased, periodically over the term of the contract relating to the above-described tender in such a manner as to avoid the situation arising where the Products to be acquired pursuant to this undertaking must be purchased at the end of the term of such contract; and

4. to submit, or to cause to be submitted, to the Department of Trade and Cooperatives copies of all contracts with and purchase orders issued to Exporters relating to the purchase of Products pursuant to this undertaking, and to cause each such contract and purchase order relating to the purchase of Products to any third party as aforesaid to refer specifically to this undertaking, in each case to permit the Department of Trade and Cooperatives to monitor compliance herewith.

In connection with our irrevocable undertaking contained herein, this will confirm our understanding that :

a. the commercial terms, including those relating to price and delivery, in respect of each purchase of Products from an Exporter shall be negotiated by us or by other purchasers thereof at the time of actual purchase;

b. the amount of each such purchase to be applied towards our obligation hereunder shall be equal to the invoiced purchase price of the Products purchased, excluding, however, any shipping costs included in such invoice and any taxes or customs duties charged in connection therewith;

c. the amount of each such purchase (if measured in a currency other than the currency in which our obligation hereunder is measured) shall be applied against our obligation hereunder at change rates (as quoted by Bank Indonesia) prevailing at the date of the Exporter's invoice issued in respect of such purchase; and

d. our undertaking contained herein shall be in addition to, and not by way of credit against, any commitments or other arrangements in effect on the date hereof with respect to the purchase of Products by purchasers located in (insert name of country being nationality of contractor/supplier).

If we fail to comply with our undertaking contained herein, we hereby agree to pay to you as liquidated damages an amount equal to 50% of the difference between the total value of products actually purchased pursuant to this undertaking and the total foreign currency value of all equipment and materials actually supplied by us from non-Indonesian sources pursuant to the terms of the contract awarded in respect of the above-described tender.

In connection with our undertaking contained herein, we hereby represent and warrant to you that (i) we have full power and authority and legal right to enter into this undertaking and to perform and observe the terms and provisions hereof, (ii) we have taken all necessary legal action to authorize, execute and deliver this undertaking, (iii) this undertaking constitutes our legal, valid and binding obligation, and (iv) no law, rule or regulation or contractual or other obligation binding on us is or will be contravened by reason of our execution and delivery of this undertaking or by our performance and observance of the terms and provisions hereof.

This undertaking shall be binding upon our successors.

(This undertaking has been executed on our behalf by our duly authorized Indonesian commercial representative/agent and such execution shall be deemed to bind us in all respects as regards the subject matter hereof. We hereby agree to countersign this undertaking if so requested by you)

Very truly yours,
(NAME OF TENDERER)

By

Name

Title

INDONESIAN EXPORT COMMODITIES
AVAILABLE FOR ADDITIONAL EXPORTS

<u>ORIGINAL LIST A1</u>	<u>ADDITIONAL LIST A2</u>
1. Rubber - 176,000 ton - RSS, SIR	1. Aluminium 8,500 ton - aluminium extrusion & fabrication, aluminium sheet.
2. Coffee - 52,000 ton - EK special, EK 1, 20 - 25% (for non-quota countries only).	2. Asbest cement - 30,000 ton - asbest cement, pipes water.
3. White pepper - 8,000 ton - ASTA, FAQ (for West European Market through UNIPRO).	3. Basketry - 2,000 ton - basketry.
4. Black pepper - 6,000 ton - ASTA, FAQ (for American Market through CITC).	4. Bauxite - 500,000 m. ton - Al ₂ O ₃ , FeO ₂ , Free Moisture.
5. Tobacco leaf - 2,000 ton (20,000 bales) - Besuki/NO (filler).	5. Biscuit - 2,000 ton - biscuit
6. Manioc - 150,000 ton - Pellet, Chip, Cube.	6. Canned Fish - 1,000 ton - Tuna in brine & in oil, Sardines in tomato sauce.
7. Cement - 500,000 ton - Portland cement, Clinker.	7. Canned Fruit and Vegetables - 5,000,000 tins - Canned pineapple, Canned mushroom, Bamboo shoot.
8. Sawn timber - 2,000,000 Cum - Indonesian Grading Rules, Malayan Grading Rules.	8. Cigars - 2,000,000 sticks - cigars.
9. Plywood - 180,000 Cum - All sorts of plywood.	9. Clove cigarettes - unlimited - Filter clove cigarettes, Plain clove cigarettes.
10. Other processed woods - 20,000 Cum - block-board, particle board, veneer, doors, rotary cut plywood lauan, dowels/mouldings, wood cement boards.	10. Coffee roasted powder - 5,000 ton coffee powder, canned.

ORIGINAL
LIST A1ADDITIONAL
LIST A2

11. Textile products - 100,000 ton -
Fabrics, Yarn/Twine, Garments,
Batik (garment of category 6, 7
and 8 for non quota countries
only.

11. Essential oil - 1,500 ton -
Vetiver oil, Citronella oil,
Clove leaf oil, Cananga oil,
Patchouly oil, Sandalwood oil.
12. Fruit juice - 5,000,000 tins -
Orange, Mango, Banana, Pineapple,
Marquisa, Tetrapack, Zuurzak,
Quora, Jambu pineapple.
13. Glass - 5,000 ton - Clear sheet
glass, Tinted sheet glass,
Figured sheet glass, Glassware,
Bottle, Dinnerware, Corrugated
carton box, Glasswall,
Pharmaceuticals, Glass container
tumbler, Ampule, vial.
14. Granite - 190,000 M.ton - Granite.
15. Nickel - 300,000 ton Ore, 4,000
ton Matte - Nickle Ore, Nickle
matte.
16. Paper - 20,000 ton - HVS, HVO,
Writing, Printing, Craft liner,
Corrugated.
17. Pipes, steel - 200,000 ton - Water
pipe, Gas pipe, Oil pipe,
Construction pipe, Furniture pipe.
18. Rattan carpet - 550,000 pcs -
Rattan carpet.
19. Rattan furniture - 100,000 sets -
Rattan Furniture.
20. Tires - 1,500,000 unit -
Automobile tires, Automobile tubes
Bicycle tires, Flaps, Motor-cycle/
Scooter/Minicar tubes & tires.
21. Tinned corned beef - 1,000 ton -
canned beef.
22. Tuna fish - 1,000 ton - Tuna,
Skipjack.

