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PRE-INVESTMENT STUDIES

AND

DEVELOPMENT STRATEGY FORMULATION FOR

INDUSTRIAL ESTATES

IN INDONESIA

(US/INS/89/040 AND TF/RAS/87/006)

FINAL REPORT

MARCH 1991

ENGINEERING CONSULTING FIRMS ASSOCIATION

(ECFA), JAPAN

PACIFIC CONSULTANTS INTERNATIONAL

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List of Abbreviations

BAPPENAS	: National Development Planning Agency
BKPM	: Investment Coordination Board
BOTABEK	: Bogor, Tangerang and Bekasi (surrounding areas of Jakarta)
ECFA	: Engineering Consulting Firms Association
EPZ	: Export Processing Zone
GIZ	: General Industrial Zone
IRR	: Internal Rate of Return
JABOTABEK	: Jakarta Metropolitan Area (Jakarta and BOTEBEK)
JETRO	: Japan External Trade Organization
JICA	: Japan International Cooperation Agency
JIEP	: Jakarta Industrial Estate, Pulogadoung
JIIEB	: Jakarta International Industrial Estate, Bekasi
PERUMTEL	: National Telecommunication Corporation
PLN	: National Power Corporation
REPELITA IV	: Fourth Five-year National Development Plan (1984/85-89/90)
REPELITA V	: Fifth Five-year National Development Plan (1989/90-93/94)
ROE	: Return on Equity
ROI	: Return on Investment
SIER	: Surabaya Industrial Estate
TEU	: Ton Equivalent Unit
UNIDO	: United Nations Industrial Development Organization
VAT	: Value Added Tax

SUMMARY AND RECOMMENDATIONS

SUMMARY AND RECOMMENDATION

1. Summary

(1) Macroeconomic Development

Despite the loss of oil revenues, Indonesia has achieved a higher then expected rate of economic growth during the 1980s. Total GDP grew by an average of 5.5 percent per annum during 1983-89, and most of this growth came from the non-oil economy. However the deterioration in the terms of trade had an adverse effect on domestic incomes during 1981-86, and the resulting shortfall of resources led to substantial cutbacks in public investment, as well as a reduction in the growth of private consumption.

Until 1985, private investment also fell significantly. However economic developments in recent years indicate that the economy is responding strongly to the structural reforms undertaken so far. Economic growth is more broadly based than in the past, 7.3 percent of GDP growth in 1989, with agriculture, manufacturing and services all exhibiting strong rates of growth in 1989. The deregulation measures, in conjunction with sound macroeconomic policies, have led to an encouraging recovery of private investment. Furthermore, data on foreign and domestic investment approvals indicate that a significant proportion of these investments are planned for export oriented activities.

(2) Prospects of Indonesian Economy

The development orientation of the current five-year development plan (REPELITA V) addresses the long-term challenge to generate a pace and pattern of growth which will expand employment rapidly enough to absorb the new and active entrants to the labor force. Based on a growth in the working age population of 2.1 million per year over the REPELITA V, a minimum 5 percent real growth rate will be necessary to create this

volume of new jobs. Equally important is education and training to ensure a labor force of adequate skills to meet the demand of industry for achieving productivity gains and using new technologies. The sustained recovery of the non-oil economy to 6-6.5 per cent per annum during 1990s is fueled by gains in factor productivity resulting from structural reforms and a strong investment effort. For the longer term, the contribution of the oil sector will decline, with falling crude production projected from the early 1990s. This reduces the average growth of total GDP to 5-5.5 percent over the 1990s.

(3) Manufacturing Sector

The manufacturing sector in Indonesia is extremely diverse reflecting the vast range of goods produced and wide variation in the scale of its production units, though the size of the sector is relatively small. The manufacturing sector, excluding oil refinery and LNG, accounted for 13.8 percent of GDP and about 30.9 percent of total export in 1988, and 5.8 percent of total employment in 1985. The growth rate of manufacturing sector was estimated 13 percent in 1988, the most highest subsector, which the total GDP increased at 5.7 percent in real term.

(4) Foreign and Domestic Investment

Both domestic and foreign investment has been expanding significantly in recent years, from US$ 826 million and Rp 4,417 billion in 1986 to US$ 4,718 million and Rp 19,594 in 1989 (BKPM approval base). In 1990, the foreign investment has reached more than US$ 7 billion only in the first 9 months.

(5) Potential Industries and Potential Investors in West Jawa

In order to identify potential industry and potential investor, questionnaire survey was carried out. The questionnaire was sent to more than 500 selected Japanese companies which have interest in investing abroad, particularly

in Asean countries. These companies are 1) participants of investment promotion seminars for Indonesia sponsored by major Japanese banks, potential foreign investors listed by JETRO, and potential investors listed by the similar questionnaire survey for industrial estates in Thailand and in the Philippines.

Of the 528 samples, 56 company showed positive responses. Among them. six companies are showing keen interests in the proposed industrial estate, two in chemical, one in transport equipment and three in electrical products. Among the 34 responses showing interests in the proposed industrial estate nine are textile/apparel, five are metal products and four each in chemicals and electrical products.

Combined with another source of potential investors information, the data shows a notable new investment trend. Comparing to conventional resource oriented or import-substitution industries in the past, the new types of investment, thus the potential industries in Indonesia, are export-oriented labor-intensive light industries. With the consideration of global economies reforming trend (liberalizing and promoting trade) and Indonesia's comparative advantages of industrialization (availability of low cost labor and stable political and economical conditions), labor-intensive export-oriented industries such as textile/apparel, electrical products assembling and transportation equipment components and assembling, and some resource processing industries such as wood/furniture, chemical and rubber products are the potential industries in Indonesia for the near future.

(6) Industrial Land Demand in West Jawa

During the last five years, the location of capital investment has distributed to the outside of DKI Jakarta. This happened because DKI Jakarta has already been saturated, and difficult to get land for industrial purpose. The direction of investment has moved toward West Java Province, mainly to BOTABEK area (surrounding areas of Jakarta, consisting of Bogor,

Tangarang and Bekasi).

The location of investment in Indonesia in the next future are supposed to concentrate in BOTABEK area. This happens because of limitation of space in DKI Jakarta for giving the better conditions for living. It is paralleled with the Government policy for industrial location distribution to the outside Jakarta. Another factor, this is a chicken-and-egg relation, to be considered BOTABEK as the most active area for manufacturing investment is that some of the industrial estate development projects will be carried out with foreign partners who have powerful marketing capabilities. A couple of industrial estates have already got commitments from some manufacturing companies to be located in the estates. That means there are additional waiting investor looking for a suitable place to locate their plants.

The cumulative demand of industrial land in West Jawa from 1990 till 1995 is estimated to be 3,007 ha, which is equivalent to 4,296 ha of industrial estate land (70% for industrial use), and 6,025 ha (8,607 ha of industrial estate) until the year 2000.

(7) Industrial Estates Development in Indonesia

Industrial estates were introduced in Indonesia by BAPPENAS in the early 1970s in Jakarta and Surabaya when industrial land was in short supply and ribbon development along major highways eroded all concepts of spatial land management. By the Presidential Decree No. 53/89 which was announced by Coordinating Minister for Economic Affairs Radius Prawiro on 1 November, 1989, private companies, foreign and national, are now allowed to develop industrial estates without having to involve the government or its firms in the ownership of the estates. Foreign and domestic investment licenses for industrial estate development are issued by BKPM.

After the issuance of the Presidential Decree No. 53/1989, about 50 applications were submitted to BKPM, some of them are

joint-venture companies with foreign companies. As of May 1990, in Indonesia, 10 provinces have industrial estates with 4 types of project conditions : operation, under construction, permit and application. The total number of the established projects is 61 units with the biggest distribution of industrial estate in West Java (28 projects), East Java (13 projects), and DKI Jakarta (9 projects), From the total of projects, 14 projects are handled by government and the rest by private sector with condition of projects being 16 projects in operation, 9 projects under construction, 13 projects permit and 23 projects application.

From 28,281.9 ha land that have been allocated for Industrial Estates in Indonesia, only 5.77 % (1,630.7 ha) are developed, 6.92 % (1,958.2 ha) under construction and the rest still under developed. Where as from 1,630.7 ha developed area, the occupancy rate is 83 %, and the biggest contribution of developed areas are DKI Jakarta, West Java and East Java.

(8) Industrial Estate Development in West Jawa

There are 28 industrial estates in West Jawa, consisting of 3 in operation, 5 under construction, 9 with permits and 11 applied, which is 45 percent of the total number of industrial estates in Indonesia. The reason why so many industrial estates are going to be developed in West Jawa is that rapidly growing industrial land demand created by the current investment boom.

Among the areas in West Jawa, the most concentrating area of industrial estates in the near future is BOTABEK (consisting of Bogor, Tangerang and Bekasi), which is the surrounding area of Jakarta. This BOTABEK area is suitable for export-oriented, labor-intensive industries, because the area has comparative advantages for such industries. One is good supporting facilities such as transportation, electricity and telecommunication, and others are the availability of engineers and labor, and easy access to the market both domestic and abroad. The other factor is the limited availability of industrial land in Jakarta, which is the highest preferable area

of such labor-intensive export-oriented industry.

(9) Industrial Land Demand and Supply

Industrial land demand in West Jawa will be some 3,000 ha during 1990 - 95, and another 3,000 ha for the next 5 years upto the year 2000. Since the net utilization rate for industries in the industrial estate is 70 percent, the gross land demand for industrial estate will be 4,300 ha for 1990 - 95 and another 4,300 ha for 1996 - 2000. For the first stage, new industrial location will be concentrated toward BOTABEK area, then gradually spreading out to other areas.

On the other hand, the West Jawa Government has allocated 18,000 ha of land for industrial use. By comparing this land allocation to the expected industrial land demand, it should be pointed out that the land allocation by the government far exceeds the land demand. It must be considered that too much supply in the early stage may cause financial difficulties to the estate developers, and also that too large development without any products is absolutely wasting the scarce resource of land in the long run.

(10) Proposed Industrial Estate Development

The proposed industrial estate will be located in Bekasi, eastward suburb of Jakarta. The total development area is 210 ha and the area of the salable industrial plats is 150 ha. Lot size is classified into 5 types. The internal roads consist of wide main road and 20 meter wide service roads. The total length is 12,600 meters. Total demand os electricity is estimated at 35,000 kW to 50,000 kW. At the initial stage, supply from the Cikarang sub-station should be enough. However, expansion of capacity at the substation should be implemented until the initial stage of factory operation to meet the demand at full operation in the estate. Water demand at full operation is estimated at 8,100 cubic meter per day. Water will be taken from the Cikarang River. Sewage facilities will be constructed with

the capacity of 7,000 ton per day. It is estimated that construction of the industrial estate will take about 18 months to be completed.

The total project costs are estimated at 69.2 billion Rupiah. The construction cost is estimated at 55.5 billion Rupiah, including power supply and telephone service facility construction, which can be sold later in addition to land sales. Annual operation and maintenance cost is estimated at 5,400 million Rupiah when it is operated at full capacity.

The financial analysis assumes that the 90% of the salable land will be sold out during the first three years at the price of 60,000 Rp/m2 ('91 prices). The projected internal rate of return (IRR) on investment base is 19.3%, while that on equity base is 21.6%. The project requires the total amount of 25.4 billion Rupiah as loan. The project is worth to be carried out in terms of financial return. However, sensitivity analysis shows that one percent increase of development cost lowers IRRs 0.5% on investment base and 0.7% on equity base, cost control is the critical factor for financial return.

(11) Market Study for Three Supporting Industries

A. Precision Tools, Moulds and Dies

Moulding industry, especially plastic moulding industries would be the key market segment to be penetrated at first. Currently around 500 companies are making plastic products using mould. It is estimated that only about 20 percent of such domestic needs are covered by special and general domestic suppliers. Market size of moulds is around US$ 26,700,000 per year.

Assessing from the expected strong future growth of users, growth rate of demand for moulds is estimated at least around 10 percent on average for the next few years.

(cif. ,000 US$)

	1988	1992	1996
Demand of Moulds in Indonesia	26,700	39,091	57,200

The questionnaire survey shows users have impression that moulds produced in Indonesia is cheaper but the quality is considerably inferior. Taking plastic moulding manufacturers, quality of moulds is absolutely important while the cost of moulds consists only limited percentage of the total production cost of their products.

It would be necessary for the newly established large-scale local producer to set selling price considerably lower than imported products until they successfully penetrate into the market. After establishing sound technological capability and acquiring customers, the prices can be increased up to the level of imported products.

To make large factory successful, good communication and prompt delivery system must be established. In order to fulfil these needs for communication, delivery and advanced technology, the Jakarta area would be the obvious choice since the largest concentration of user industries is found around the area and availability of training opportunities and technology.

As the direct sales route is dominant for moulds and dies, enhancement of direct sale promotion and communication with customers would play vital role for sales promotion. Once large scale factory proves its capability to supply quality products at the right price, it would be possible to seize the market currently dominated by imported products through direct marketing promotion in which the local producer has comparative advantage.

B. Packaging Machinery

As it is not realistic to expect export will grow rapidly in the near future, size of the market for future local producer is limited to import substitution, which amount about US$ 15,000,000 in 1988.

Total demand would be about 38,000 thousand per year in 1995. The growth rate is estimated to be about 15 percent per year.

Vacuum packaging machine, labelling machine, injection machine, blow molding machine, pressing machine, extruder, loom sewing machine, cutting machine and cutting machine should be considered for future domestic production in the near future in Indonesia.

Characteristics of the industry include its handing of a wide variety of products in limited quantities, and user leadership. Users, products to be packed and packaging materials vary widely. Natural consequence is the limited number of production of a huge variety of products. In this industry, therefore, even medium and small scale firms can compete on the same level with large firms if they have sufficient technology.

Optimal number of workers at the beginning is assumed to be between 50 to 100. To compete with foreign producers who have highly sophisticated technologies, it is recommended to form a joint venture with foreign company which have advanced technologies and experience. In this case, annual production scale would be around US$ 1,200 thousand or 8 percent of the current market.

What is most important for marketing is the continuous information exchange with users. In addition, enough effort should be made to improve delivery times, after-sales service and maintenance.

C. Woodworking Machinery

Demand for wood processing machinery and equipment in Indonesia once peaked in the early 1980s as a result of the accelerated pace of plywood mill development in Indonesia. But the demand for machinery and equipment has recovered strongly due to the recovery of international plywood market.

The output of wood processing industry in Indonesia in 1985 was estimated as follows. Since production in furniture and woodworking is extremely diversified and normally recorded in number of pieces, the output of these subsectors were measured by roundwood equivalent volume (r).

	('000 m3)	CRV('000 US$)
Sawn timber	7,000	760,028
Plywood	4,847	894,960
Blockboard	300	34,399
Particle board	60	96,220
Veneer	95	inc. in Plywood
Woodworking(r)	398	87,700
Furniture(r)	315	306,994

The current replacement value (CRV) of the Indonesian wood processing industry, which was estimated by the 1987's Wood Processing Industry Sector Study, is also shown in the above-table. Based on the current replacement value in 1985, the current replacement value in the year 2000 is estimated as follows.

	CRV(US$)/m3	Output ('000m3)	CRV (million US$)
Sawn timber	108.6	10,700	1,162
Plywood/Veneer	181.1	8,114	1,469
Blockboard	114.7	840	96
Particle Board	1,603.7	190	305
Woodworking(r)	220.4	1,040	229
Furniture(r)	9[illegible].6	1,063	1,036
Total			4,298

The expected demand for woodworking machinery is as follows.

(US$ million)

	1991	1995	2000
Demand of woodworking machinery in Indonesia	280	310	350

Although some high precision instrument and control equipment are difficult to be produced in Indonesia in short period of time, small to medium scale various types of sawing machine, log intake equipment, driers and general purpose woodworking machine are technically feasible to be produced in Indonesia. The growth of demand is large enough to absorb the products of the new woodworking manufacturing company with 100 employee producing 1000 units of woodworking machinery with the value of US$ 2 million.

2. Recommendations

Because of favorable factors both external (appreciation of Japanese Yen and NIEs currencies, and problems in China and the Philippines) and internal (stable political and economic conditions, availability of manpower, reforms of government regulations and improvement of basic infrastructure), an opportunity to attract export-oriented manufacturing industries for Indonesia has been greatly enhanced.

In order to attract these export-oriented investment, high quality industrial estates located near major cities must be built in a very short period.

So far, the private industrial estate development program is the best solution to meet the need in the very short time. Indonesian Government has responded to the existing high demand for industrial estate by issuing the Presidential Decree No.53/1989, which allows both private domestic and foreign companies to invest in industrial estates. It was an appropriate step to solve the shortage of high quality industrial estate in Indonesia. Compared with Thailand and Malaysia, however, Indonesia has been lagging behind in attracting medium to high value-added export-oriented in the past few years.

Formulation of Industrial Location Program and Industrial Estate Development Strategy

Because of the booming foreign and domestic investment in manufacturing sector in Indonesia, industrial land demand will is rapidly increasing. This land demand stimulates industrial land supply by means of industrial estate development. These private business activities, which are motivated by profit maximization, often cause unfavorable effects to society, such as environmental problems and land speculation.

Industrial estate development is one of the best ways to avoid problems of spatial land use planning and environmental pollution. But this could work out satisfactorily when all expected functions would be well established and managed. At this moment, West Jawa Government allocates 18,000 ha of land for industrial estate, which is more than twice as much as the industrial land demand until the year 2000. Industrial estates with all required functions can not be developed only by private developers but requires support by public sectors. That means public sector has to provide an appropriate size of counterpart fund.

It is, therefore, recommended to formulate a very practical industrial estate/zone location master plan with specific development program. This makes it possible to keep the quality of industrial estates in high level and thus to compete with industrial estates of other developing countries.

Urgent Needs for Off-site Infrastructure Development

Each industrial estate has its own plan to develop its own land facilitated with on-site infrastructure such as internal roads, water supply system, waste water treatment system, drainage. However, external infrastructure such as access roads, power supply network, telecommunication system, waste water discharge network to limited rivers or discharge canal are out of their control. Even they are allowed to develop such infrastructure with their own contribution by the Authorities, it compel their construction costs to increase significantly and make the projects unfeasible.

On the other hand, if the developers start the development and sales of their products without confirmation of future development of external infrastructure, it is obvious to see negative impacts in the area such as pollution, population increase and congestion on roads. Another unfavorable scenario is that the country will lose the opportunity to catch the

current foreign investment boom which is essential for better economic growth, even the developers provide internationally competitive industrial estates.

Therefore, cooperated and coordinated actions between private and public sectors will be essential. It is recommended that prompt actions to provide external infrastructure by public sector, even not in full scale, should be initiated in order to avoid future chaotic situation or losing the opportunity for possible economic development.

At this moment, electricity supply is the most critical factor for accelerated industrial development in Jawa. The Government has already announced the power shortage in the near future, which has made potential investors hesitate in coming to Indonesia in some cases. One of the solutions is to mobilize private sector, which has been already tried to arrange by the Government. This arrangement should be finalized as soon as possible and implemented smoothly.

Environment Control

The Government has already issued a series of regulations and decrees since 1982 in order to avoid environmental problems. However, in practice, prevention of pollution requires funds for both investment and people as well as materials and operation. Huge amount of money required to prevent pollution often discourages investment. Therefore, cooperated efforts by private and public have to be done effectively. The Government should not only strictly enforce the regulations but also give some incentives. One of the practical ways is to provide soft loan for investing equipment for pollution prevention and to provide public disposal facilities.

Incentives and Deregulation of Bureaucratic Process

Indonesian Government has intensively deregulated the process concerning to industrial activities, such as investment regulation and trading reform. But, it is clear that incentives for foreign investors are less attractive than other ASEAN countries. Foreign businessmen also pointed out that the processes involving government offices were complicated thus time-consuming.

Another factor to be considered is to improve efficiency of distribution system for input and output. In order to compete with the foreign products in the world wide market, shortness and accuracy of delivery of input materials and manufactured products are essential. In other Asean countries, for example, the containers arrived at port can clear the custom within two days, while it takes two weeks in Indonesia. Therefore, improvement of efficiency of delivery, especially shortening the export and import process at customs office is essential. One of the solutions is to formulation of Export Processing Zone (EPZ) and Inland Bonded Port.

As more export-oriented investments come to Indonesia, development of new type of privately operated EPZ and inland bonded port facilities become essential ones. Three facilities and functions have been already available in Thailand, Malaysia and the Philippines. It is time for Indonesia to study possible system suitable for the country.

One of the ideas is to create a formal Industrial Estate Development Committee or Board by the initiative of the Ministry of Industry with an appropriate size of staff. This Committee works on issues related to strategic development of industrial estates/zone and issues related to investment promotion in cooperation with BKPM. All of other ASEAN countries already have this type of committee or authority for this purpose.

Shortage of Engineers and Labor

Indonesia has a potential to supply relatively low cost workers. This is one of the Indonesia's advantages. However, rapid industrialization makes a gap between labor demand and supplying capacity especially in engineers and skilled worker levels. As seen in the cases of Thailand and Malaysia, both of them have experienced rapid industrialization in the last few years and are facing the problem of labor shortage, Indonesia will encounter this serious bottleneck in the near future. Therefore, the capacity of labor supply in all levels of requirements should be carefully reviewed.

The First Successful Industrial Estate

With the Presidential Decree NO.53/1989, preparation of privately operated industrial estates are now in progress. Everyone interested in participating manufacturing in Indonesia is paying attention on how private industrial estate development goes and how successfully it will be dine. It is an opportunity for Indonesia to improve the credibility of the country by showing the successful implementation of industrial estate development by private sector with an assistance by the public sector. If the first ones will be implemented successfully, it is going to be a trigger for further successful implementation of industrial estate development, and thus be a trigger for further investment in manufacturing. But if it fails, the country will lose credibility and face difficulty to recover from it. Therefore, it is recommended to concentrate development efforts on high potential industrial estates rather than spreading out efforts to a number of industrial estate developments.

CHAPTER 1

INTRODUCTION

Chapter 1 INTRODUCTION

1.1 Background of the Study

In Indonesia, foreign and domestic investments have been expanding to a fairly good economic performance and have secured future prospects in the recent years. The foreign investment has grown about six times form US$ 826 million in 1986 to US$ 4.7 billion in 1989.

Promotion of private sector investment has been given a high priority in view that the Government will continue to suffer from insufficient development funds for the appropriate development schemes. In order to support this promotional activity, the government promotes the establishment of industrial estates. The advantages of industrial estates in Indonesia can be summarized as follows: (1) effective inducement of export oriented industries, (2) broadening of the industrial structure by enhancing better interactions among industries within and between the estates, (3) controlling the environmental problems in an effective way, and (4) efficient land use by containing manufacturing industries in one area.

An earlier study suggests that the demand for industrial estates in the Jakarta metropolitan region, for instance, will be sufficient to market 210 ha within five years.

Identification of potential investors, however, is a crucial promotional element to make this industrial estate establishment scheme successful. This would require a very time consuming market study (identification of potential investing companies in Japan and NIES). The formulation of industry mix, i.e. screening of possible industries would be one of the practical means of marketing effort for the private estate promoters and government authorities. Furthermore, promotional strategy formulation may be needed to provide the government with specific guidelines for future promotion of the industrial estate scheme.

In the strategy framework of both export diversification and import substitution, the existence of a dense network of supporting industries - such as local parts/components manufacturers and sub-contracting industries - assume critical importance in generating self-sustained industrial development.

The government has recently emphasized that their priority lies in (1) precision tools, moulds and dies, (2) packaging machinery, and (3) woodworking machinery. Lack of specific market data is the most crucial bottleneck to promote the joint venture projects from an idea stage to more practical assessment of projects' commercial profitability. Particularly the above mentioned products are mainly domestic market oriented and foreign potential investors expect to obtain marketing data as much as possible for preliminary assessment of investment potential.

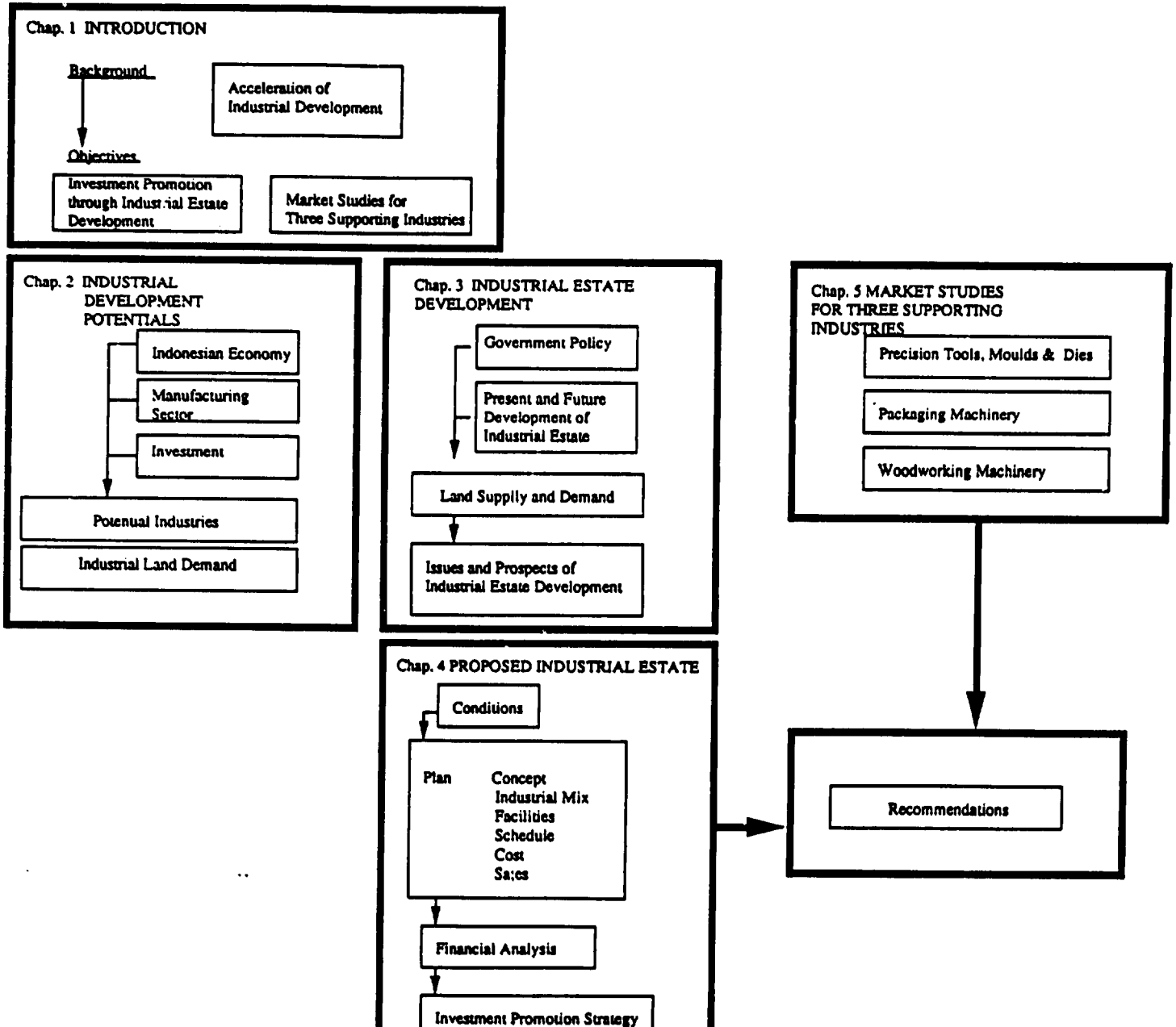
1.2 Objectives of the Study

The objectives of the study are as follows:

(a) To enable the Indonesian government and potential foreign investors to decide on the implementation modalities for bringing investment in the establishment of commercially operational industrial estate(s).

(b) To ascertain the commercial viability particularly the domestic market potential for the high priority sectors such as precision tools, moulds and dies, wood working machinery and packaging.

Fig. 1 - 1 STUDY FRAMEWORK



CHAPTER 2

POTENTIAL INDUSTRIES AND INDUSTRIAL LAND DEMAND IN WEST JAWA

Chapter 2 POTENTIAL INDUSTRIES AND INDUSTRIAL LAND DEMAND IN WEST JAWA

2.1 Current and Future Prospects of Indonesian Economy

(1) Macroeconomic Development

External Shocks in the 1980s

Indonesia grew at almost 8 percent per annum during the 1970s. Much of the impetus to this growth came from a rapid expansion of net oil and natural gas exports. By 1980, oil and natural gas accounted for 80 percent of export earnings and 70 percent of government revenues. Compared to many oil exporters, Indonesia used these resources well. It managed to a large extent to prevent the commodity-producing sectors (agriculture and manufacturing) from lagging behind the rest of the economy. It also succeeded in improving education, health and family planning, and in substantially reducing the incidence of poverty. Sound macroeconomic management and a prudent external borrowing strategy enabled Indonesia to achieve a balance of payments surplus and to reduce its debt service to exports ratio to below 13 percent by the end of the 1970s. Despite the progress made however, some structural problems remained, which heightened the adjustment challenges that emerged from a series of external shocks in the 1980s.

The main external shock has been a severe deterioration in Indonesia's terms of trade, primarily due to the collapse of oil prices. Indonesia's crude oil export price fell steadily from a peak of US$34.3 a barrel in 1981/82 to US$25.0 a barrel in 1986. Although there was a partial recovery in 1987, oil prices fell again in 1988. Despite the recovery in oil prices in 1989, Indonesia's average crude oil export price is only 42 percent of the real price in 1981/82. The second source of external shocks was the depreciation of the U.S. dollar between 1985 and 1988. As a large proportion of Indonesia's foreign debt is denominated in currencies that have appreciated in relation to the U.S.

dollar, Indonesia's debt services payments have increased considerably. On average, over 1983-88 Indonesia is estimated to have suffered an income loss equivalent to some 9-10 percent of its GNP.

Government's Adjustment Program

The government has responded effectively to the challenges posed by these adverse developments by implementing, since 1983, a broad range of adjustment measures and structural policy reforms. These adjustments have comprised of measures to restore financial stability in the short term, as well as policies to restructure the economy over the medium term in order to reduce Indonesia's dependence on oil as a source of foreign exchange and budgetary revenues, and to improve economic efficiency. The policies can be grouped into four broad categories: (a) exchange rate policy; (b) fiscal policy; (c) monetary and financial policies;(d) trade and other regulatory reforms.

The government's policy to maintain an appropriate exchange rate has served to restore balance of payments stability as well as promote structural adjustments. Two major devaluations were undertaken in March 1983 and in September 1986. Since then there has been a more active management of the exchange rate and, in October 1989, a new procedure for exchange rate management was introduced to allow greater flexibility to reflect market trends.

Strong fiscal measures have also been implemented in order to restrain public expenditure, mobilize public resources and reduce the overall fiscal deficit. Many large capital intensive projects were rephrased in 1983. Some measures were also taken to restrain public enterprise investment, and equity participation in public enterprises funded through the budget was reduced to minimal levels. On the revenue side, a sweeping tax reform was implemented over 1984-86, to increase non-oil tax revenues and improve the efficiency of the tax system. Further measures to broaden the tax base and improve tax administration were implemented in 1989. This helped boost tax revenues

sufficiently to enable a reduction in the central government's budget deficit from 3.0 percent of GDP in 1988/89 to 1.4 percent in 1989/90, while at the same time allowing a 5 percent increase in real terms in the central government's capital expenditures.

These fiscal and exchange rate measures have been supported by monetary and financial policies to contain inflationary pressures, prevent capital flight, mobilize financial resources and promote the efficient use of these resources. The government has recognized the importance of keeping inflation low to maintain a competitive exchange rate. Because private capital movement to and from other countries is virtually unrestricted, the government has also recognized the need to ensure competitive interest rates for domestic currency deposits. A major financial sector reform was initiated in June 1983, which deregulated state bank interest rates, simplified subsidized lending rates for priority sectors and replaced credit ceilings with a system of reserve money management.

The government has also embarked on a series of trade and other regulatory reforms, with a view to increasing the competitiveness of the economy as well as ensuring a recovery in economic growth over the medium term. In trade policy, an across the board reduction in nominal import tariffs was announced in 1985, followed by a package of measures designed to provide inputs to exporters at international prices. A more fundamental step was taken in October 1986, when the government announced the first of a series of trade deregulation packages. To consolidate past progress in this area, the government announced a new series of trade policy reforms in May 1990. This reform further reduced nontariff barriers, lowered tariffs significantly, and eliminated some export restrictions.

Substantial progress was also made in simplifying and reducing other regulatory impediments. During 1986-87 the investment approval process was streamlined, licensing requirements were simplified, the bias against foreign investment reduced and the local content programs made more flexible. In

May 1989, the government converted the Investment Priority List into a short negative list, thereby increasing the transparency of the system and opening up new sectors to both domestic and foreign investment. Reforms in the area of customs, ports and maritime transport were also implemented in 1985 and 1988, resulting in greater competition and a significant reduction in freight costs and procedural time.

Economic Recovery after Shocks

The government's adjustment program has helped to bring down the current account deficit from 7.8 percent of GNP in 1982/83 to 1.9 percent in 1989/90. During the initial phase of adjustment (1983-85), most of the improvement in the balance of payments took place through a reduction in imports. Since 1985 however, it has been the dramatic response of non-oil exports, growing at 18.5 percent per annum in real terms during 1986-89, which has led to the narrowing of the current account deficit. While increases have occurred in Indonesia's traditional exports, about 71 percent of the increment has come from a rapidly expanding and diverse base of manufactured goods. In 1989/90 the oil and natural gas sector also performed very well, primarily reflecting the 18.5 percent increase in the price of oil.