EXHIBIT VII -3

RTA CASE NO. 178

AUGUST 2, 1982, 30-TH YEAR

TRADE

THE MINISTRY OF INDUSTRY

The Decree of the Minister of Industry
: No. 295/M/SK/7/1982

R E

PROVISIONS ON SOLE AGENCY

THE MINISTER OF INDUSTRY,

- Considering :
- a. that in the framework of the support and development of the industry as the main task of the Department of Industry, it is necessary to determine provisions and regulations in the field of industry in an integrated, suitable, realistic and responsible way;
 - b. that in order to ensure the type and kind of capital goods, circulating in Indonesia will meet the provisions and regulations, mentioned above, it is necessary to introduce a mechanism in the form of an agency; /that
 - c. that the provisions and regulations on the agency should also be arranged in a proper way, so that they will become one of the controlling and steering instruments, for the sake of the realization of the abovementioned support and development;
 - d. that for that purpose it is necessary to issue a Decree.

- In view of :
1. the Bedrijfsreglementeringsordonnantie 1934 (=Undertaking regulation ordinance of 1934) (State Gazette 1938 No. 85) jo. the Government Regulation No. 1 year 1957 and the Government Regulation No. 53 Year 1957 on the Channelling of Enterprises.
 2. The Presidential Decree No. 44 year 1974 on the Principles of the Departmental Organization;
 3. The Presidential Decree No. 45 year 1974 jo. No. 27 year 1978 on the Department's Organization Scheme;
 4. The Presidential Decree No. 59/M year 1979 on the Formation of the 3rd. Development Cabinet;
 5. The Decree of the Minister of Industry No. 176/M/SK/10/1978 jo. No. 158/M/SK/3/1981 on the Organization and Working Procedure of the Department of Industry;
 6. The Decree of the Minister of Industry, No. 176/M/SK/10/1978 on the Support/Development of Industrial Activities by the Directorate General within the Jurisdiction of the Department of Industry, as it has been amended and added.

HAS DECIDED :

H A S D E C I D E D :

To stipulate : THE DECREE OF THE MINISTER OF INDUSTRY ON PROVISIONS ON THE SOLE AGENCY.

CHAPTER I
GENERAL PROVISION

Article 1

What is understood in this decree by :

1. Agency is the legal relationship between the principal and a national enterprise in the assignment for carrying out the assembling/fabrication/manufacturing and the selling/distribution of capital goods and certain industrial goods.
2. An Agent is a national enterprise, which functions as an agent.
3. The principal is the mother company abroad/in Indonesia, which produce capital goods and certain industrial goods with a trade mark/brand of its own, or an enterprise which has a full power of attorney from the mother company and which has the right and full authority to confer the agencyship to an agent in Indonesia, in accordance with the regulations of said mothercompany.
4. An agreement/contract is an agreement/contract, concluded between the principal and the agent for said agency.
5. The Minister is the Minister of Industry.

CHAPTER II

AIM AND OBJECTIVES OF THE AGENCY

Article 2

The agency for capital goods and certain industrial goods, produced abroad has the following objectives:

- a. To support the Government's program in the development implementation, industrialization and other Government policies of a special nature;
- b. That the capital goods and certain industrial commodities represented by the agency can be operated, so as to support the development within a reasonable time-period with a high efficiency level and with a guaranteed after-sale service;
- c. To encourage and to realize the transfer of technical know-how in a speedier and concentrated way;
- d. To adjust goods, being represented by the agent, with the need and conditions, set by the Indonesian Industrial Standardization;
- e. To ensure the congruity with the Government's program, pertaining to products, which have already been or planned to be made/manufactured in Indonesia.

CHAPTER III

AGENCY

Article 3

- (1) In the framework of the implementation of the industrialization program, it is necessary to arrange the import of capital goods and certain industrial commodities on a selective basis, in accordance with the Indonesian Industrial Standard and/or with the effective standard, which is acceptable as the effective standard in Indonesia, and besides that it can also be adjusted with the

Government's.....

Government's special policy for certain circumstances, as the development's interest may require;

- (2) To safeguard the implementation of this Government's policy as mentioned in paragraph (1) of this article, it is necessary to introduce the Agency as an Institution.

Article 4

The category/class of goods to be included in the group of capital goods and certain industrial commodities, as well as the determination of category/group, which is only required for their circulation, or assembling or manufacturing purposes, is determined by the Minister.

Article 5

The sole-agency of capital goods and of certain industrial commodities, as mentioned in article 4 of this Decree is applicable for goods as complete units, including attachments & accessories, as well as spareparts of non-universal nature.

Article 6

The agency for capital goods and for certain industrial commodities is only established, if:

- a. they are required for the development and in meeting special Government policy;
- b. they can support Government aids in the industrialization, in accordance with the Indonesian Industrial Standard and/or standard which is being applied, and it can be accepted as the effective standard in Indonesia.

Article 7

The sole-agency for capital goods and for certain industrial commodities is only granted, in case the following provisions can be met:

- a. if the enterprise concerned can operate over a long period of time and on a high level of efficiency;
- b. if the principal is guaranteed to have a good reputation, both in the field of capital goods/certain industrial commodities, which have already been produced and wellknown widely in the community for their consistent technology and life cycle, which will cover a fairly long time-period.

CHAPTER IV

POSITION OF THE AGENCY

Article 8

- (1) A national enterprise can assume the agency for capital goods and certain industrial commodities;
- (2) The Agent must be a Legal Body, established according to the effective law in Indonesia, as a Limited Liability Company (PT) or as a Public company (P.T.Persero) or as a State Undertaking Body;
- (3) The new agent can start its activities, after it has obtained a recognition from the Government, c.q. from the Department of Industry;
- (4) One national enterprise can hold the sole-agency for one or more capital goods and certain industrial commodities;
- (5) One national enterprise, which has been assigned by the principal to function as an agent for one kind of capital goods/certain industrial product, must be given the priority to assume the agency

agency for the whole series of type and model of a similar goods, so that one kind of goods of one trade mark or brand will not be separated in its representative/agency.

CHAPTER V

RIGHTS AND RESPONSIBILITY OF THE PRINCIPAL

Article 9

In arranging the agency the principal has the right to select and to appoint himself the national enterprise, which will function as his agent in Indonesia.

Article 10

- (1) The appointment as agent by the principal must be exclusive for the whole territory of the Republic of Indonesia;
- (2) Exceptions to paragraph (1) of this article can be granted in certain circumstances, and based on considerations, to be determined by the Minister.

Article 11

- (1) The time-period for a sole-agency has been determined to be at least 3 (three) years, with the possibility for an extension after the expiration of said period, while priority is given to the same enterprise.
- (2) For an agency, which is directed to assembling and fabrication of a product, the relative period has been determined to be at least 5 (five) years.

Article 12

The principal is obligated to guarantee the regular supply of components and spareparts of the contract goods, such in the framework of guaranteeing the after-sale service for the enduser.

Article 13

The principal provides continuous training facilities with guidance to the sole agent, both abroad as well as in Indonesia, in accordance with the requirement, and to assist and also to provide guarantees, so that the agent can carry out his obligations.

Article 14

- (1) The principal is obligated to assist the sole agent in acquiring technical skill, planning and management in giving aftersale service, and to give regular information on the Research & Development progress with respect to the product, which he represents as agent;
- (2) Direct selling by the principal of capital goods/certain industrial products, for which a sole agent has been appointed for Indonesia, is in principle not allowed;
- (3) The principal shall not transfer the agency from one national enterprise to another one, except for reason and motivations, as stipulated in this Decree.

CHAPTER VI

RIGHTS AND RESPONSIBILITIES OF THE SOLE AGENT

Article 13

The Agent has the right to select and to determine himself which principal to take and which kind/category of capital goods and certain industrial products to represent as agent, in accordance with the effective provisions in Indonesia.

Article 16....

Article 16

The sole agent is obligated to market the capital goods/certain industrial products which he represents as agent, in the best possible way; and he shall be obligated to guarantee the endusers a regular after-sale service during a time period, to be determined afterwards.

Article 17

The sole agent is obligated to maintain a direct contact with the principal, with whom the former has concluded the agreement, except in cases, as defined in article 23 of this Decree.

Article 18

Every agent is obligated to employ a technical expert for the kinds of capital goods and industrial products, which he represents as agent.

Article 19

For the execution of agent's activities and the schedule for their implementation, the sole agent shall prepare the required organization, physical facilities and manpower.

Article 20

The marketing area for the good(s), which is/are being represented as agent can be determined to cover a part and/or the whole territory of the Republic of Indonesia and/or abroad.

Article 21

The sole agent shall submit a periodical report every 6 (six) months, at the latest at the beginning of March and September of the current year.

CHAPTER VII

SOLE AGENCY AGREEMENT

Article 22

The appointment/assignment of a national enterprise by the principal must be done via an agreement and it is exclusively valid for a certain time period, in accordance with the nature and objective for the utilization of capital goods and certain industrial product(s), which is/are the object of the agreement.

Article 23

- (1) The sole agency agreement shall be concluded directly with the principal, except if in the principal's country there is a provision, which rules that the export of capital goods and certain industrial products shall be directed via a trading house/sole exporter; in such a case the sole agency agreement can be concluded not directly, but with the knowledge of the principal;
- (2) The persons from both parties, who sign the sole agency agreement, are they who have the right to represent each enterprise, in accordance with the provision in the articles of association/deed of establishment of the relative enterprise.

Article 24

- (1) With every sole-agency agreement it should be worked out, that the applicable law will be the Indonesian law;

(2) Other

- (2) Other matters, which shall be fulfilled by the sole agent and the principal, are those which involve the following:
- a. Name and full address of the contracting parties,
 - b. A detailed elucidation of the agreement's objectives,
 - c. A detailed elucidation on the relative goods, which are the objects of the agreement,
 - d. The objective to be gained via this agency, while allowing sufficient flexibility, in accordance with the conditions prevailing from time to time,
 - e. Basic provisions, which have been agreed upon, if this agreement due to a certain reason will be cancelled,
 - f. Basic provisions, which have been agreed upon, with regard to what is called very improper/unsatisfactory activity (non-performance) as the agent.

CHAPTER VIII

TERMINATION OF THE CONTRACT/SOLE-AGENCY AGREEMENT

Article 25

The agreement/contract which is still valid, can only be cancelled/terminated by both parties after mutual consent there-to.

Article 26

- (1) The agreement/contract which is still valid, can only be terminated by the relevant parties in the following cases:
- a. The enterprise, functioning as sole-agent:
 1. is liquidated
 2. ceases its activities
 3. its rights have been transferred
 4. is bankrupt
 - b. With mutual consent from both parties.
- (2) a. A sole-agency can only be terminated unilaterally by the principal, in case the sole agent is very improper/unsatisfactory (non-performance) in conducting the agency;
- b. In case the principal unilaterally terminates the agreement outside of the provision, mentioned in paragraph (1) of this article, then he is obligated to indemnify the sole-agent, with whom he has concluded the agreement, for the loss which is definitely being suffered by said sole-agent;
- c. The indemnification, mentioned in paragraph (1) of this article, is based on the stock-taking, drawn up jointly by the sole-agent and the principal, or by his proxy, covering the following:
1. Stock of equipments/components/remainder of spareparts which are still under custody of the sole-agent;
 2. Building facilities, tools and equipments which have specially been supplied in the framework of said capital goods/certain industrial products;
 3. Employees, who have specially been trained to handle the relative capital goods/certain industrial product(s), which have been represented as sole-agent;
 4. Other investment, which have been carried out by the sole-agent in the framework of marketing;
- (3) In case the principal decides to terminate the sole-agency, as mentioned in paragraph (1) and paragraph (2) of this article, and which is followed up by the appointment of a new sole-agent, the recognition for the new sole-agent shall be given not earlier than

after the

after the relevant principal has promptly settled all matters arising out of the cancellation of the agreement with the former sole-agent (clean break);

- (4) If the termination of the sole-agency has been carried out unilaterally by the principal, which is not followed up by the appointment of a new sole-agent, then the principal beside indemnifying the sole-agent, with whom he has terminated the agreement, he is also obligated to supply the enterprise, belonging to his ex sole-agent, continuously spareparts during at least 2 (two) years, in order to guarantee the continuity of the service to the endusers of the equipment(s) concerned, and the relative sole-agent remains responsible for the after-sale service during said time period of two years.