Overall export earnings showed a real growth of 9.8 percent in 1989, part of which was offset by a rapid rise in non-oil imports, which increased by 18 percent in real terms. Private sector capital good's imports accounted for the largest share of this import growth, reflecting the strength of private sector response to deregulation.

The government's fiscal and monetary management has also succeeded in reducing fiscal imbalances and domestic inflation. Inflation. (as measured by consumer price index for 17 cities), decelerated significantly during this period, averaging 7.8 percent from 1983-89 as compared to over 15 percent in the 1970s. In addition to the efforts made to reduce fiscal imbalances and promote public savings, the deregulation of interest rates in

June 1983 helped to mobilize private financial resources and increase the attractiveness of domestic deposits.

The large decline in oil revenues convinced the government of the need to improve economic efficiency and stimulate the private sector. The comprehensive deregulation measures undertaken since 1985 have been in response to this need. There are signs of considerable improvement in economic efficiency in recent years. There has also been an improvement in the structure of the economy with a substantial decline in the importance of oil and natural gas revenues in the budget and balance of payments.

Despite the loss of oil revenues, Indonesia has achieved a higher then expected rate of economic growth during the 1980s. Total GDP grew by an average of 5.5 percent per annum during 1983-89, and most of this growth came from the non-oil economy. However the deterioration in the terms of trade had an adverse effect on domestic incomes during 1981-86, and the resulting shortfall of resources led to substantial cutbacks in public investment, as well as a reduction in the growth of private consumption.

Until 1985, private investment also fell significantly. However economic developments in recent years indicate that the economy is responding strongly to the structural reforms undertaken so far. Economic growth is more broadly based than in the past, with agriculture, manufacturing and services all exhibiting strong rates of growth in 1989. The deregulation measures, in conjunction with sound macroeconomic policies, have led to an encouraging recovery of private investment. Furthermore, data on foreign and domestic investment approvals indicate that a significant proportion of these investments are planned for export oriented activities.

(2) Prospects of Indonesian Economy

Development Issues

Indonesia is emerging from a difficult but successful adjustment period with a more robust, diversified and competitive economy. The strong private sector growth, and surge in investment and exports, particularly in 1989, indicate that foundations are being laid for a period of sustained and relatively rapid growth. While living standards improved considerably in the 1980s, sustained growth is needed to enable further progress in reducing poverty and to provide productive employment for the growing labor force. The key elements which would provide the foundations for sustained growth can be grouped int three inter-related areas: continuation of the government's prudent macroeconomic management; further promotion of private sector development; and the provision of efficient public sector programs to support private sector development and poverty reduction.

Successful management of the public sector in particular calls for a sharper focus of public spending in line with two broad priorities. It should provide adequate basic infrastructure and services to remove potential constraints on private sector growth, such as power, telecommunications and transport. It should also meet the needs of the poor for basic services. Ensuring the effectiveness of public spending will require continued improvements in program management and implementation by the government departments.

Prospects of Indonesian Economy

The development orientation of the current five-year development plan (REPELITA V) addresses the long-term challenge to generate a pace and pattern of growth which will expand employment rapidly enough to absorb the new and active entrants to the labor force. Based on a growth in the working age population of 2.4 million per year over the REPELITA V, a minimum

5 percent real growth rate will be necessary to create this volume of new jobs. Equally important is education and training to ensure a labor force of adequate skills to meet the demand of industry for achieving productivity gains and using new technologies.

The World Bank projected the key indicators of Indonesia's mid-term prospects as shown in the Table 2-5. The sustained recovery of the non-oil economy to 6-6.5 per cent per annum during 1990s is fueled by gains in factor productivity resulting from structural reforms and a strong investment effort. For the longer term, the contribution of the oil sector will decline, with falling crude production projected from the early 1990s. This reduces the average growth of total GDP to 5-5.5 percent over the 1990s.

Table 2-1 Gross Domestic Products

Sector Share of GDP (from current price data) (%)

Sector	1965	1973	1980	1987	1988
Agriculture	56.0	38.3	24.0	23.3	24.1
Industry	12.6	26.5	41.7	36.4	35.7
(of which Manufacturing)	8.4	10.6	13.0	17.0	18.5
Services	31.4	35.2	34.3	40.3	40.2
Total	100.0	100.0	100.0	100.0	100.0

Growth Rate of GDP (from constant price data)

Sector	1965-73	1973-80	1983-88	1988	1989p
Agriculture	4.8	3.8	3.1	4.2	4.1
Industry	15.2	7.3	5.1	5.1	8.2
(of which Manufacturing)	9.0	14.7	13.1	13.0	
Services	5.0	10.1	6.4	7.0	8.3
Total	7.8	7.1	5.1	5.7	7.3

p) preliminary data
Source: Central Bureau of Statistics

Table 2-2 Foreign Exchange Rate

	Rp/$	Rp/Yen
1980	634	3.12
1983.3	970	4.18
1986.9	1641	10.31
1988	1731	13.75

Table 2-3 Domestic Inflation
(annual average; % p.a.)

	1973-81	1981-88
CPI	15.3	8.4
WPI	16.6	1.6
Non-oil GDP Deflator	15.9	9.3

Source:Central Bureau of Statistics and World Bank

Table 2-4 Current Account Balance
(US$ billion at current prices)

	1982/83	85/86	86/87	87/88	88/89*
Merchandise exports (fob)	18.6	18.5	13.7	18.1	19.8
Oil & LNG	14.7	12.3	7.0	8.6	7.7
Non-oil	3.9	6.2	6.7	9.5	12.1
Merchandise imports (cif)	-20.6	-14.4	-12.7	-14.2	-15.5
Oil & LNG	-4.8	-3.2	-2.3	-2.4	-2.1
Non-oil	-15.8	-11.2	-10.4	-11.8	-13.4
Trade balance	-2.0	4.1	1.0	3.9	4.3
Non-factor services (net)	-1.7	-1.9	-1.6	-1.5	-1.8
Interest payment (MLT)	-1.5	-2.1	-2.4	-2.8	-3.0
Other factor services (net)	-2.2	-2.3	-1.2	-1.5	-1.7
Official transfers	0.1	0.2	0.2	0.3	0.3
Current account balance	-7.3	-2.0	-4.0	-1.6	-1.9
(Oil price, $/barrel)					

* Estimated
Source: Bank Indonesia and World Bank

Table 2-5 Non-oil Merchandise Exports
(US$ million at current prices)

	1982/83	1986/87	1987/88	1988/89*
Agriculture	2398	3262	3885	4592
Mineral & Metals	676	725	1080	1381
Manufactured Goods	854	2744	4537	6128
Textile	180	774	1283	1757
Plywood	324	1156	1834	2034
Others	350	814	1420	2338
Total	3928	6731	9502	12100

*Estimated
Source: Central Bureau of Statistics and World Bank

Table 2-6 Non-oil Merchandise Imports
(US$ million at current prices)

	1982/83	1986/87	1987/88	1988/89*
Consumer goods	1945	1132	1202	1485
Food	1345	711	820	1000
Non-food	600	421	382	485
Intermediate	4869	4248	4886	5525
Capital goods	9010	5005	5675	6425
Total	15824	10385	11763	13435

*Estimated
Source: Central Bureau of Statistics,
Bank Indonesia and World Bank

Table 2-7 Key Indicators of Indonesia's Mid-term Prospects

	Actual	Projected		
	1981-88	1988-90	1990-95	1995-2000
Average real growth rates (% p.a.)				
Gross national income (GNY)	1.8	5.2	6.1	6.3
Gross domestic product (GDP)	3.3	4.9	5.2	5.7
Non-oil GDP	4.3	5.7	6.2	6.6
Non-oil exports /a	13.0	10.8	7.2	6.8
Non-oil imports /a	-3.2	7.4	7.8	6.3
Fixed investment	-0.5	7.8	8.9	6.7
- Public	-2.0	5.1	7.7	5.7
- Private	0.7	9.7	9.7	7.3
Consumption	3.4	4.6	5.1	6.0
Growth rate of monetary variables (%)				
Broad money (M2)	25.1		15.4	14.2
Domestic credit	25.7		13.0	13.6
Private credit	28.0		13.6	13.0
Structure of the economy (%) /b				
Non-oil manufacturing/GDP /c	9.5	10.3	12.5	14.9
Non-oil exports/non-oil imports /d	90.3	92.3	97.2	99.8
Public savings/GDP	6.0	6.9	8.9	8.9
National savings/GDP	19.8	20.9	25.0	26.5
Fixed investment/GDP	20.3	21.4	24.6	25.4
Private fixed investment/total fixed investment /c	56.9	59.0	61.2	63.1
Consumption/GDP	74.5	74.3	71.3	70.9
Macroeconomic balance (%) /b				
Current account/GNP	-2.5	-2.1	-1.0	-0.6
Non-interest current account/GNP	2.1	2.3	1.8	1.2
Overall public sector balance/GDP	-3.4	-2.7	-1.2	-1.0
Public sector primary balance/GDP	-0.1	0.2	0.8	0.3
MLT debt service/exports	36.3	34.4	23.8	17.1
MLT debt/exports	220.8	204.0	151.7	109.6
MLT debt/GNP	64.7	60.6	46.6	33.2
Memo items:				
Nominal deposit rate (% p.a.)	17.6 /e		13-14	11-12
Nominal lending rate (% p.a.)	21.5 /e		15-16	13-14
Domestic inflation rate (% p.a.)	8.4		6-7	6-7
ICOR	5.2 /f		4.3	4.3
Labor force growth rate (% p.a.)	2.9 /e		2.7	2.5
Employment elasticity	0.6 /e		0.5	0.4

/a Goods only.
/b End of period; in current prices.
/c In constant 1983 prices.
/d Goods only; in current dollars.
/e End of period.
/f Average for 1986-88.

Source: Indonesia Strategy for Growth and Structural Change, World Bank

2.2 Review of Manufacturing Sector

(1) Overview of Manufacturing Sector

The manufacturing sector in Indonesia is extremely diverse reflecting the vast range of goods produced and wide variations in the scale of its producing units, though the size of the sector is relatively small. The manufacturing sector, excluding oil refinery and LNG, accounted for 13.8 per cent of GDP and about 30.9 per cent of total export (Table 2-2, 2-3) in 1988, and 5.8 per cent of total employment in 1985. The growth rate of manufacturing sector was estimated 13 per cent in 1988, the most highest subsector, while the total GDP increased at 5.7 per cent in real term (Table 2-1).

(2) Historical Development

Industrial policies in Indonesia had been oriented towards import substitution and the creation of job opportunities, with little attention being given to export promotion. This inward orientation of domestic industry has been fostered by protective measures, in the form of both tariff and quantity restrictions, which have been an important feature of the domestic market for manufactures and have resulted in the manufacturing sector often been characterized by significant inefficiencies.

The large trade surpluses generated by oil price increases, however, contributed to the significant structural changes which started in the mid-1970s. Since then, the relative importance of the traditional industries such as food and beverages, and textiles industries fell sharply, while that of the intermediate and capital goods industries, especially basic and fabricated metal products wood products, chemicals and fertilizers, grew quickly.

In response to series of policy reform measures undertaken by the Government since 1986, strong growth occurred in various

manufacturing subsectors. Among medium- and large -scale enterprises, the most significant gains in output during 1986-88 took place in some transport-related products (motor vehicles, tires and tubes), paper products, plywood, cement iron and steel products, as well as structural metal products and glass. Aside from the gains shown by the medium-scale enterprises, the small-scale production subsector also participated in the strengthened momentum of the manufacturing sector. Estimated output growth by this subsector was 7 to 8 per cent in recent years.

(3) Export of Manufacturing Product

The Government's policy reorientation has had a marked effect on exports of manufactured goods, which increased from $2.7 in 1986/87 to $6.1 in 1988/89. Manufactured exports have become the most important source of export growth and account for about 30 per cent of total exports and about 50 per cent of non-oil exports. Plywood and textile products still dominate; they accounted for 33 per cent and 29 per cent, respectively, of manufactured exports in 1988/89. However, a result of the greater ease and profitability of exporting, Indonesia's manufactured base has broadened considerably, as a variety of products shown in Table 2-7 have entered the export market in significant quantities.

(1) Development Policy in Repelita V

Under Repelita V, the sector is expected to play as a main moving force in stepping up the economic growth and the expansion of employment opportunities, being projected to grow by 8.5 per cent annum. Likewise, the share of export of manufactured products in terms of values is expected to increase from 47.7 per cent at the end of Repelita IV to 59.7 per cent at the end of Repelita V. In order to achieve these targets, Repelita V stipulates: (i) further development of machinery and industrial equipment manufacturing; (ii) promotion and strengthening of the

linkage between small-, medium-, and large-scale industries and between upstream and down stream industries; (iii) development of centers of industrial growth throughout the country; (iv) strengthening of capabilities of private sector including cooperatives; (v) consideration of environmental conservation and pollution control; and (vi) promotion of quality and reliability of domestic products.

Table 2-8 Index of Manufacturign Production (1975=100)

Code of Industry Group	Description	1975	1980	1985	1986	1987	1988*
31121	Condensed and dried milk, creamery and processed butter, fresh and preserved cream	100	234	207	197	212	229
31330	Malt Liquor and malt	100	129	119	125	141	138
31420	Clove cigarettes	100	151	246	267	296	317
31430	Other cigarettes	100	130	97	86	74	74
32111	Yarn and thread	100	118	111	115	125	125
32112	Weaving mills (except jute weaving products	100	126	127	132	154	166
32114	Batik	100	117	100	101	109	103
32130	Knitting mills	100	88	84	89	64	75
32400	Footwear	100	130	173	174	176	191
33113	Plywood	100	392	387	429	557	648
34111	Paper manufacture (all kinds)	100	153	182	206	219	335
35110	Basic chemicals (except fertilizer)	100	128	149	155	170	175
35120	Fertilizer	100	466	850	930	927	846
35210	Paint, varnish, and lacquers	100	115	189	199	160	178
35232	Matches	100	179	389	395	474	541
35510	Tyres and tubes	100	257	311	329	356	417
36210	Glass and glass products	100	208	250	244	348	417
36310	Cement	100	367	686	767	806	858
37100	Basic iron and steel industries	100	1034	1158	1359	1423	1539
38130	Structural metal products	100	172	214	218	252	291
38312	Drycell batteries	100	228	343	358	393	365
38320	Radio, TVs, cassettes, other communication equipment and apparatus	100	340	243	217	208	241
38430	Motor vehicles assembly and manufacture	100	194	183	211	233	218
38440	Motor cycles and three wheel motor vehicles, assembly and manufacture	100	114	100	128	117	102
	General index	100	194	258	275	290	299

*Average of three quarters
Source: Central Bureau of statistics

Table 2-9 Major Items of Manufactured Exports
(US$ million at current prices)

Products	1985	1986	1987	1988*	Growth rate 1985-88 (% p.a.)
Plastics	1.5	12.5	24.7	56.1	232.7
Ceramics	0.5	1.2	4.5	14.1	212.8
Glass & its products	8.3	12.7	30.7	93.7	124.1
Other articles of basic metal	5.4	7.6	17.4	56.9	119.6
Sandal, shoes	8.2	8.8	23.5	82.6	116.1
Furniture	7.1	9.2	27.2	69.7	113.9
Iron & steel	34.2	69.5	196.0	296.2	105.2
Paper & its products	20.9	31.8	95.8	138.2	87.5
Rubber products	7.5	11.3	24.2	48.8	86.5
Matting	13.3	19.4	47.2	76.4	79.2
Cements	21.5	39.8	56.1	75.6	52.1
Other	93.8	122.7	91.9	240.7	36.9
Processed food	56.7	81.5	105.9	139.2	34.9
Pharmaceutical products	6.5	7.0	9.4	15.4	33.3
Leather & its products	37.5	43.9	53.8	77.6	27.4
Fertilizer	80.0	127.3	86.0	134.1	18.8
Animal feed	90.8	97.8	113.2	147.5	17.5
Total	493.5	703.9	1007.6	1762.6	52.8

*Estimated
Source: Central Bureau of Statistics and World bank

2.3 Foreign and Domestic Investment

(1) Changes of Investment Environment

Indonesia faces serious competition from Thailand, Malaysia, and the Philippines in attracting foreign investors who want to establish their production bases in South East Asia or to relocate their manufacturing units from Japan, Korea, Taiwan and Hong Kong.

The current investment boom started in 1986 from the realignment of foreign exchange rates at the Plaza Meeting in 1985. Especially, Japan, Taiwan and Korea were affected by the agreement because their currencies were appreciated nearly 100% within two years. The higher value of currency means higher cost of production by as much as 100% or more. This sudden changes in production costs made many manufacturers from these countries to shift their production to all over the world. For example, Japanese foreign direct investments increase from US$ 12 billion in 1985 to US$ 67 billion in 1989. ASEAN countries recognized this opportunity as attracting export-oriented investments. Thailand started investment promotion program from 1986 aggressively followed by Malaysia in the end of 1987 (revised New Economic Plan). The Philippines has also started to promote new wave of investments from these countries from 1988 charging BOI Omnibus investment Promotion Regulation.