Article 27

In case an agreement/contract has expired, the principal can extend the validity of said agreement, while giving priority to the same sole-agent.

CHAPTER IX

THE REGISTRATION AND RECOGNITION OF THE SOLE-AGENT

Article 28

Every sole agent is obligated to have registered the agreement/contract, which he has concluded with the principal, at the Department of Industry.

Article 29

- (1) The recognition of the sole-agency will be granted to the relative sole-agent, after all requirements, mentioned in this Decree, both regarding rights and responsibilities of the sole-agent and the principal, as well as other conditions/provisions have been fulfilled;
- (2) The Department of Industry has the right to examine the completeness of all the requirements concerned, as mentioned in paragraph (1) of this article, which have been contained in the agency agreement.

Article 30

The official recognition, issued to the sole-agent, is a special license, which gives holder the right to conduct sole-agent's activities in accordance with the provision, effective for the time period, as mentioned in the relative recognition.

Article 31

In case the enterprise belonging to the sole-agent is considered as to be not supporting the national development, specifically the national industrial development, or in case of a conflict which might endanger the position and interest of the Government, the Minister can revoke the sole-agency which has been issued, or in case of the expiration of its validity, he shall not extend the relative recognition for the sole-agency, and the Minister can issue a recognition for a sole-agency in the same line of business to another enterprise.

CHAPTER X

SOLUTION FOR DISPUTES

Article 32

- (1) If a dispute should arise between both parties in the implementation of the sole-agency agreement, the solution shall be sought via discussion between both parties;

(2) In

- (2) In case no solution can be reached via the discussion, as mentioned in paragraph (1) of this article, then the solution shall be sought via a national arbitration, the decision of which shall be final and binding for both parties.

CHAPTER XI

TEMPORARY AND CONCLUDING PROVISION

Article 33

Every sole-agency agreement, which has been signed and is still valid at the date of sanction of this Decree, shall be adjusted with the provisions in this Decree.

Article 34

This Decree becomes effective on the date of its stipulation

Stipulated in : JAKARTA

On : July 7, 1982

THE MINISTER OF INDUSTRY

W.S.

A.R. SOEHOED

Best Available Document

CHAPTER VIII
FUNDING SOURCES

Foreign investors in Indonesia have several alternative funding sources which should be investigated as part of a detailed feasibility study, these include:

- Indonesian government
- Private Indonesian firms or other foreign firms
- Commercial Banks
- World Banks (PDFCI)
- Export Credit
- Asian Development Bank
- Bilateral Assistance Programs

The Indonesian government is a primary source of project funding. If a selected project is among the priority list of projects desired by the government, the likelihood of their participation is good. At the time of submittal for review by the Investment Review Board the governments' desire to participate should be explored. Similarly, both Indonesian and foreign firms should be sought as participants inasmuch as Indonesian ownership is required by law.

Indonesia's banking system is another funding source and consists of Bank Indonesia (the central bank), State and private (including foreign) commercial banks, development banks, and other financial institutions such as savings banks, development finance companies, and investment banking institutions.

Commercial banking is dominated by five State banks owned by the Government, which account for 80-90 percent of total outstanding bank credit. Each of the banks is permitted to conduct foreign exchange transactions, and each channels credit to one particular economic sector in accordance with government priorities. State commercial banks, by area of specialization, are Bank Rakyat Indonesia-agriculture, fisheries, cooperatives, and rural development; Bank Ekspor Impor Indonesia-production, and processing and marketing of export products; Bank Negara Indonesia-industry and infrastructure; Bank Bumi Daya-State agriculture and forestry; and Bank Dagang Negara-mining.

There are 78 private Indonesian banks of which 9 are authorized to deal in foreign exchange. All have relatively small capital and resource bases, including technical expertise.

There are 10 branches of foreign banks in Jakarta including four U.S. banks:

- American Express International Banking Corporation
- Bank of American
- The Chase Manhattan Bank
- Citibank

No additional foreign banks are being permitted to establish branches.

However, foreign banks have established 48 representative offices. U.S. banks with representative offices include:

- Bankers Trust New York
- Chemical Bank
- Continental Illinois Bank of Chicago

- Manufacturers Hanover Trust
- Marine Midland Bank
- Morgan Guaranty Trust Company of New York
- United California Bank
- Wells Fargo Bank

The operations of foreign banks are limited to Jakarta except when they establish joint ventures with national banks. The role a foreign bank is expected to play in Indonesian banking is to facilitate foreign direct investment, capital inflows, and the adoption of modern banking practices in Indonesia. Foreign banks have been expanding their operations rapidly, gaining a comparable share in total loans outstanding to that of private national banks.

There are 29 development banks or finance companies in Indonesia, primarily involved in granting medium- and long-term credit. The largest development bank is the Development Bank of Indonesia (BAPINDO). Established in 1960, BAPINDO was reorganized in 1970 with assistance from the World Bank Group, with a view to making it the predominant source of medium- and long-term finance for industry. It has received additional World Bank aid. Although most of BAPINDO's credits are for no more than 5 years, it is the only bank authorized to grant loans up to 15 years. It may also make equity investments. All industries are eligible for loans, but priority is given to those considered important for achieving the objectives of the current 5-year plan.

Two other development finance companies that extend medium-term loans and make equity investments are the Indonesian Development Finance Company

(IDFC), a joint venture between the Government and the Netherlands which the Dutch Government has a majority interest, and P.T. Private Development Finance Company of Indonesia (PDFCI), a largely privately owned development bank, which also has received assistance from the World Bank Group. In addition to BAPINDO, IDFC, and PDFCI, there are 26 regional development banks with 123 branch offices providing finance for relatively small projects in industry, agriculture, fishing, trade, and services.