A recent Japanese investment study rated indonesia as the third choice in ASEAN countries after Thailand and Malaysia. For foreign businessmen, Indonesia is not a bad place to invest as there is still abundant manpower available for relatively low wages. They are also free to transfer their money to their own countries because there are no limits on the transfer of foreign exchange in Indonesia. However, several questionnaire surveys held among Japanese companies regarding their concerns related to the investment climate of Indonesia show that they are not satisfied with Indonesia's policies on tax incentives, land ownership, and company ownership.

From the point of view of tax incentives, Indonesia is considered to be behind other countries because Indonesia no longer offers tax holidays or other taxation incentives which are comparable with those in other countries although taxation level is relatively low (15% to 35% of taxable income) as mentioned. Concerning land ownership and company ownership, Indonesia is the only country out of ASEAN countries which does not allow 100 % ownership.

In addition, the low per capita income in Indonesia is a hindrance to the development of the domestic market. With per-capita income as low as the present condition, it is difficult to increase the market volume. Thus there are a lot of factories which are operating way below their capacity. It is only possible to increase the market volume by exporting as pointed out in REPELITA V.

Despite some negative factors, investment prospects in Indonesia are quite good. The last devaluation has made exports from Indonesia attractive. The facilities and special concessions made available through deregulation have made Indonesia's products more competitive in price and services and thus made possible and increase of investments. At the same time, potential investors have started to appreciate economic stability in Indonesia. Even though Indonesia's economy has been struck by oil price fluctuations and by the effect of dropping prices for various primary commodities Indonesia was not subject to severe economic crises in comparison with those experienced by Malaysia (1985 recession), Philippines (minus growth in 1985) or even Singapore (minus growth in 1985).

(2) Investment Trend

Both domestic and foreign investment has been expanding significantly in recent years, from US$ 826 million and Rp 1,417 billion in 1986 to US$ 1,718 million and Rp 19,594 in 1989 (BKPM approval base). In 1990, the foreign investment has reached more

than US$ 7 billion only in the first 9 months. The figures show the following distinguished trend.

1) Foreign investment to Indonesia has shown strong recovery since 1987 from the sluggish movement before, through a notable progress of simplifying and reducing other regulatory impediments. The investment approval process was streamlined, licensing requirements were reduced, the bias against foreign investment was curtailed and the role of the local content program was reduced through a series of steps between 1986 and 1987.

2) The Japanese investment which ranked as the highest since 1983 showed a decline in 1988. The reason was that there was no big investment project which has been brought about by the Japanese firms. It seems, however, there has been no major change in continuing strong investment trend from Japan.

3) Also noteworthy is a drastic upsurge of investment from so-called Asian NIES, namely South Korea, Hong Kong, Taiwan and Singapore. While it was only about 10 percent of total foreign investment from these countries, it reached more than one quarter of total in 1989. The boom of foreign investment from these countries, having started toward Thailand, has recently reached Indonesia. The main subsectors are the export-oriented, labor-intensive light industries such as textile, wearing apparel and shoe-making.

4) Manufacturing is still a dominant sector for investment, but also service sectors such as trading, banking and hotels have grown rapidly.

5) With regard to the regional distribution of investment, Jawa Island is the dominant region, especially for the foreign investment. Among other provinces, the

investment in West Jawa Province has been growing faster and steadily, more than 50 percent per year for foreign investment since 1986 and more than 100 percent for domestic investment, because of the locational advantages.

Table 2-10 Foreign Investment by Country (US$ million)

	1983	1984	1985	1986	1987	1988	1989
Japan	548	112	127	329	532	247	769
US	588	95	111	154	73	672	348
Netherland	92	44	12	23	123	271	282
W.Germany	109	17	66	17	331	956	7
UK	73	14	77	46	13	121	43
Korea	2		59	12	23	199	466
Hong Kong	126	706	53	10	135	240	407
Thaiwan				18	8	910	158
Singapore	24	16		102	6	240	166
Others	1320	103	324	115	213	552	2072
Total	2882	1107	859	826	1457	4408	4718

Source: BKPM

Table 2-11 Foreign Investment by Sector (US$ million)

	1983	1984	1985	1986	1987	1988	1989
Industry							
Food	83	77	6	34	54	231	223
Textile	12	1	7	9	118	213	581
Wood	13			32	45	104	106
Paper	722		25	47	109	1479	211
Chemicals	15	36	45	3	3	6	77
Petroleum	168	60	292	290	205	1539	2435
Non-metalic Mineral	49		3		251	30	184
Metal	836	609	65	39	7	61	106
Machinery	716	210	244	82	57	129	292
Other	1	9			3	10	30
Others	267	105	172	290	605	606	474
Total	2882	1107	859	826	1457	4408	4719

Source: BKPM

Table 2-12 Foreign Investment by Province (US$ million)

	1983	1984	1985	1986	1987	1988	1989
JAVA							
DKI Jakarta	775	269	258	258	440	335	521
Jawa Barat	1308	758	450	422	606	1043	1476
Jawa Tengah	22			57	32	25	1703
Yogjakarta							
Jawa Timur	72	57	70	9	208	237	330
OUTSIDE JAWA	705	23	81	80	171	2768	689
TOTAL	2882	1107	859	826	1457	4108	1719

Source: BKPM

Table 2-13 Domestic Investment by Sector (RP billion)

	1983	1984	1985	1986	1987	1988	1989
Industry							
Food	195	92	91	215	456	1728	549
Textile	104	126	97	262	1289	2057	3563
Wood	174	48	62	127	765	1486	773
Paper	533	11	16	41	296	237	1137
Chemicals	51	2	30	40	38	19	16
Petroleum	779	272	928	773	2047	3039	4035
Non-metalic Mineral	2048	213	178	17	132	371	267
Metal	71	562	25	221	74	181	2039
Machinery	853	110	202	142	410	279	507
Other	4		4	3	10	98	48
Others	2230	664	2117	2576	4748	5169	6660
Total	7042	2100	3750	4417	10265	14664	19594

Source: BKPM

Table 2-14 Domestic Investment by Province (RP billion)

	1983	1984	1985	1986	1987	1988	1989
JAVA							
DKI Jakarta	891	537	631	442	777	1031	1420
Jawa Barat	1757	601	1000	1114	3854	5389	9275
Jawa Tengah	1331	130	246	206	565	870	891
Yogjakarta	27	7	36	44	28	167	52
Jawa Timur	874	295	406	321	499	1026	2822
OUTSIDE JAWA	2162	530	1431	2290	4542	6181	5134
TOTAL	7042	2100	3750	4417	10265	14664	19594

Source: BKPM

2.4 Potential Industries and Industrial Land Demand in West Jawa

(1) Potential Industries in West Jawa

A location decision is considered to be one of the most important considerations in starting manufacturing enterprise. It is usually based on a variety of factors concerning location. These location factors vary from manufacturer to manufacturer depending on types of goods produced, types of raw materials used, kinds and nature of technologies employed, availability of workers, and so forth. For those processing natural resources directly, proximity to resource sites should be one of the most important factors for their manufacturing locations, while the presence of international ports in the close vicinity is essential for those relying largely on imported raw materials.

As an archipelago consisting of some 13,000 island, Indonesia shows an interesting spatial profile in population and economic activities. The most remarkable fact is that Jawa island, which is only 7 percent of total land, accommodates more than 60 percent of population and accounts for 86 percent of the total employment in the medium and large scale manufacturing sector.

In order to identify potential industry and potential investor, questionnaire survey was carried out. The questionnaire was sent to more than 500 selected Japanese companies which have interest in investing abroad, particularly in Asean countries. These companies are 1) participants of investment promotion seminars for Indonesia sponsored by major Japanese banks, potential foreign investors listed by JETRO, and potential investors listed by the similar questionnaire survey for industrial estates in Thailand and in the Philippines. Distributed questionnaire is attached in appendix part.

The summary of the questionnaire survey is as follows.

Number of sample: 528

Number of response: 110

Number of response showing interests to invest in Indonesia and/or to locate in the proposed industrial estate in Bekasi (see Chapter 4): 56

The total positive responses, 56 companies' responses, are summarizes in the Table 2-13 and 2-14. Among them, six companies are showing keen interests in the proposed industrial estate, two in chemical, one in transport equipment and three in electrical products. Among the 34 responses showing interests in the proposed industrial estate nine are textile/apparel, five are metal products and four each in chemicals and electrical products.

Table 2-15 Potential Investors to Proposed Industrial Estate
Degree of Interest

(Companies)

		strongly interested	interested	less interested
Invest to Indonesia	having plan	3	3	4
	considering	3	31	8

Samples not answering both questions are ommited

Tab 2-16 Degree of Interests by Sector

Sector	strongly interested	interested
Food		3
Textile/Apparel		9
Cheminal/Plastic	2	4
Rubber		1
Wood/Furniture		
Glass/Ceramics		1
Metal Products		5
Machinery		3
Transport Equipment	1	1
Electrical Products	3	4
Others		3
TOTAL	6	34

Another source of information on potential industries is the "Potential Investors from Japan to ASEAN Countries" which is published by ASEAN Promotion Center on Trade, Investment and Tourism. Among the listed 783 companies in 1989, 247 companies showed interests to invest in Indonesia. The sub-sectoral distribution is shown in the following table.

Table 2-17 Potential Investors to Indonesia

Food	13
Textile/Apparel	41
Wood/Furniture	37
Pulp/Paper/Printing	12
Chemical	17
Rubber	6
Leather	5
Ceramic	9
Iron/Metal	6
Metal Products	25
Machinery	35
Electrical Products	11
Transport Equipment	6
Precision Instruments	5
Others	16
TOTAL	247

Source: Potential Investors from Japan to ASEAN Countries, ASEAN promotion Center on Trade, Investment and Tourism, 1989

The two source of data shows a notable new investment trend. Comparing to conventional resource oriented or import-substitution industries in the past, the new types of investment, thus the potential industries in Indonesia, are export-oriented labor-intensive light industries. With the consideration of global economies reforming trend (liberalizing and promoting trade) and Indonesia's comparative advantages of

industrialization (availability of low cost labor and stable political and economical conditions), labor-intensive export-oriented industries such as textile/apparel, electrical products assembling and transportation equipment components and assembling, and some resource processing industries such as wood/furniture, chemical and rubber products are the potential industries in Indonesia for the near future.

(2) Industrial Land Demand in West Jawa

During the last five years, investment in Indonesia has shown a strong upward trend. The average growth rates of both foreign and domestic investments were more than 50% per year in 1985-89. This active investment boom has been induced by a series of deregulation of investment and also by favorable changes of the global economic circumstances. It is expected that the upward trend will last for at least three to five years, by taking into account both the comparative advantages among the ASEAN countries and steady growing Indonesia's economy.

For the projection of whole investment in Indonesia, the following three cases, relatively conservative ones, were assumed. All cases are based on 1989's total investment approval by BKPM, amounting US$ 15,601 million (domestic:10,886 and foreign:4719).

Pessimistic Case: starting with 30% increase in 1990, lowering growth rate by 10% per year and no increase from 1993.

Most likely Case: starting with 30% increase in 1990, lowering growth rate by 5% per year and keeping the level from 1996.

Optimistic Case: starting with 30% increase in 1990, keeping the pace until 1992, lowering growth rate by 5% per year and keeping the level from 1998.

Table 2-16 shows the projection of investment in Indonesia until the year 2000 based on the above assumptions.

Manufacturing sector has grown faster than the other sectors, both foreign and domestic investments. In 1986, the share of manufacturing sector was about half of total investment, and in 1989 it was about 70%.

During the last five years, the location of capital investment has distributed to the outside of DKI Jakarta. This happened because DKI Jakarta has already been saturated, and difficult to get land for industrial purpose. The direction of investment has moved toward West Java Province, mainly to BOTABEK area (surrounding areas of Jakarta, consisting of Bogor, Tangarang and Bekasi).

The location of investment in Indonesia in the next future are supposed to concentrate in BOTABEK area. This happens because of limitation of space in DKI Jakarta for giving the better conditions for living. It is paralleled with the Government policy for industrial location distribution to the outside Jakarta. Another factor, this is a chicken-and-egg relation, to be considered BOTABEK as the most active area for manufacturing investment is that some of the industrial estate development projects will be carried out with foreign partners who have powerful marketing capabilities. A couple of industrial estates have already got commitments from some manufacturing companies to be located in the estates. That means there are additional waiting investor looking for a suitable place to locate their plants.

The followings are the assumptions for estimating the future industrial land demand in West Jawa Province;

a. share of manufacturing in total investment: 70%
b. share of West Java in Indonesia: 10%
c. investment cancellation after BKPM approval: 20%
d. average amount of investment: US$15 million
f. average land demand per project: 1 ha

g. industrial land for waiting investors: 100 ha(1990)
50 ha(1991)
20 ha(1992)

Table 2-17 shows the industrial land demand in West Jawa until the year 2000, calculated with the above assumptions. Based on the assumptions, the cumulative demand of industrial land in West Jawa from 1990 till 1995 is 3,007 ha, which is equivalent to 4,296 ha of industrial estate land (70% for industrial use), and 6,025 ha (8,607 ha of industrial estate) until the year 2000.

Table 2-18 Projection of Investment in Indonesia(BKPM approvals) (US$ million)

Year	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Most likely case	15,605	20,287	25,358	30,430	34,994	38,494	40,418	40,418	40,418	40,418	40,418	40,418
(growth rate)		30.0%	25.0%	20.0%	15.0%	10.0%	5.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pesimistic case	15,605	20,287	24,344	26,778	26,778	26,778	26,778	26,778	26,778	26,778	26,778	26,778
(growth rate)		30.0%	20.0%	10.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Optimistic case	15,605	20,287	26,372	34,284	42,855	51,426	59,140	65,054	68,307	68,307	68,307	68,307
(growth rate)		30.0%	30.0%	30.0%	25.0%	20.0%	15.0%	10.0%	5.0%	0.0%	0.0%	0.0%

Table 2-19 Industrial Land Demand in West Jawa (ha)

Year	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Most likely case(1)		303	379	454	523	575	604	604	604	604	604	604
Pesimistic case		303	364	400	400	400	400	400	400	400	400	400
Optimistic case		303	394	512	640	768	883	971	1,020	1,020	1,020	1,020
Waiting Investors(2)		100	50	20								
Total Demand(1+2)		403	429	474	523	575	604	604	604	604	604	604
Accumulation(Net, Industry)		403	832	1,306	1,829	2,403	3,007	3,611	4,214	4,818	5,421	6,025
Accumulation(Gross Land)		576	1,188	1,866	2,612	3,434	4,296	5,158	6,020	6,883	7,745	8,607

CHAPTER 3

INDUSTRIAL ESTATE DEVELOPMENT AS INVESTMENT PROMOTION

Chapter 3 INDUSTRIAL ESTATE DEVELOPMENT AS INVESTMENT PROMOTION

3.1 Government Industrial Development Policy

Manufacturing is Indonesia's greatest hope for economic growth during Repelita V (1989 to 1994), but also during the second long term development period extending well into the 21st century, starting with Repelita VI (1994 to 1999). The development of manufacturing is geared towards industries producing export goods, absorbing manpower to a large extent, processing agricultural goods and producing industrial machinery. Only thus a reliable platform can be established for the long term progress in focus during the so-called takeoff period starting with Repelita VI. The followings are the rationale to promote the industrial sector as a high priority sector for stimulating economic growth and expanding employment.

a. economic growth and development is a central goal of Government policy

b. economic growth requires export growth to pay for needed imports and to service debts

c. given the level and uncertainty of oil prices, and Indonesia's level of proven oil reserves, the only reliable source of export growth for Indonesia is a wide range of non-oil export both from agriculture and manufacturing

d. non-oil export growth requires an efficient, low-cost, productive economy to enable firms to compete in world markets, in turn requiring a competitive domestic market

e. protection and Government controls, which were chosen as policy instruments for many years, hamper the competitive domestic market; they have created the "high-cost" economy that Indonesia is now trying to escape

f. in order to encourage exports and economic growth, therefore, Indonesia needs to dismantle the protection policies and Government controls, to "deregulate" the economy

g. non-oil Government revenues must also be developed if Government is to play a constructive role in development

h. the benefits of deregulation and economic growth must be widely and evenly spread among the population

The structural adjustment activities were derived from this chain of reasoning. They comprised three major components: getting prices right, letting markets work, and reforming public institutions:

In all these fields structural adjustment was carried out and is still in progress. Now, political management of the economy aims basically at deregulation, liberalization, simplification of procedures and promotion of private initiatives. The purpose is to fundamentally change the industrial policy, i.e. focusing on cost and quality competitive export diversification instead of the often insufficient high-cost import substitution. This new policy has created a favorable business climate, making everyone proud to participate in producing and marketing goods "Made in Indonesia".

The core of the economic development policy comprises structural transformation of the economy, increase of employment opportunities, spatial distribution of business opportunities, diminution of import dependence, growth in exports of manufactured goods, enhancement of software capabilities including design and engineering, development of industrial growth centers in various regions and exploitation of energy and natural resources as well as human resources. These processes are interrelated. Regarding industrial growth centers, it is important to note that they embrace a system of specifically designed territories or areas in which industrial growth will

take place, i.e. industrial zone, industrial estates, small scale industry settlements, small scale industry facilities and small scale industry centers.