In 1973, the Government authorized the establishment of nonbank financial institutions to stimulate the development of the money and capital market in Indonesia. Except for one, a consortium of Indonesian banks and enterprises, each of these is a consortium of at least three foreign trading and merchant banks (each from a different country) and one Indonesian bank. Operating as investment banks, the financial institutions are not permitted to compete with the commercial banks. However, they provide a wide array of financial services, including investment consultancy and portfolio management, and also engage in money market activities. They may serve as the "pribumi" partner in a foreign investment contract to meet the joint-venture requirement. Also these institutions will act as intermediaries in coordinating and underwriting the issue of securities by companies wishing to list their stocks in the new capital or securities market.

There are nine nonbank financial institutions. Seven of these have a U.S. bank as a participant. Those with an American partner are:

- Asia and Euro-American Capital Corp. Ltd., Goldman, Sachs & Co.
- Financial Corporation of Indonesia (P.T. Finconesia), Manufacturers Hanover Trust

- Indonesia Investment International (P.T. Indovest), The First National Bank of Chicago
- P.T. Inter-Pacific Financial Corporation, Continental Illinois National Bank & Trust Company of Chicago
- Merchant Investment Corporation (P.T. Merincorp), Morgan Guaranty International
- Multinational Finance Corporation (P.T. Multicor), Chemical Bank
- P.T. Mutual International Finance Corporation, Crocker National Bank.

The Government also has established a specialized institution, P.T. Bahana, as a venture capital and finance company providing medium- and long-term loans, equity finance, and technical assistance to financially weak enterprises.

While there is no capital market in operation in Indonesia, the Government has taken steps to encourage its development through the establishment of the Securities and Exchange Commission (BAPEPAM). BAPEPAM has authority to prepare regulations and supervise the activities of the stock exchange as well as to define offering and trading procedures. The Government also created an investment fund, P.T. Dana Reska, which plans to buy shares from companies and convert them into share certificates of relatively small denominations to enable small investors to participate in the stock market. The Government also grants certain tax allowances to companies willing to go public and to individuals who invest in securities traded in the stock exchange.

Interest rates offered by the State commercial banks are set by Bank Indonesia. However, foreign banks and private nonbank financial

intermediaries are not subject to the interest ceilings imposed by Bank Indonesia when using their own resources. Private financial institutions are able to provide financing facilities to borrowers who are not "pribumi" and, therefore, ineligible for the services of the State banks.

Short-term credit is available from commercial banks (State, private, or foreign) for up to one year. Generally, short-term loans can be rolled over but, with some exceptions, the loans must be repaid when the term is up.

State banks have more favorable lending rates for the production, distribution, and export and import of goods in priority economic areas. As of mid-1982, the rates ranged from 12 to 21 percent, with lower rates applying to priority categories such as food grain distribution and agricultural credit. Lending rates of commercial banks generally ranged from 12 to 25 percent.

Some Indonesian firms have access to credit in Singapore and Hong Kong through established business or personal relationships. Those who must rely on domestic credit are seriously disadvantaged, especially when importing from non-Asian sources. U.S. suppliers can overcome some of this disadvantage by (1) supplying the Indonesian market from regional depots or bonded warehouses; (2) assisting Indonesian customers to draw on credit facilities through U.S. banks in Singapore, Hong Kong, or elsewhere at rates lower than in Indonesia; or (3) providing direct credit facilities based on credit evaluations from U.S. banks in Indonesia.

Term credit is available from most banks, although foreign banks must obtain Bank Indonesia's approval to make loans with more than 1-year maturity. As

indicated under Development Banks, above, BAPINDO is by far the most important source of medium- and long-term credit and provides finance for projects of all sizes in both the public and private sectors. Other major sources of credit are the development banks, IDFC and PDFCI, and the finance company, P.T. Bahana.

The Government has been trying to assist indigenous, "pribumi" firms, by making credit available at preferential rates. A chief source of term credit for indigenous enterprises is the Kredit Investasi Besar (KIB or "INVESTASI") program initiated by the Government, through which State banks were authorized to extend 3-5 year credits (with a grace period) for approved projects.

Another source of funding is the Export-Import Bank of the United States, an independent U.S. Government agency, which has been an important source of export financing for more than four decades. Created in 1934 by Presidential Executive Order, the Bank was established on a statutory basis in 1945 with passage of the Export-Import Bank Act. Since then Exim's operating charter has been renewed periodically, most recently in late 1978 when it received a new five-year mandate.

Today a growing variety of Eximbank programs assists thousands of American exporters ranging from some of the world's largest and most experienced international corporations to small firms just beginning foreign trade endeavors. Exim financial services support a broad cross-section of products and projects - from industrial raw materials and farm products, computers and farm machinery, to cement plants, power generating plants and commercial jet aircraft.

Exim operations generally divide into two financing categories. The first is buyer credit or project financing which provides direct loans at fixed interest rates and long terms, as well as financial guarantees of private source loans for heavy capital equipment and capital-intensive projects. The second is supplier credit, which offers assistance through medium-term commercial bank guarantees, short- and medium-term export credit insurance, the Cooperative term export credit insurance, the Cooperative Financing Facility (a network of foreign banks that work with Exim) and discount loans.

Project Financing supports the exports of "turnkey" projects such as manufacturing, electric power and petrochemical plants and large mining and construction operations. This category also covers "big ticket" product exports including commercial jet aircraft, locomotives and other heavy capital equipment. As of early 1980, project and capital equipment financing accounted for roughly 75 percent of the Bank's outstanding financing. The largest part of Exim's direct project financing (perhaps as much as 70 percent) assists in financing U.S. exports to creditworthy sales in developing countries. The suppliers credit category, through its various programs, is designed to support less costly transactions where repayment periods are either short-term (up to six months) or medium-term (from six months to five years).

CHAPTER IX

ILLUSTRATIVE SCOPE FOR FEASIBILITY STUDY

INTRODUCTION

A feasibility study provides the technical, commercial and economic bases for making an investment decision regarding a proposed project. Feasibility analysis involves a certain number of stages during which the various elements are prepared and examined in order to reach decisions. The range and accuracy of information needed for decision making will depend on the inherent characteristics of the project such a size, degree of complexity and risk. In addition, because the decision to be made and the information required will vary among projects, companies, industries, institutions and countries the illustrative scope of feasibility study described in this chapter is general in nature.

Reference is made to the distinction between pre-feasibility and feasibility studies. The principal difference lies in the depth of the investigation. A pre-feasibility study is often viewed as an intermediate step between investment opportunity studies and detailed feasibility studies. While less detailed than the feasibility study, the pre-feasibility nevertheless addresses all of the same areas that a feasibility study does. Also, it generally requires less time and money. The orders-of-magnitude cost for a pre-feasibility ranges between 0.25 and 1.50 percent of project investment. On the other hand, for Detailed feasibility studies the cost ranges between 1.0 and 3.0 percent for small industries and 0.2 and 1.0 percent for large industry projects with sophisticated technology. On average the approximate range of accuracy for pre-feasibility studies is +20% and for a feasibility it is +10%.

Exhibit IX-1 illustrates the major components of a feasibility study. They are:

- Project Definition
- Market Analysis
- Technical Analysis
- Financial Analysis
- National Profitability Analysis

Each of these is discussed more fully in the following sections. In summary, they provide the data necessary to evaluate the project from two major standpoints - commercial profitability and national profitability. The commercial analysis evaluates the project's contributions to the earnings of a firm. The national profitability analysis evaluates the project's contribution to the development objectives of the nation. Both standpoints are not entirely mutually exclusive. In fact, their core evaluation processes are very similar; namely,

Identification of the quantity, quality and timing of physical inputs and outputs,

Attachment of appropriate prices to the inputs and outputs in order to compute the respective values of costs and benefits

Comparison of costs and benefits with certain evaluation criteria

The commercial analysis relies heavily on actual market prices. The national analysis utilizes not only market prices but also adjusts these prices to approximate the social value to the country of inputs and outputs.

PROJECT DEFINITION

Important to the start of any project is a careful delineation of the objectives of the project. The objectives can range from the expansion of existing industry or plant, the manufacture of a certain product or group of products to the utilization of certain resources. In addition, investment objectives and criteria should be identified early so that all necessary and relevant data to be used in the project evaluation from commercial and national standpoints can be systematically developed. There are three major components in this stage of the study. They are:

1. Conceptual Considerations
2. Commercial Considerations
3. National Considerations

The details of these components are outlined in Exhibit IX-2.

MARKET ANALYSIS

One of the most important elements in a feasibility study is the analysis of the market and competitive factors involved for the proposed product. The market analysis quantifies the size and composition of the present market demand by segment and provides the basis for projecting future sales of the product. The market analysis generally should contain the following five items which, in turn, are detailed in Exhibit IX-3.

1. General Market Description
2. Market Demand and Size
3. Supply
4. Future Demand and Market Share
5. Selling Prices and Revenues

TECHNICAL ANALYSIS

The technical analysis serves to establish whether the project is technically feasible and to provide a basis for cost estimating. In addition, the technical analysis provides data to estimate the impact of various technical alternatives on employment, infrastructure demands, capital requirements, balance of payments, other industries, environment and other factors. The technical analysis addresses the following seven components.

1. Technical Soundness
2. Facility Requirements and Capacity
3. Capital Investment
4. Raw Materials and Utilities
5. Organization
6. Operating Costs
7. Selling and Distribution

The details of these components are listed in Exhibit IX-5.

FINANCIAL ANALYSIS

The financial analysis evaluates the project in terms of various measures of commercial profitability and determines the magnitude and type of financing required. The basic components of capital investment, production and operating costs from the technical analysis are assembled. From the market analysis projected revenues are determined. A comparison of investment and production costs and revenues over the life of the project is made. This comparison assesses the financial viability of the project. Various financial techniques can be employed including: internal rate of return, payback, net present worth and return-on-equity.

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Financing plans are then developed and evaluated. These plans address the sources of capital (foreign and domestic, public and private) the mix of capital (equity vs. debt) and the financial instruments involved (short, medium and long-term loans and ordinary and preferred stock).

Because variations in rates of interest, proportions of debt and equity as well as costs of production and price of product and other factors may affect the project's financial feasibility it may be necessary to conduct a sensitivity analysis to identify items that have a large impact on project profitability. With such a calculation, the relative importance of each of the variables to profitability can be estimated. Typical techniques of sensitivity analysis include: break-even analysis, minimum sales price required, simple-equation models and discounted cash flow models.

It may also be necessary to conduct a risk analysis. This analysis is concerned with identifying and quantifying the risks associated with a project. Risk analysis provides an indication of the likelihood of an event (like change in product price) whereas sensitivity analysis assesses only the consequences of such an event. The decision whether or not to conduct a risk analysis is largely dependent on the magnitude and type of project. Risk analysis utilizes such techniques as: changing the discount rate or rate of return, adjusting cash flow on a probability basis or subjective basis, changing the payback periods and decision tree analysis.

The basic components of financial analysis are listed below. They are outlined in detail in Exhibit IX-5. The depth and breadth depend on the nature of the project, the overall objectives of the feasibility study and the requirements of the interested parties (project developer, national government, private lenders and development banks).

1. Flow of Funds

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2. Financial Evaluation

3. Financing and Capital Recovery Plan

NATIONAL PROFITABILITY ANALYSIS

The preceding analyses have examined the profitability of a proposed project from the commercial standpoint of the firm. These may not give an adequate measure of the contribution of a project to the country. The previous emphasis has been on determining the profits of a project in monetary terms and not on its real contribution to the welfare of the society. To measure a project's contribution to the national economy, national profitability analysis is done.

The objective of national profitability analysis is to trace the project's contribution to all fundamental development objectives. Moreover, while commercial profitability analysis is based on market prices, national profitability analysis is determined with the use of adjusted prices, where appropriate, that are deemed to be approximation of social prices. These adjustments are made where market imperfections distort the actual prices of goods and resources involved in a project. The resulting market prices may not reflect their real value to the economy as a whole. Similarly, it may be necessary to adjust the rate of foreign exchange when the official rate is distorted and does not reflect the true value. Therefore, in project evaluation the foreign exchange components should be valued at the adjusted rate of exchange in order to obtain a more realistic picture of the social benefits and costs of a project.

Another important factor in national profitability analysis is the indirect effects of a proposed project. Indirect effects are the additional benefits and costs occurring in other technologically and economically related

projects. The indirect effects should be accounted for only when their occurrence is owing to the proposed project. These would include new projects supplying inputs (backward linked) or those receiving outputs (forward linked) from the proposed project.