Main strategies for a rational development pattern of Indonesia's industry in the years ahead are:

a. deepening and strengthening the industrial structure and its relation to other sectors of the economy, in particular agriculture, forestry and mining

b. developing the machinery industry, with the priority of commodities for a captive market, which is increasing: establishment of standards and the ability for engineering and design

c. developing small scale industries, with the priority on the marketing problems along with the "foster-parent" plan (assistance to solve technical and marketing problems, training), technical guidance and capital assistance

d. developing the export of industrial products by continuously increasing competitiveness to strengthen the role of export for industrial production

e. developing practical training facilities, engineering and design of industries and system development, and other software concerning the manufacturing of machinery, machine tools, electronics and of factories as a whole

f. developing entrepreneurship an management personnel, including skilled manpower

Another, important feature of Government policy regarding the development of manufacturing is to have investors go to parts of the country, especially outside Java.

3.2 Functions of Industrial Estate

Industrial estates are part of a development strategy called spatial management. It is to create an effective and efficient pattern of land utilization, promote the linkage of industrial development with the development of other sectors and thus achieve integrated and balanced regional economic and social progress.

The expression "industrial estate" dates back to the last century. In developing countries the tool became quite popular in the 1950s. Roughly a decade later came the Export Processing Zones (EPZ), although their number is much smaller. Industrial estates can take various forms reflected in different terms: industrial area, district, park, town, and zone. Some of these terms are also used in a different sense.

Industrial zones are merely areas of land which have been designated officially for industrial use, normally clustering basic industries, multifarious industries and small scale industries. Official zoning is essentially regulatory in nature and usually implies certain controls over land use, type and density of industrial settlement, compliance with environmental regulations and other requirements. Such zones may already be fully or partially occupied by industrial plants, they may consist of vacant land which might be improved/developed or not, and there might be other features such as residential houses or commercial buildings in industrial zones.

An industrial area is a peace of land purchased by a public or private developer and is subdivided into improved plots, usually varying in size, which are sold or leased to industrial enterprises or persons desirous of establishing manufacturing ventures. An industrial are can be defined as a real estate operation.

The numerous definitions of "industrial estate" point out several essentials beyond real estate development. An industrial

estate

a. is an area principally suitable for industrial utilization

b. which is developed as a whole with transport and utility infrastructure

c. subdivided into marketable plots

d. offered to interested persons or enterprises on a purchase or lease basis

e. planned, implemented and operated by a permanent management body

f. operated at principles advocating at least full cost recovery, but certainly prohibiting speculation

Export Processing Zone (EPZ) is an area to promote manufacturing or assembling products for export principally through the attraction of overseas investment. Their main purpose is generating additional employment and foreign exchange earnings, but also acquisition of technologies and skills required for modern industrial development. An EPZ is a manufacturing enclave where raw materials and/or semifabricated goods enter duty free and finished products are exported, again customs exempt. In some cases, a small portion of the production is allowed for local marketing, requiring specific packaging and labeling.

In all aspects of land acquisition, land development, implementation and operation the EPZ is comparable to the industrial estate. The significant difference is their location within or in proximity to a port or airport area. Additional features are excellent transport and communication facilities and the waiving of a number of laws and regulations for the area to ease access of products to the world market and to attract foreign investment.

It has been often said that there are minimum conditions for the successful establishment and operation of an industrial estate, which, if ignored, almost certainly lead to failure. They are:

a. markets with sufficient purchasing power for locally manufactured goods as well as availability of raw material resources to be processed

b. entrepreneurs able and willing to go into industry; the existence of manufacturing units and workshops at a certain location is a good indicator

c. availability of skilled workers or of workers who can be trained in skills needed

d. consistent Government policies on industrial estates convincingly demonstrating their comparative advantages

e. appropriate institutions with competent professicnal supervisory board, management and staff to plan, implement, operate and monitor industrial estates

f. adequate off-site physical infrastructure in terms of water, sewerage, electricity, transport, telecommunications for the types of industries envisaged

g. effective and efficient on-side physical infrastructure and service packages at competitive conditions

In using industrial estates as a promotion tool for industrial development, the region or the country can expect a variety of economic and social benefits:

a. economies of scale can be achieved from overall planning, implementation and operation of all elements of the project

b. external economies are derived from the physical infrastructure and the clustering of industrial enterprises

c. concentration of many plants allows for the provision of services (electricity, water, telephones), otherwise more difficult to obtain

d. land developed with necessary infrastructure is available to suit the immédiate and future needs of industrial enterprises

e. financing individual plants might become easier through the assistance of the estate company

f. time needed from planning an industrial factory to starting operation can be reduced

g. provision of services to industry, e.g. common facilities and advisory services, is economically more feasible

h. provision of services to workers, such as training or bus transportation is easier

i. protection of the environment form unpleasant industrial odors, noises, waste water and other pollution hazards is relatively easier

j. setting-up of industries in an orderly form is guaranteed, thus contributing to spatial development of a town and avoiding location of factories in residential, commercial, or agricultural areas.

3.3 Industrial Estates Development in Indonesia

Industrial estates were introduced in Indonesia by BAPPENAS in the early 1970s in Jakarta and Surabaya when industrial land was in short supply and ribbon development along major highways eroded all concepts of spatial land management. General industrial estates came under the supervision of the Ministry of Industry.

In Indonesia at the moment, there are five industrial estates managed by state companies, namely: the Jakarta Industrial Estate Pulogadung (JIEP), the Surabaya Industrial Estate Rungkut (SIER), the Cilacap Industrial Estate (CIE), the Medan Industrial Estate (MIE) and the Ujung Pangdang Industrial Estate(UPIE).

In addition to the above mentioned five industrial estates, the government is currently preparing to develop more estates, two of which are under design and construction (Lampung Industrial Estate and Cirebon Industrial Estate) covering areas of 274ha and 61.8ha respectively. Five more are under study i.e. in Palembang (South Sumatra), Padang (West Sumatra), Lhok Seumawe (Aceh), Surakarta (Central Java) and Samarinda (East Kalimantan).

In Indonesia, there is another type of Industrial estates which have been developed by the private sectors. At the beginning, most private developers were only active in housing projects. Then they gradually went into commercial, recreational and also industrial land development. Sometimes this type of industrial land was called "industrial estate" although legally private companies were not entitled to own and operate industrial estates. Nevertheless, some real estate developers in Jabotabek, Surabaya and Semarang use this term to describe their activity of converting raw land into plots suitable for industrial development.

Since domestic private investors are experienced and willing to develop industrial estates in Indonesia. BKPM already

introduced this business activity in its priority list in 1987. With the Presidential Decree No. 21 of May 1989 issued as another step of the Government's policy of deregulation, it has become possible for foreign investors to establish private industrial estates in Indonesia. The former condition that 20 % of the equity must be held by the Government or state-owned enterprises was abolished. By the Presidential Decree No. 53/89 which was announced by Coordinating Minister for Economic Affairs Radius Prawiro on 1 November, 1989, private companies, foreign and national, are now allowed to develop industrial estates without having to involve the government or its firms in the ownership of the estates. Foreign and domestic investment licenses for industrial estate development are issued by BKPM.

In this context, the former land developers who had been acquiring massive land and selling to the industrialists individually, and business groups, some of them with foreign partners, have been increasingly trying to get official approvals to operate "industrial estates".

After the issuing of the Presidential Decree No. 53/1989, about 50 applications were submitted to BKPM, some of them are joint-venture companies with foreign companies. As of May 1990, in Indonesia, 10 provinces have industrial estates with 4 types of project conditions : operation, under construction, permit and application. The total number of the established projects is 61 units with the biggest distribution of industrial estate in West Java (28 projects), East Java (13 projects), and DKI Jakarta (9 projects), From the total of projects, 14 projects are handled by government and the rest by private sector with condition of projects being 16 projects in operation, 9 projects under construction, 13 projects permit and 23 projects application (Table 3-1,3-2).

From 28,281.9 ha land that have been allocated for Industrial Estates in Indonesia, only 5.77 % (1,630.7 ha) are developed, 6.92 % (1,958.2 ha) under construction and the rest still under developed. Where as from 1,630.7 ha developed area,

the occupancy rate is 83 %, and the biggest contribution of developed areas are DKI Jakarta, West Java and East Java.

Details of the industrial estates in Indonesia are shown in Appendix B.

Table 3-1 Distribution of Industrial Estate in Indonesia by Owner and by Operational Status

No.	Provinces	Owner		Operational Status				Total No. of Projects
		Governm't	Private	Operation	Under Construc.	Permits	Applica-tion	
1	North Sumatera	1	0	1	0	0	0	1
2	Riau	0	2	0	0	0	2	2
3	Lampung	1	0	0	1	0	0	1
4	DKI Jakarta	3	6	9	0	0	0	9
5	West Java	3	25	3	5	9	11	28
6	Central Java	1	3	1	1	2	0	4
7	East Java	3	10	1	1	1	10	13
8	East Kalimantan	1	0	0	0	0	1	1
9	South Sulawesi	1	0	1	0	0	0	1
10	Central Sulawesi	0	1	0	1	0	0	1
	Indonesia	14	47	16	9	12	24	61

Source: Ministry of Industry and various sources

Table 3-2 Distribution of Land Area by Development Stage in Indonesia

(ha)

No.	PROVINCES	OPERATIONAL			UNDER CONSTRUCT'N		PERMIT	APPLICA-TION	TOTAL AREA
		Total Area	Developed Area	Occupancy Rate (%)	Total Area	Construct Stage			
1	North Sumatera	220.0	78.5	95.0	0.0	0.0	0.0	0.0	220.0
2	Riau	0.0	0.0	0.0	0.0	0.0	0.0	530.0	530.0
3	Lampung	0.0	0.0	0.0	275.0	77.2	0.0	0.0	275.0
4	DKI Jakarta	1633.1	810.5	91.0	0.0	0.0	0.0	0.0	1633.1
5	West Java	770.0	336.0	60.0	2071.8	981.0	6592.0	2990.0	12423.8
6	Central Java	240.0	78.0		300.0	300.0	600.0	0.0	1140.0
7	East Java	319.0	211.6	95.0	500.0	500.0	318.0	10390.0	11527.0
8	East Kalimantan	0.0	0.0	0.0	0.0	0.0	0.0	230.0	230.0
9	South Sulawesi	203.0	86.1	73.9	0.0	0.0	0.0	0.0	203.0
10	Centre Sulawesi	0.0	0.0	0.0	100.0	100.0	0.0	0.0	100.0
	INDONESIA	3385.1	1630.7	83.0	3246.8	1958.2	7510.0	14140.0	28281.9

Source: Ministry of Industry and Various Sources

3.4 Industrial Estate Development in West Jawa

(1) Existing and Planned Industrial Estates in West Jawa

As shown in the previous section, there are 28 industrial estates in West Jawa, consisting of 3 in operation, 5 under construction, 9 with permits and 11 applied, which is 45 percent of the total number of industrial estates in Indonesia. The reason why so many industrial estates are going to be developed in West Jawa is that rapidly growing industrial land demand created by the current investment boom.

Among the areas in West Jawa, the most concentrating area of industrial estates in the near future is BOTABEK (consisting of Bogor, Tangerang and Bekasi), which is the surrounding area of Jakarta. This BOTABEK area is suitable for export-oriented, labor-intensive industries, because the area has comparative advantages for such industries. One is good supporting facilities such as transportation, electricity and telecommunication, and others are the availability of engineers and labor, and easy access to the market both domestic and abroad. The other factor is the limited availability of industrial land in Jakarta, which is the highest preferable area of such labor-intensive export-oriented industry.

The Government of West Jawa has allocated 18,000 ha for industrial estate, which includes the above-mentioned existing and ongoing private industrial estates. The allocation of the land to sub-region is as follows.

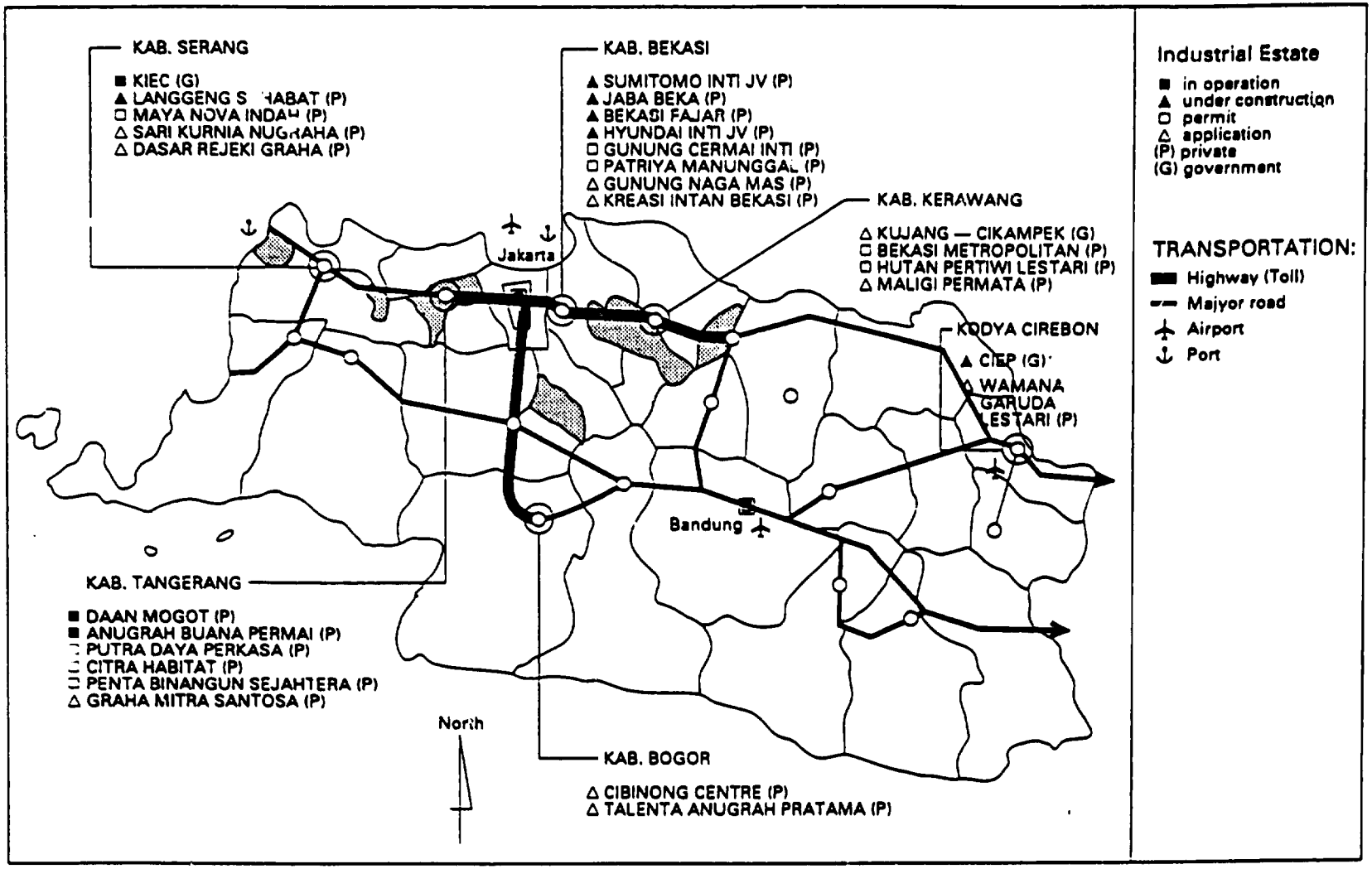


Figure 3 . 3 Industrial Estates in West Java

Table 3-3 Industrial Estate Land Allocation

Regency	Area(ha)
Cirebon	500
Karawang	5,500
Tangerang	3,000
Serang	3,500
Bogor	500
Purwakarta	1,000
Sumedang	400
Bandung	600
Bekasi	3,000
TOTAL	18,000

Source: West Jawa Government

(2) Industrial Land Demand and Supply

As shown in Chapter 2 Section 4 (2.4), industrial land demand in West Jawa will be some 3,000 ha during 1990 - 95, and another 3,000 ha for the next 5 years upto the year 2000. Since the net utilization rate for industries in the industrial estate is 70 percent, the gross land demand for industrial estate will be 4,300 ha for 1990 - 95 and another 4,300 ha for 1996 - 2000. For the first stage, new industrial location will be concentrated toward BOTABEK area, then gradually spreading out to other areas.

On the other hand, the West Jawa Government has allocated 18,000 ha of land for industrial use. By comparing this land allocation to the expected industrial land demand, it should be pointed out that the land allocation by the government far exceeds the land demand.

In order to understand the industrial land demand at this stage of development, it is worth to review the booming land demand in Thailand for the last few years. In the case of

Thailand, the current investment boom started in 1987, just before the boom of Indonesia. Before 1987, there were about 1,000 ha of industrial land developed as industrial estates, which had been full of operating factories. Since 1987, another 3,000 ha of land has been developed as industrial estates, which just met the industrial land demand. In order to meet the current land demand, 1,400 ha of land is now under construction. In addition to the industrial estates under construction, Thailand has a plan to prepare additional 4,000 ha of industrial estates during the next 5 years. These are the data for the whole Thailand.

On the other hand, it must be considered that too much supply in the early stage may cause financial difficulties to the estate developers, and also that too large development without any products is absolutely wasting the scarce resource of land in the long run.

The decision by the Government in March 1990 to suspend issuing the licenses for industrial estate development for the time being, was a reasonable one. If the booming demand in the future will be more than expected, then the development should be proceeded in appropriate timing. It is difficult at the moment foreseeing the future, even five years with confidence, since investment decisions are to be affected by various factors not only in domestic ones but also of global scale conditions. Therefore, careful attention should be paid to the further development of industrial estates in West Jawa.

(3) Socio-economic Impact of Industrialization

Since the activities of industry can not solely stand by themselves, but requires the supports from the area such as labor supply, service activities, transportation and so on. It also involves the economy as a nation wide. Preliminary calculation shows significant contributions not only on the region but also on the national economy. The followings are the assumptions for estimation.

a.	number of workers in manufacturing:	150 p/ha
b.	number of workers in the area in supporting sector:	60% of a.
c.	population depending on a.+b.:	3 p/worker
d.	gross output from manufacturing:	US$30,000 /worker
e.	gross output increase in Indonesia induced by production of manufacturing goods:	160% of d.
f.	value added in manufacturing:	35% of d.
g.	value added increase in Indonesia:	40% of e.
h.	import for intermediate input in manufacturing:	30% of d.
i.	export of manufactured goods:	70% of d.

(note: all assumptions are based on the past data in Indonesia obtained from Statistical Year Book of Indonesia 1988, Industrial Statistics 1987, Indonesian Input-Output Table 1985 and so on, and modified by taking into account the specific characteristics of the expecting manufacturing sectors)

Table 3-5 Socio-Economic Impact of Industrial Estate Development in West Jawa

Year	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Factories in Operation(ha)			403	832	1,306	1,829	2,403	3,007	3,611	4,214	4,818	5,421
Number of Workers(,000)												
Manufacturing			60	125	196	274	361	451	542	632	723	813
Service(including outside)			36	75	118	165	216	271	325	379	434	488
Total Workers			97	200	313	439	577	722	867	1,011	1,156	1,301
Depending Population			290	599	940	1,317	1,730	2,165	2,600	3,034	3,469	3,903
Economic Impact (US$ million)												
Gross Output(Manufacturing)			1,813	3,742	5,877	8,229	10,816	13,532	16,248	18,964	21,680	24,396
Gross Output Increase(Indonesia)			2,901	5,988	9,404	13,166	17,305	21,651	25,996	30,342	34,688	39,034
Value Added(Manufactuing)			635	1,310	2,057	2,880	3,785	4,736	5,687	6,637	7,588	8,539
Cumulative Value Added(Manufacturing)				1,944	4,001	6,882	10,667	15,403	21,090	27,727	35,315	43,854
Value Added(Indonesia)			1,160	2,395	3,761	5,266	6,922	8,660	10,399	12,137	13,875	15,614
Cumulative Value Added(Indonesia)				3,556	7,317	12,583	19,505	28,166	38,564	50,701	64,576	80,190
Trade (US$ million)												
Import for Input			544	1,123	1,763	2,469	3,245	4,060	4,874	5,689	6,504	7,319
Export of Products			1,269	2,620	4,114	5,760	7,571	9,472	11,373	13,275	15,176	17,077
Net Foreign Currency Earning			725	1,497	2,351	3,292	4,326	5,413	6,499	7,586	8,672	9,758
Cumulative Net Foreign Currency Earning				2,222	4,573	7,865	12,191	17,604	24,103	31,688	40,360	50,119

3.5 Investment Promotion Strategy through Industrial Estate Development

An industrial estate is an area where various manufacturing activities are located. Occupants in industrial estates can utilize the facilities such as roads, electricity, telephone and water with required standards. Integration of the industrial facilities will make initial investment cost-effective even the higher prices of lands. The accumulation of various industrial activities will create an interaction among each type of industries, and it can strengthen industrial structure either in the estate or among industrial estates.

Because of favorable factors both external (appreciation of Japanese Yen and NIEs currencies, and problems in China and the Philippines) and internal (stable political and economic conditions, availability of manpower, reforms of government regulations and improvement of basic infrastructure), an opportunity to attract export-oriented manufacturing industries for Indonesia has been greatly enhanced.

In order to attract these export-oriented investment, high quality industrial estates located near major cities must be built in a very short period.

So far, the private industrial estate development program is the best solution to meet the need in the very short time. Indonesian Government has responded to the existing high demand for industrial estate by issuing the Presidential Decree No.53/1989, which allows both private domestic and foreign companies to invest in industrial estates. It was an appropriate step to solve the shortage of high quality industrial estate in Indonesia.

Compared with Thailand and Malaysia, however, Indonesia has been lagging behind in attracting medium to high value-added export-oriented in the past few years.

Formulation of Industrial Location Program and Industrial Estate Development Strategy

Because of the booming foreign and domestic investment in manufacturing sector in Indonesia, industrial land demand will is rapidly increasing. This land demand stimulates industrial land supply by means of industrial estate development. These private business activities, which are motivated by profit maximization, often cause unfavorable effects to society, such as environmental problems and land speculation.

Industrial estate development is one of the best ways to avoid problems of spatial land use planning and environmental pollution. But this could work out satisfactorily when all expected functions would be well established and managed. At this moment, West Jawa Government allocates 18,000 ha of land for industrial estate, which is more than twice as much as the industrial land demand until the year 2000. Industrial estates with all required functions can not be developed only by private developers but requires support by public sectors. That means public sector has to provide an appropriate size of counterpart fund.

It is, therefore, recommended to formulate a very practical industrial estate/zone location master plan with specific development program. This makes it possible to keep the quality of industrial estates in high level and thus to compete with industrial estates of other developing countries.

Urgent Needs for Off-site Infrastructure Development

Each industrial estate has its own plan to develop its own land facilitated with on-site infrastructure such as internal roads, water supply system, waste water treatment system, drainage. However, external infrastructure such as access roads, power supply network, telecommunication system, waste water discharge network to limited rivers or discharge canal are out

of their control. Even they are allowed to develop such infrastructure with their own contribution by the Authorities, it compel their construction costs to increase significantly and make the projects unfeasible.

On the other hand, if the developers start the development and sales of their products without confirmation of future development of external infrastructure, it is obvious to see negative impacts in the area such as pollution, population increase and congestion on roads. Another unfavorable scenario is that the country will lose the opportunity to catch the current foreign investment boom which is essential for better economic growth, even the developers provide internationally competitive industrial estates.

Therefore, cooperated and coordinated actions between private and public sectors will be essential. It is recommended that prompt actions to provide external infrastructure by public sector, even not in full scale, should be initiated in order to avoid future chaotic situation or losing the opportunity for possible economic development.

At this moment, electricity supply is the most critical factor for accelerated industrial development in Jawa. The Government has already announced the power shortage in the near future, which has made potential investors hesitate in coming to Indonesia in some cases. One of the solutions is to mobilize private sector, which has been already tried to arrange by the Government. This arrangement should be finalized as soon as possible and implemented smoothly.

Environment Control

The Government has already issued a series of regulations and decrees since 1982 in order to avoid environmental problems. However, in practice, prevention of pollution requires funds for both investment and people as well as materials and operation.

Huge amount of money required to prevent pollution often discourages investment. Therefore, cooperated efforts by private and public have to be done effectively. The Government should not only strictly enforce the regulations but also give some incentives. One of the practical ways is to provide soft loan for investing equipment for pollution prevention and to provide public disposal facilities.

Incentives and Deregulation of Bureaucratic Process

Indonesian Government has intensively deregulated the process concerning to industrial activities, such as investment regulation and trading reform. But, it is clear that incentives for foreign investors are less attractive than other ASEAN countries. Foreign businessmen also pointed out that the processes involving government offices were complicated thus time-consuming.

Another factor to be considered is to improve efficiency of distribution system for input and output. In order to compete with the foreign products in the world wide market, shortness and accuracy of delivery of input materials and manufactured products are essential. In other Asean countries, for example, the containers arrived at port can clear the custom within two days, while it takes two weeks in Indonesia. Therefore, improvement of efficiency of delivery, especially shortening the export and import process at customs office is essential. One of the solutions is to formulation of Export Processing Zone (EPZ) and Inland Bonded Port.

As more export-oriented investments come to Indonesia, development of new type of privately operated EPZ and inland bonded port facilities become essential ones. Three facilities and functions have been already available in Thailand, Malaysia and the Philippines. It is time for Indonesia to study possible system suitable for the country.

One of the ideas is to create a formal Industrial Estate Development Committee or Board by the initiative of the Ministry of Industry with an appropriate size of staff. This Committee works on issues related to strategic development of industrial estates/zone and issues related to investment promotion in cooperation with BKPM. All of other ASEAN countries already have this type of committee or authority for this purpose.

Shortage of Engineers and Labor

Indonesia has a potential to supply relatively low cost workers. This is one of the Indonesia's advantages. However, rapid industrialization makes a gap between labor demand and supplying capacity especially in engineers and skilled worker levels. As seen in the cases of Thailand and Malaysia, both of them have experienced rapid industrialization in the last few years and are facing the problem of labor shortage, Indonesia will encounter this serious bottleneck in the near future. Therefore, the capacity of labor supply in all levels of requirements should be carefully reviewed.

The First Successful Industrial Estate

With the Presidential Decree NO.53/1989, preparation of privately operated industrial estates are now in progress. Everyone interested in participating manufacturing in Indonesia is paying attention on how private industrial estate development goes and how successfully it will be dine. It is an opportunity for Indonesia to improve the credibility of the country by showing the successful implementation of industrial estate development by private sector with an assistance by the public sector. If the first ones will be implemented successfully, it is going to be a trigger for further successful implementation of industrial estate development, and thus be a trigger for further investment in manufacturing. But if it fails, the country will lose credibility and face difficulty to recover from

it. Therefore, it is recommended to concentrate development efforts on high potential industrial estates rather than spreading out efforts to a number of industrial estate developments.

CHAPTER 4

PROPOSED INDUSTRIAL ESTATE

Chapter 4 PROPOSED INDUSTRIAL ESTATE

4.1 Introduction

Industrial estates can be classified into two types from the viewpoint of location; coastal and inland industrial estates. The coastal industrial estates are suitable for heavy industries and petro chemical which need port facilities for transportation of large quantity of materials and products. On the other hand, the inland industrial estates are suitable for light industries and small-and-medium-scale industries which use less amount of materials and produce less amount of products. It is assumed that the proposed industrial estate will be located in an inland area and accommodate mainly export-oriented industries.

The location of investment in Indonesia in the next future are supposed to concentrate in BOTABEK (surrounding areas of Jakarta, consisting of Bogor, Tangarang and Bekasi) area. This happens because of limitation of space in DKI Jakarta for giving the better conditions for living. It is paralleled with the Government Policy for industrial location distribution to the outside Jakarta. Among the BOTABEK area, the higher potential areas for industry is considered to be Bekasi, due to several factors:

a. good accessibility
b. low density land
c. availability of both skilled and unskilled labor
d. availability of utility and water resources

In this study, therefore, the proposed industrial estate, named Jakarta International Industrial Estate Bekasi (JIIEB), is assumed to be located in Cikaresemi, Kabupaten Bekasi, eastward suburb of Jakarta. (Fig.4-1)

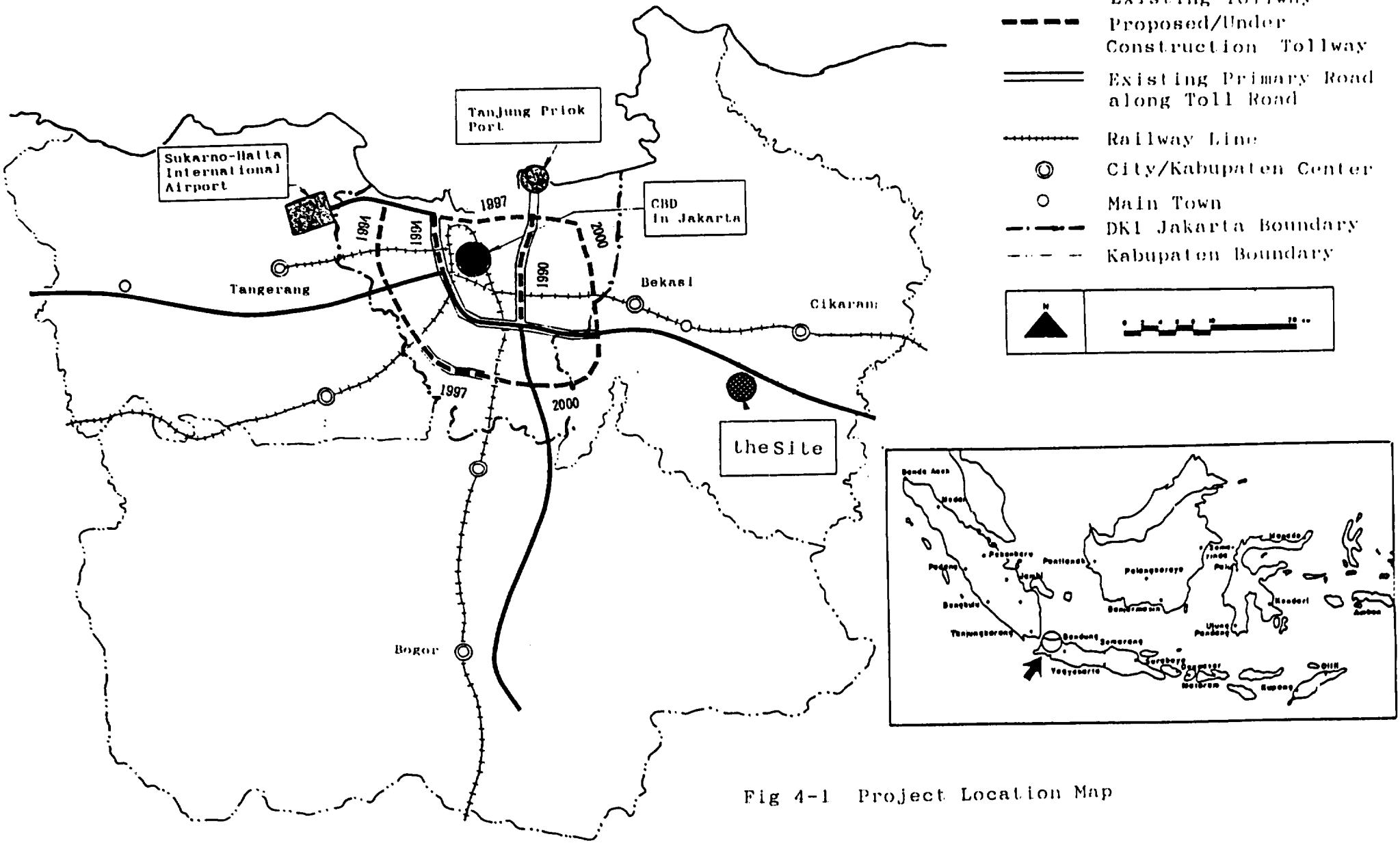


Fig 4-1 Project Location Map

4.2 Site Conditions

(1) Location of the Proposed Site

The estate is located in Cikaresemi, Kabupaten Bekasi, eastward suburb of Jakarta.

1) Road

The Jakarta-Cikampek Highway connects Cikarang with Jakarta. The distance between the Cikarang interchange and the estate is 2km on paved Kabupaten road Cikarang-Cibarusa (2 lanes).

It takes totally 40 minutes from the estate to the central business district in Jakarta by these roads.

The bus service is operated by PPD (state own company) and private companies.
There are three kinds of bus service, inter-regional, suburban, and inter-local lines in Jabotabek region.

The frequency of bus operation are about 30 times/day between Jakarta and Bekasi with 30 minutes journey, and 7 times/day between Bekasi and Cikarang with 30 minutes journey respectively.

However there is no direct bus service between the interchange and the estate at present.

If bus passengers would generate with some scale in a place, bus operation will be usually served for that place by private bus company. Therefore after the full implementation of the estate development, the bus operation will be expected serve for the estate.

In view of limited bus services to JIIEB, it is recommended that each company operating in the estate will arrange transportation for their own workers.

2) Port

The nearest international sea port from the estate is Tanjung Priok which is a largest one in Indonesia. The journey time is about 50 minutes by road with 45km distance from the estate.
The Tanjung Priok international port occupies only 12% of total export handling value and 47% of import value in Indonesia in 1987.
The cargo flow increased with the annual growth rate of 19% during 1985 to 1988.