National development objectives vary in number, kind and emphasis among different countries. These objectives provide the basis from which criteria for project evaluation are derived. Each objective at the national level is reflected in one or more criteria at the project level. The priority assigned to each of these criteria correspond to the importance of the respective development objective at the national level.

There are several fundamental strategic objectives for national development. Again, some may be more important than others for a particular country. Also, all five objectives need not always be applied at the same time in the evaluation of every project. These objectives include:

1. Value added
2. Employment impact
3. Distribution of value added
4. Net foreign-exchange effect
5. International competitiveness

The value added criterion measures the overall effects of a project on the economy. It represents in a general way the difference between the values of output and input. It is applied in project evaluation in terms of net national value added. This index measures a project's contribution to the domestic economy only to the extent that value added is distributed and consumed in a country and for the benefit of the country. The portion of the value added that is repatriated as wages, interest, royalties, etc. does not add to the national income or welfare and therefore is excluded. In

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addition, since benefits and costs are distributed over time, it is necessary to calculate total value in present worth terms. Instead of using the commercial interest rate, the social rate of discount is used. This is a quantitative estimate of the value society places on future benefits and costs. It is based on such factors as: the interest rate a country can actually lend, invest, or borrow; whether the country is a capital lender or capital borrower, and whether speedy development of some basic strategic industries or less developed regions of a country are desired.

If the creation of new employment is one of the principal development objectives, then employment effect needs to be measured. The impact of a project would be measured on both unskilled and skilled labor as well as direct and indirect employment.

The distribution of value added can be affected in two ways: allocation among different social groups; and allocation among different regions of a country. The targeting of social groups and/or regions would be based on national development objectives.

Another important factor in the overall national profitability evaluation of a project is the assessment of the effects on the foreign-exchange position of a country. This assessment is made in two areas: the balance of payments effect and the import substitution effect.

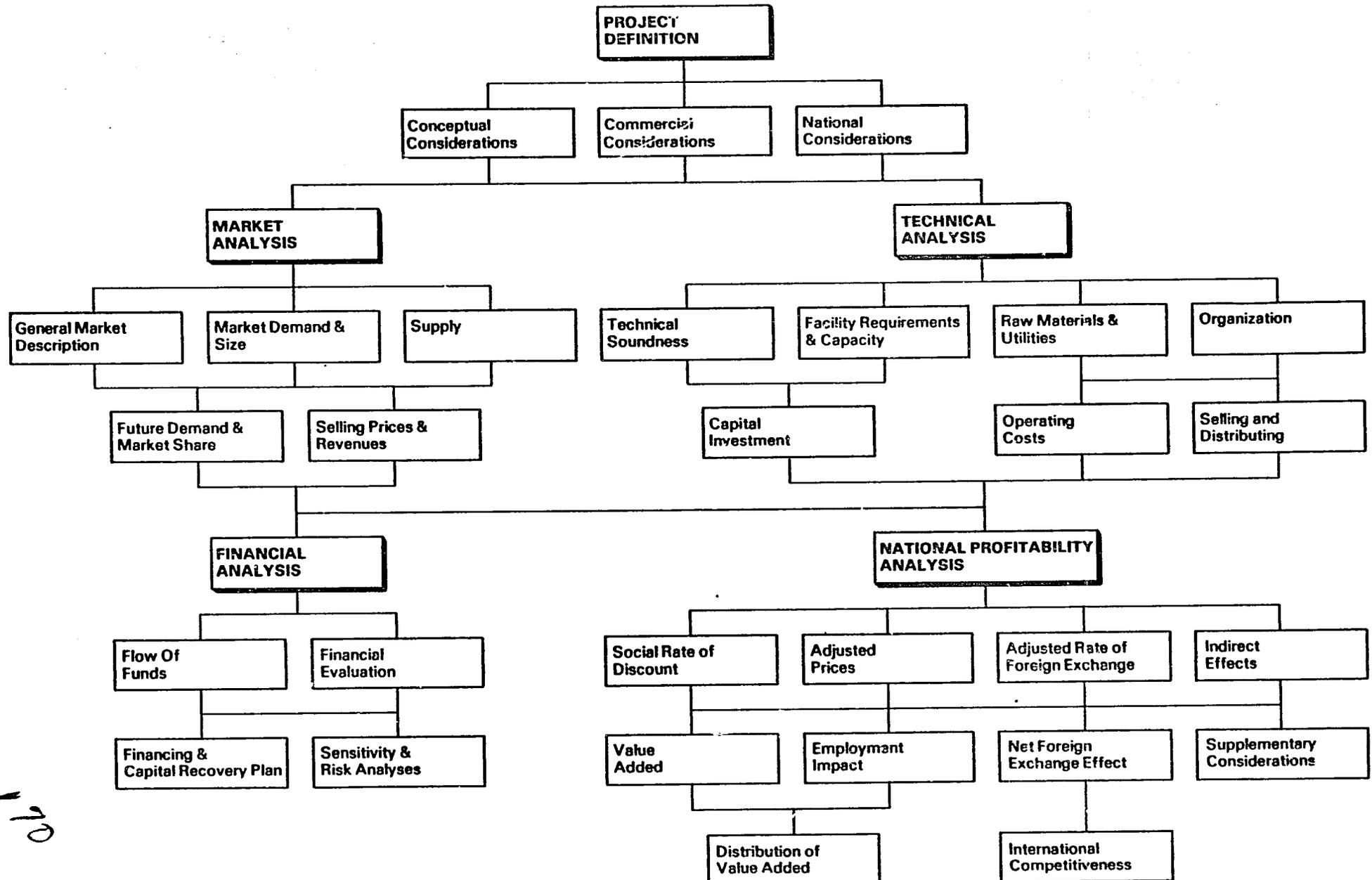
The first area is of primary concern to countries where the shortage of foreign exchange is a key obstacle to economic development. Therefore, a project's effect on the balance of payments has to be examined. On the other hand, for countries enjoying a surplus balance of payments, the

analysis of foreign exchange focuses on the second area or the effect of import substitution. For example, the establishment of sophisticated industrial projects adds considerably to a wide variety of needed materials, components, equipment, technical know-how, royalty payments etc. While a project may help a country in manufacturing an important item or provide a substitute for an imported commodity, it may also add new items to the import schedule and impose many payment repatriation obligations. Thus, a comprehensive analysis of the effects of an investment project on import substitution becomes needed.