Table 4.1 Handling Quantity of Container Cargo at Tanjung Puriok

(Unit: TEU)

Year	Loading	Unloading	Total
1985	78,304	76,960	155,264
1986	95,703	88,501	184,204
1987	106,534	97,020	203,554
1988	133,555	122,835	256,390

There are 3 piers for general and bulk cargo, and a pier for container cargo.
Existing handling volume, 27,000 TEU/month in 1988 is 49% of ratio of Existing handling capacity (55,200 TEU/month at the end of 1989).

Annual growth rate container freight are forecasted with 20% on volume until 1995, and 10% after 1995 in accordance with the report of "Utilization of Tanjung Priok Port, Connecting to Container Industry Development and Iron Industry" by National Port Authority, September 1989.

Based on above estimation, the existing capacity is enough to satisfied the demand until 1992.
The Department of Communication proposes the extension plan of the port in 1993.

3) Railway

Indonesia national railway serves only 8 lines per day between Cikarang and Jatinegara in Jakarta. It is not able to expect for railway transport for cargo and commuter services, because there is no step-up plan during Re-Pelita V. The current transportation mode as commuter purpose is mainly depend on bus service in Jabotabek area due to the cheap tariff and relative affluent operation frequency.

4) Airport

The Jakarta International Airport is located at about 20km distance north-westward of Jakarta. The airport is utilized for both international and domestic purpose with 1,800ha of land area, 2,400m of two runways.

The current take-off/landing capacity is 74 times per hour. The handling quantity of freight on the air-

port was 21,200 tonnes for international and 29,100 tonnes for domestic respectively in 1985.

According to the report of master plan of "Jakarta international airport Soekarno-Hatta in 1986" by Aero Ports De Paris, the growth rate of cargo traffic (freight-tonne) on the airport was 4.3% for international and 3.9% for domestic during 1976 to 1985.

There is no available data for identification of future capacity of aerial cargo.

(2) Climate Conditions

The average annual rainfall in Cikarang is 1,886mm during 1979 to 1987. The average number of rainy day is 96 days during the same period.

The normal dry period is between March and October in Cikarang and surrounding area.

(3) Topographic Conditions

The area is located on the elevation between 30-50m. The landform is generally formed as flat to undulating plains.

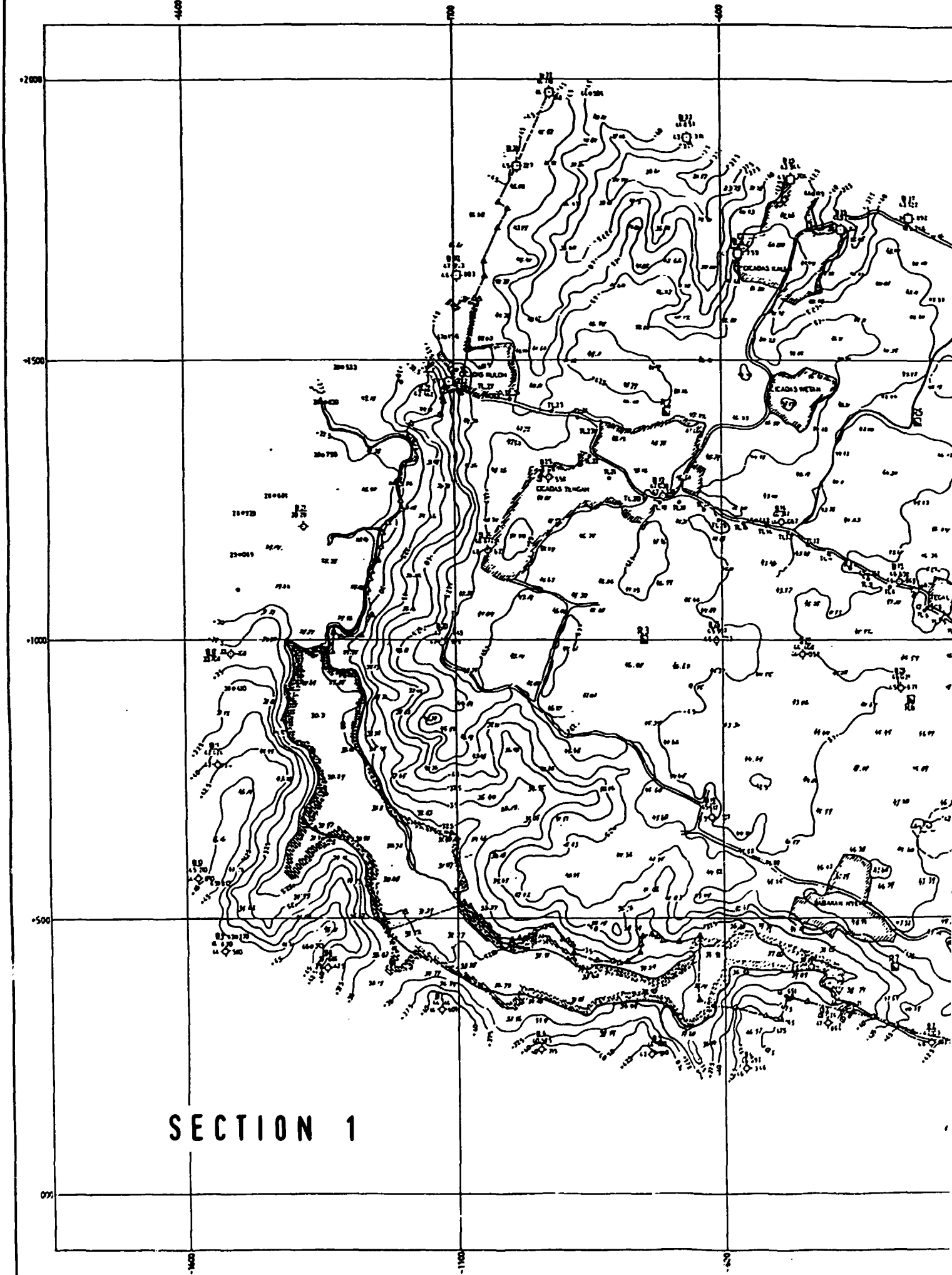
The Cikarang river is running westward of the area. The present land use is mainly consisted of paddy fields and brick work fields. See Fig. 4.1 Topographic Map.

(4) Geological Conditions

Based on technical phenomena, geomorphology and historical geology, Van Bemmelen (1949) divided West Java into four physiographical units as follows:

- the coastal plain of Jakarta
- the Bogor zone
- the Bandung zone
- the southern mountain of Java Barat

The site is located between the Bogor zone and the coastal plain of Jakarta. The Bogor zone is an anticlinorium of strongly folded neogenestrata with intrusions of volcanic necks etc. The coastal plain of Jakarta consists of alluvial river deposits and mud flows from the volcanic mainly, with occasional exposures of slightly folded marine tertiary sediments.


SECTION 1

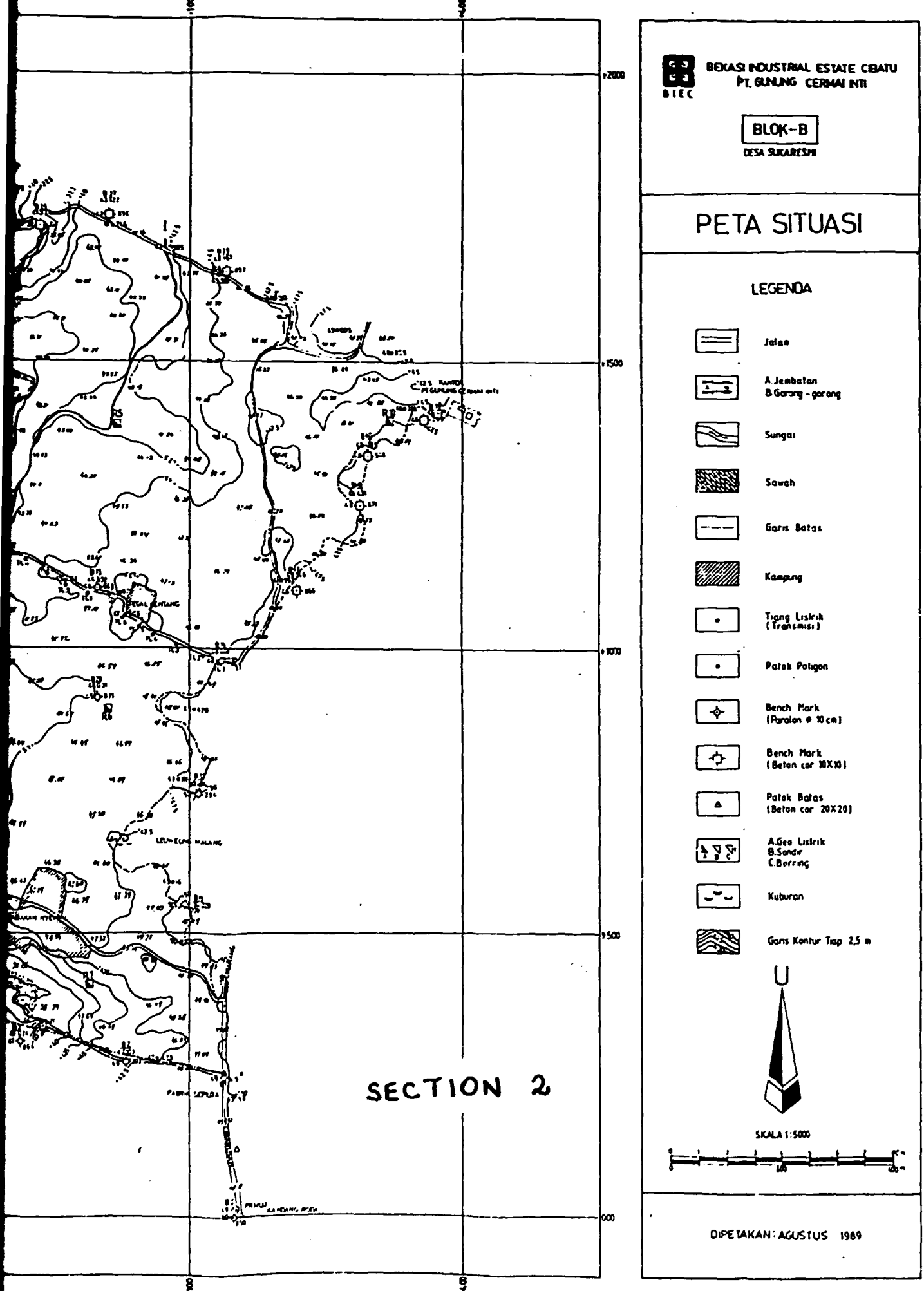


Fig 1-2 Topographic Map

From the view point of soil bearing capacity, the subsoil divided into two classification.
The following foundation is recommended for factory construction.

Factory Construction

Area*	Light-weight	Medium-weight	Heavy-weight
I	Strip footing	Piled foundation	Piled foundation
II	Strip footing	Strip footing	Piled foundation

(5) Water Resource

There is no piped water supply in the site and the surrounding area.

The local people in the site have many shallow wells. These most wells have no lack of water even though during dry season. The water from these shallow wells is used for domestic and a few private industry purposes in the area.
However water extraction from deep well is strictly prohibited in the Bakasi region.

The Cikarang river forms the western part of boundary for the estate.
The quantity of water flow on the river are 24.18 cu m/sec on January to 5.62 cu m/sec on August with average of 13.58 cu m/sec during 1969 to 1988.

The Cikarang river connects directly with the Tarum Barat Canal about 4km downstream from the site. The Jatilhur Water Authority always control the water quantity of the Tarum Barat Canal. The minimum of water quantity in the Cikarang river was 400 l/sec for the past 20 years against the required demand for the estate of 150 l/sec. See Table 4.2 Flow Volume of Cikarang River.

The construction of enlargement project of the Tarum Barat Canal is now under going at the target year of 1990.

In order to supply the raw water to the estate during the dry season, the water authority will be able to control the water quantity of the river for the estate.
Water gate for intake point during dry season will be constructed into the river near the site.

Based on the result of geoelectrical sounding survey, the shallow wells should be used for domestic water and industrial water as emergency purpose. Because the shallow groundwater

Table 4.2 Flow Volume of Cikarang River

(Unit : Ton/Sec)

	January		Feburary		March		April		May		June		July		August		September		October		November		December		Average
1969	9.6	10.3	25.7	10.2	9.0	28.0	31.4	18.7	7.9	8.3	26.3	3.3	18.8	5.0	2.5	2.0	1.4	29.0	9.4	11.6	13.9	17.4	16.6	12.0	13.7
1970	20.2	16.4	27.5	28.5	29.1	30.9	23.0	15.3	10.8	26.1	10.6	19.6	9.5	17.6	7.1	5.8	3.9	6.7	14.2	4.2	9.2	36.3	11.0	21.2	16.9
1971	33.1	36.7	60.8	38.3	26.9	33.7	29.2	27.9	14.2	27.3	12.1	22.2	12.2	11.0	10.6	8.2	9.2	5.8	21.1	12.3	6.0	14.4	16.2	13.5	21.0
1972	22.5	37.0	27.6	15.2	39.7	49.7	27.4	17.7	34.5	19.9	3.4	2.3	2.1	0.7	1.3	1.1	0.8	0.7	1.1	12.4	0.7	0.8	10.4	11.1	14.2
1973	16.8	14.7	48.3	38.8	34.8	18.0	15.1	19.6	38.8	31.4	11.8	9.7	16.9	10.7	8.6	11.5	17.8	30.4	25.0	21.1	13.8	7.4	18.0	14.6	20.6
1974	36.9	31.9	26.7	19.7	15.0	25.3	30.2	24.4	19.4	11.2	3.3	8.5	7.1	3.5	16.1	5.7	15.0	11.5	21.8	11.1	13.0	9.9	11.7	8.1	16.1
1975	10.7	21.5	22.6	20.4	24.7	16.0	28.5	18.3	26.1	14.1	11.2	4.9	6.9	4.0	8.8	7.9	19.5	18.5	21.0	22.7	9.8	13.1	4.3	10.2	15.2
1976	54.8	55.4	21.1	13.9	24.8	20.7	20.1	31.2	21.8	13.7	8.0	1.9	2.6	0.7	0.5	1.7	8.1	3.3	7.2	3.9	2.7	8.9	4.8	5.6	14.1
1977	9.4	47.4	28.7	32.0	35.1	24.3	23.3	11.3	11.0	22.7	11.5	12.2	1.7	1.1	0.6	0.4	4.5	1.9	0.5	1.4	7.7	1.8	3.5	10.8	12.7
1978	20.1	13.2	10.3	15.9	20.5	19.7	23.4	22.7	11.1	7.9	3.2	7.3	6.4	3.9	7.4	7.1	12.9	6.9	11.0	15.7	21.3	14.0	13.9	20.5	13.2
1979	25.4	47.3	23.7	17.4	22.9	15.1	32.6	28.6	20.9	15.0	15.9	4.8	9.9	9.2	16.0	5.1	9.3	15.5	23.6	9.5	39.2	14.8	15.4	19.8	19.0
1980	29.9	34.2	20.2	21.1	22.2	17.6	12.6	17.4	11.5	8.2	6.0	1.9	3.5	6.7	15.0	3.9	3.3	1.9	1.9	8.4	9.3	21.6	11.0	9.6	12.5
1981	23.3	33.6	14.0	13.5	21.4	13.5	19.5	26.0	16.3	3.5	10.8	6.8	14.2	12.4	12.5	4.7	3.2	12.1	16.7	6.9	8.8	4.6	3.4	45.9	14.5
1982	29.4	33.2	12.4	7.6	11.5	24.8	34.6	11.3	9.1	3.5	13.3	2.2	1.1	1.0	3.3	0.7	0.4	0.5	0.9	0.8	0.4	0.4	5.7	20.6	9.5
1983	23.7	15.7	6.0	8.7	16.9	11.8	19.1	5.2	9.5	9.5	4.9	0.4	0.5	26.0	0.6	0.4	0.6	0.9	0.4	5.0	12.9	2.9	7.7	8.4	8.2
1984	19.4	10.4	4.7	5.9	11.5	18.9	18.2	15.4	16.6	23.6	7.3	4.4	1.2	2.2	0.4	5.4	14.5	15.2	9.6	19.1	10.7	12.4	15.3	7.8	11.3
1985	6.9	30.9	19.9	24.7	21.6	17.0	18.2	10.4	9.7	10.9	10.8	5.8	9.6	8.2	4.6	1.8	2.5	12.5	5.2	8.7	4.1	4.2	2.0	13.0	11.0
1986	11.7	22.1	15.3	9.9	15.7	10.8	14.5	9.6	4.0	1.8	1.9	4.9	6.6	4.7	22.7	7.2	4.9	10.2	8.4	10.3	9.4	12.4	10.5	8.2	9.9
1987	18.9	9.8	16.2	32.3	20.0	25.7	18.8	15.6	19.7	10.2	5.5	3.3	2.0	2.5	0.5	0.3	1.1	1.3	4.7	1.6	5.2	1.8	16.2	22.7	10.7
1988	9.4	14.1	20.3	16.5	18.8	14.5	10.5	4.6	9.7	12.1	2.9	0.4	0.7	0.7	1.8	0.7	0.3	1.1	4.4	10.2	4.4	6.7	7.1	26.5	8.3
Average	21.6	26.8	22.6	19.5	22.1	21.8	22.5	17.6	16.1	14.0	9.0	6.3	6.7	6.6	7.0	4.1	6.7	9.3	10.4	9.8	10.1	10.3	10.2	15.5	13.6

Source : Jatiluhur Authority, 1989

quantity is not enough to supply for whole industrial water in the site.