Finally, it is important to determine whether the products of an export-oriented project will be internationally competitive. This is particularly true for projects where the economic scale of production is larger than what can be absorbed in the domestic market. To determine the international competitiveness of the products requires comparing the inputs of domestic resources for production of the exported items with the benefits (the net foreign-exchange earnings that would be received from exports.)

Other factors may have to be addressed. These supplementary considerations may be difficult to quantify and will have to be treated qualitatively. They would involve implications in terms of infrastructure, technical know-how, environment etc. These and the other components of national profitability analysis are detailed in Exhibit IX-6.

FEASIBILITY STUDY COMPONENTS



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EXHIBIT IX-2

PROJECT DEFINITION ELEMENTS

1. Conceptual Considerations

- Expansion or new venture objectives
- Product history
- Frames of reference
- Potential project location
- Previous studies

2. Commercial Considerations

- Investment objectives
- Investment criteria
- Lending bank's requirements

3. National Considerations

- Development objectives
- Development criteria
- Social rate of discount
- Adjusted rate of foreign exchange
- Indirectly linked projects
- Target groups and/or regions

MARKET ANALYSIS ELEMENTS

1. General Market Description

- Market area
- Channels of distribution
- Methods and rates of transportation
- General trade practices

2. Market Demand and Size

- Size of market and sales volume
- Past and present market trends
- Imports and exports
- Per capita consumptions
- Major consumers of product

3. Supply

- Domestic and foreign production
- Geographic analyses of market and points of production
- Related products
- Identification of competitors and their future plans
including: selling prices, quality and market practices

MARKET ANALYSIS ELEMENTS

4. Future Demand and Market Share

- Imports and exports
- Competitive position
(availability and cost of labor and raw materials,
efficiency of production, location, quality of products and
dependability)
- Proposed markets, market share and marketing plan
- Legal and regulatory considerations

5. Selling Prices and Revenues

- Historic prices
- Selling prices to be met
- Estimated transportation costs
- Export expenses
- Forecast of sales
- Net revenue analysis

TECHNICAL ANALYSIS ELEMENTS

1. Technical Soundness

- Product specification (physical, mechanical, electrical and chemical properties)
- Product uses
- Manufacturing process comparisons
- Manufacturing process selection
- Equipment selection
- Major unit descriptions and functions
- Process flow sheets
- Auxiliary capital equipment
- Patents and licenses involved

2. Facility Requirements and Capacity

- Determination of plant size and production schedule
- Capacity analysis (planned and future)
- Facility layouts and plans
- Selection of machinery and equipment
- Utility and transportation tie-ins
- Auxiliaries and spares
- Materials handling
- Estimated outputs as percentage of capacities
- Site selection analysis
- Engineering and construction plan and schedule
- Climatic factors

TECHNICAL ANALYSIS ELEMENTS

3. Capital Investment

- Cost of land
- Buildings and land improvements
- Environmental considerations
- Material handling equipment
- Auxiliaries
- Plant start-up
- Licenses and royalties
- Utility and energy costs
- Maintenance
- Selling and distributing
- Administration and general
- Taxes and royalties
- Total operating costs
- Start-up costs and expenses

4. Selling and Distribution

- Sales staff
- Advertising costs
- Distribution plans
- Summary costs
- Design and engineering
- Construction
- Total capital requirements

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TECHNICAL ANALYSIS ELEMENTS

5. Raw Materials and Utilities

- Requirements and specifications
- Availability
- Potential sources and reserve analysis
- Estimated costs
- Alternative considerations
- Power requirements (peak and annual)
- Fuel for heat, steam and process
- Water balance and treatment
- Effluent disposal
- Handling and storage plans

6. Organization

- Estimate of labor requirements (skilled and unskilled)
- Availability of skilled and unskilled labor
- Source and qualifications of management
- Breakdown of direct and indirect labor and supervision required
- Recruiting and training plans

7. Operating Costs

- Personnel
- Fringe benefits
- Raw materials

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EXHIBIT IX-5

FINANCIAL ANALYSIS ELEMENTS

1. Flow of Funds

- Revenues
- Operating costs
- Interest during construction
- Depreciation and amortization
- Working capital
- Retained earnings
- Future capital requirements
- Allowance for escalation
- Cash flow analysis
- Pro forma income statement
- Pro forma balance sheet

2. Financial Evaluation

- Net present value
- Internal rate of return
- Pay-back period
- Simple rate of return
- Liquidity analysis
- Sensitivity analysis
- Risk analysis

3. Financial and Capital Recovery Plan

- Financial Plan
- Governmental assistance
- Funds available for capital recovery
- Plan for distribution of funds

NATIONAL PROFITABILITY ANALYSIS ELEMENTS

1. Value Added

- Price adjustments
- Adjusted rate of foreign exchange
- Direct and indirect effects
- Value of output
- Value of material inputs
- Net domestic value added
- Repatriated payments
- Net national value added
- Values discounted at social rate
- Absolute efficiency test
- Relative efficiency test

2. Employment Effect

- Skilled and unskilled workers
- Employment in backward and forward linked projects
- Ratios of employment to capital investment (direct, indirect, skilled and unskilled)

3. Distribution Effect

- Targeted social groups and regions
- Net distribution benefit flows
- Distribution indexes (wage earners, regions, profit centers, government and repatriations)

NATIONAL PROFITABILITY ANALYSIS ELEMENTS

4. Net Foreign-Exchange Effect

- Foreign exchange inflows (direct and indirect)
- Foreign-exchange outflows (direct and indirect)
- Net foreign-exchange flow
- Present value of net foreign-exchange flow
- Net balance of payment effects
- Import substitution effects

5. International Competitiveness

- Foreign-exchange inflows
- Foreign-exchange outflows
- Domestic resource inputs
- Export efficiency test

6. Supplementary Considerations

- Infrastructural requirements
- Technical know-how
- Environmental impact