The water quality of the Cikarang river and the Tarum Barat Canal are enough to satisfy for industrial use.

(6) Power Supply Condition

Electricity is supplied from PLN (National Electricity Corporation) in Indonesia.
Power supply in West Java which is generated from Suralaya thermal power plant and Saguling water power plant.

The network of transmission line is consisted of 500 and 150 KV in Java Island. The sub-station at Cikarang which is located at the northern part of the estate has the power supply capacity of 500 MW at present.

However the current capacity is not enough to supply to the large scale industrial estate such as the JIIEB development. Therefore construction of new sub-station or expansion of the existing station will be required for the power supply to the estate.

After discussion with PLN, PLN has already approved the application of the supply for the estate.

Gas will be available to supply for the estate by PGN (Perum Gas Neraga) in condition to accomplishment of agreement between PGN and the estate.

(7) Telecommunication Facilities

The telecommunication service is supplied from PERUMTEL (National telephone corporation).
Bekasi station which is the nearest one from the estate has the current capacity of 1,000 lines.

New Cikarang station is proposed to be open with 1,000 lines in 1991 by PERUMTEL.

In case of the JIIEB development including neighbouring industrial estate development with about 700-800 ha of land area, both international and domestic telephone services shall be supplied for establishment of efficient and convenient industrial estate.

Therefore micro wave system shall be installed from the estate to Jatinegara station in Jakarta or Bekasi station.

(8) Socio-economic Condition

1) Manpower Supply

a) Quality and Quantity of Manpower Demand in JIIEB

The manpower required by companies to be located in JIIEB is estimated at about 20,000 workers by the end of 1996 at full operation.

For factories' operation in Indonesia, about 90% are unskilled workers, and the remaining 10% will be made up of skilled engineers, office staff, and managers.

b) Overall Assessment of Manpower Supply for JIIEB

In Repelita V, the population of Indonesia is estimated to increase from 175.6 million in 1988 to 192.9 million in 1993, an increase of 17.3 million in 5 years, or in average by 3.5 million per year. In this context, the workforce for the same period is estimated to increase from 74.5 million to 86.4 million, an increase of 11.9 million new job seekers in 5 years, or average of 2.4 million people per annum. Actually, one of the major Repelita's concern is how much these manpower could be absorbed through increasing job opportunities by encouraging labor intensive export oriented-industries.

This situation keeps Indonesia as one of the countries which can provide abundant labor supply for the foreseen future. Especially, the Jabotabeck region attract majority of best skilled labor and abundant migrants unskilled labor even with the government decentralization policy.

Generally speaking Indonesia especially the Jabotabeck region is expected to enjoy abundant manpower supply for the near future and not expect any skilled labor shortage experienced in Thailand and Malaysia in the recent years.

c) Unskilled Labor Supply and JIIEB Employment Prospect

The unskilled workers demanded by JIIEB will consist of primary school graduates, junior high school graduates and the unemployed including the surplus workers of the agriculture, ndustry. In view of the existing trend of unemployed people to

flow into the Jabotabek area for looking for opportunities of employment, securing adequate unskilled labor force should not pose any serious problem.

When JIIEB gets fully occupied, about 18,000 unskilled workers will be needed. The required unskilled workers for JIIEB can be obtained from the existing population in the Bekasi region (population of 1.5 million) at first. If the demand by JIIEB factories is larger than the local labor supply, it can be easily assumed that the un-met portion of unskilled labor can be obtained from Jakarta and the other neighboring area, i.e. in West Java since the potential unskilled labor market is very large in this area. About 50 % of the population in the working age, which is about 35 million, are economically active, and half of the rest who are not economically active are attending school.

d) Skilled Labor Supply and JIIEB Employment Prospect

For JIIEB, about 2000 skilled workers in the field of engineering, management and administration staffs are required by 1996, which means about 600 workers per year.

The skilled workers for JIIEB is expected to come from at first mainly (90%) from the Jakarta area and the remaining 10% from the Bekasi region.

Most of the skilled workers have their own transportation means (either cars or motor cycles) and able to commute from Jakarta are easily to the JIIEB site due to the higher income level of their families. The largest number of skilled workers are available in Jakarta area because of availability of higher education institutions, high skilled job availability and highly developed urban life.

At this moment, supply of skilled labor are over supplied. Due to the special manpower development programme initiated by Ministry of Science and Technology in cooperation with Ministries of Education and Labor, Indonesia has been producing relatively large number of high skilled workers compared to the demand.

Education levels in DKI Jakarta and West Java are higher than those in the other areas. Education facilities are abundant in the same area. These

education facilities include the following high-standard institutions:

-the University of Indonesia;
-the Bandung Institute of Technology;
-Padjadjaran University;
-the Textile Institute of Technology; and
-the Bogor Institute of Agriculture.

In addition, private academies and colleges are increasing in number and quality, producing ready-to-use skilful technicians, especially for employment in industries, services, management, etc. Educated and non-educated people can be recruited directly or from the educational institutions and through manpower agencies of the Department of Manpower.

According to the manpower development programme (1989-1994), 30,000 skilled workers are expected to graduate from Universities and 5,000 will be sent to the abroad. Approximately, 50% of these university graduates are expected to remain in the Jakarta and Botabek area. Considering the high supply (18,000/year) and JIIEB demand of 600/year skilled worker, required skilled workers can be obtained without employers' much struggles.

One of the indications of over-supply of skilled labor is shown in the record by the Ministry of Labor of the registration for yellow cards. (Table 4-3) "Registered job-seekers" mean the people who submitted yellow-cards to the authority for registering their interests to get jobs. Although this figures include people unskilled and skilled or highly-educated, big portion of the figures represent people who are educated and could be candidates for positions which require technical and managerial skills. This is because not many unskilled workers register their name since companies usually try to employ workers especially unskilled workers through their own network, for example through their employees rather than governmental job placement offices in Indonesia.

e) Wage rates

The approximate statistics of minimum monthly wages in 1987 in West Java shows competitive value for investment in industry:

	per month
<uneducated-workers>	
unskilled workers	$2.33 - $3.33
building workers	$1.00 - $1.66
transport workers	$0.66 - $1.00
factory workers	$0.50 - $0.57
<educated workers>	
college-graduates	$ 83.33 - $166.67
engineer	$166.67 - $266.67
master holders	$300.00 - $533.33

Table 4-3 Manpower Supply and Demand in DKI Jakarta and West Jawa

	1987				1988			
	Registered job-seekers	Jobs available	Employed	% of employed	Registered job-seekers	Jobs available	Employed	% of employed
DKI Jakarta	132073	21692	15718	11.9%	116777	18574	12518	10.7%
Jawa Barat	169627	41300	35317	20.8%	169193	55550	41825	24.7%
Total	301700	62992	51035	16.9%	285970	74124	54343	19.0%
Indonesia	990040	167553	130267	13.2%	926734	180672	124959	13.5%

Source: Data Ketenagakerjann No.1, 1989 (Ministry of Manpower)

2) HOUSING CONDITION FOR JIIEE

a) Expatriates

It is expected that expatriates will prefer to live and commute from Jakarta because it takes only 30 to 50 minutes from the city and they can avail themselves of city life-style.

Average figures of monthly rents of a house in the following areas are respectively:

Kemang	$1770
Pondok Indah	$1510
Kebayoran	$2100
Menteng	$2500
Permata Hijau	$2070
Kuningan	$1450

Apartments are also increasingly becoming available in Jakarta due to increasing number of expatriates in Jakarta.

b) Local workers

Housing supply in Indonesia is segmented into the following two categories:

-a formal or regulated supplies produced in accordance with government regulations by private and public sector developers who have legal access to land and institutional finance; and

-an informal or unregulated supplies produced by individuals and builders lacking legal access to land and finance, which tend to be physically deficient and legally insecure shelters.

Within this framework, there are six types houses are available for the locals in Indonesia:

-real estate type

-housing supply by private developer with loan from National Saving Bank (BTN)

-housing supply by the National Urban Development Corporation(Perum Perumnas) with loan from BTN

-housing supply by PD Sarana Jaya(only Jakarta area)

-low cost housing estate with loan from BTN

-informal housing supply by the locals

There is also a Kampung Improvement Programme.

Housing policy over the longer term entails withdrawal of the public sector form the direct provision of housing with correspondingly greater emphasis on kampung improvements. Policy changes introduced by the Government during the REPELITA IV period were designed to achieve this objective and have resulted in a significant expansion of housing supply at lower cost. The private sector share of the Government's housing program has increased from 53 % in the early years of REPELITA IV to 75% at present. During the REPELITA V, the Government will intensify its efforts to target subsidies to lower-income groups.

i. Managers and Engineers (university graduate-level)

They tend to gather in Jakarta looking for well- paid jobs, and most likely have established their base in Jakarta. They normally have their own cars so that it is safe to assume that they use their own cars as their transportation to their offices.

ii. Middle-income Workers (vocational, technical, or high-school level) and Low-income Workers (unskilled workers)

JIIEB will mostly attract manpower from all-over the Jabotabek area due to high-availability of potential labor forces as the manpower statistics show. Modes of their transportation to their offices will be: buses, motor cycles, bicycles, by walk, or buses to be provided by companies respectively.

The people under the category of middle income can afford to buy a house according to the BTN Loan Scheme. However, the supply of the houses by PERUMNUS by this scheme are very limited. During REPELITA IV, only 21,000 units were constructed by PERUMNUS in Jabotabeck area, which means only 5,000 units per year. It is tentatively planned by PERUMNUS to provide 122,250 units during

REPELITA V in total, which means again around 5,000 units for Jabotabeck area per annum. In this context, housing statistics show firm increase of housing supply by the private sector, definitely pulled by the strong demand especially in West Java. Given recent drive of industrial development in the area, this trend is expected to continue or even will be accelerated for at least the foreseen future. According to the JABOTABEK Master Plan for the year of 2005 (RUTR), 667.9 ha is allocated for the housing in general and 868.6 ha is for the housing with restrictions in Bekasi. In the same plan, 7,588.4ha is allocated for the housing in general and 1,133.6 ha is for the housing with restrictions in Tangerang. Currently there are at least 24 private developers for Bekasi area only. The selling prices range from Rp.4,250,500 to Rp. 50,000,000.

It is reported that 80 to 90% of the total housing demand in Indonesia is currently being met by informal housing supply, which means dwellings of around 15 sq.m constructed in private property in simplest ways for the rents of Rp. 500 to 1,000 per day. This supply will be produced simply responding to demand. These will be the houses which unskilled workers can afford. If the companies to be located in JIIEB are serious about welfare of their employees, they should give a thought to providing housing especially to their unskilled workers.

4.3 Basic Plan of the Project

(1) Basic Concept of JIIEB

The following concept are considered for the JIIEB development:

- establishment of sophisticated industrial estate installed with required every utility facilities and amenity facilities
- consideration of expansion development between 1992 and 1994 based on the investment demand
- consideration of cargo terminal (inland port) during phase II stage based on further study

(2) Industrial Mix

To determine the industrial mix of JIIEB, potential industries to be located in JIIEB is estimated with the following JIIEB policy and an assumption.

JIIEB shall welcome investors from every nationality. The rough shares are;

Japan	40%
Other foreign countries	30%
Indonesia	30%

The share of each industry is estimated based on;

- Market study in Japan
- Recent Japanese investment in West Jawa
- Recent NIES investment in West Jawa
- Current occupants in JIE Pulogadung

With the above assumptions, the estimated shares of potential industries to be located in JIIEB is shown in Table 4-4.

Table 4-4 Potential Industries to be located in JIIEB

(Number of Factories)

SECTOR	COUNTRY WEIGHT	JAPAN(A) 20%		JAPAN(B) 20%		INDONESIA 30%		NIES 30%		TOTAL 100%
1.FOOD		3	9%	0	0%	16	8%	3	4%	5%
2.TEXTILE/APPAREL		6	18%	0	0%	16	8%	43	51%	21%
3.CHEMICAL/PLASTICS		4	12%	6	19%	32	16%	8	10%	14%
4.RUBBER		2	6%	1	3%	0	0%	3	4%	3%
5.WOOD/FURNITURE		3	9%	2	6%	9	4%	7	8%	7%
6.GLASS/CERAMICS		1	3%	2	6%	8	4%	2	2%	4%
7.METAL PRODUCTS		4	12%	4	13%	29	14%	8	10%	12%
8.MACHINERY		3	9%	3	9%	14	7%	5	6%	8%
9.TRANSPOT EQUIPMENT		2	6%	11	34%	14	7%	0	0%	10%
10.ELECTRICAL PRODUCTS		4	12%	1	3%	16	8%	4	5%	7%
11.OTHERS		1	3%	2	6%	48	24%	1	1%	9%
TOTAL		33	100%	32	100%	202	100%	84	100%	100%

SOURCE:
JAPAN(A) RESULTS FROM QUESTIONNAIRE SURVEY IN JAPAN
JAPAN(B) APPROVED JAPANESE INVESTMENT PROJECTS IN JKT/W.JAVA 85-89
INDONESOA PULGADUNG INDUSTRIAL ESTATE
NIES APPROVED NIES INVESTMENT PROJECTS IN JKT/W.JAWA 85-89

The potential industries for JIIEB were estimated as shown in Table 4-4. To determine the industrial mix of JIIEB in terms of land use, the figures in Table 4-4 are converted to the area to be occupied by each industrial sector. Average factory size by each sector is estimated based on the current occupants in Pulogadung Industrial Estate and the Japanese industrial statistics. In addition to area with these averages, the area for large scale factories from Japan, which are expected to located in JIIEB with high possibility was added. The industrial mix in terms of land use and number of workers in each sector is shown in Table 4-5. The industrial mix might be slightly modified at the physical land use planning stage in the later section.

Table 4-5 Proposed Industrial Mix

SECTOR	EPZ (ha)	EPZ (%)	GIE (ha)	GIE (%)	TOTAL (ha)	TOTAL (%)	WORKERS (No)	WORKERS (%)
1.FOOD	1	2%	2	2%	3	2%	458	2%
2.TEXTILE/APPAEL	7	12%	2	2%	9	6%	1874	9%
3.CHEMICAL/PLASTICS	2	4%	7	8%	9	6%	728	4%
4.RUBBER	2	4%	0	0%	2	1%	168	1%
5.WOOD/FURNITURE	4	7%	1	1%	5	3%	782	4%
6.GLASS/CERAMICS	2	4%	3	3%	5	3%	255	1%
7.METAL PRODUCTS	7	12%	25	28%	32	22%	2266	11%
8.MACHINERY	5	9%	5	6%	10	7%	1539	7%
9.TRANSPRT EQUIPMENT	12	19%	32	36%	44	29%	6537	32%
10.ELECTRICAL PRODUCTS	16	26%	10	11%	26	17%	5158	25%
11.OTHERS	1	2%	3	3%	4	3%	811	4%
TOTAL	60	100%	90	100%	150	100%	20576	100%

(3) General Layout

1) Framework

- project area of 210 ha
- industrial area of 150 ha other infrastructure and service facilities of 60 ha due to establishment of high quality industrial estate (*)
- composition of industrial mix as shown in Table 4-6, which has been slightly modified from Table 4-5 due to physical constraints of land use.

*) When private operation of EPZ is granted by the government 60 ha out of 150 ha will be converted into EPZ to be operated by JIIEB.

Table 4-6 Composition of Industiral Mix

Industrial Mix & Other Land	No.	Total Area (ha)	Total Share (%)
1. Food	6	3.0	1.9
2. Texl.	32	9.0	5.8
3. Chem. & Plas.	14	7.0	4.5
4. Rubber	4	2.0	1.3
5. Wood & Furn.	10	6.0	3.9
6. Glass & Ceram.	5	5.0	3.2
7. Metal	25	32.0	20.6
8. Machine	9	13.0	8.4
9. Transp. Eqip.	28	42.0	27.0
10. Elect. Prod.	10	24.0	15.4
11. Others	10	4.0	2.6
12. Small Busin.	40	2.0	1.3
13. Reserved		6.5	4.2
Total	196	155.5	100.0

2) Layout Concept

In order to keep easy access to the estate, efficient road network for inter-local and internal traffic will be established in the estate.

In order to support efficiently for each industry, the service facility such as administration center and utility facilities will be allocated with easy access.

As far as concerned the linkage of industrial group, the allocation will be carefully undertaken with considering the relationships.

3) Land Use Plan

In order to meet with sizes and type of industries, various plot shall be prepared for each industry.

The overall land use allocation is shown in Table 4-7 and the allocation of industries is shown in Fig. 4-3.

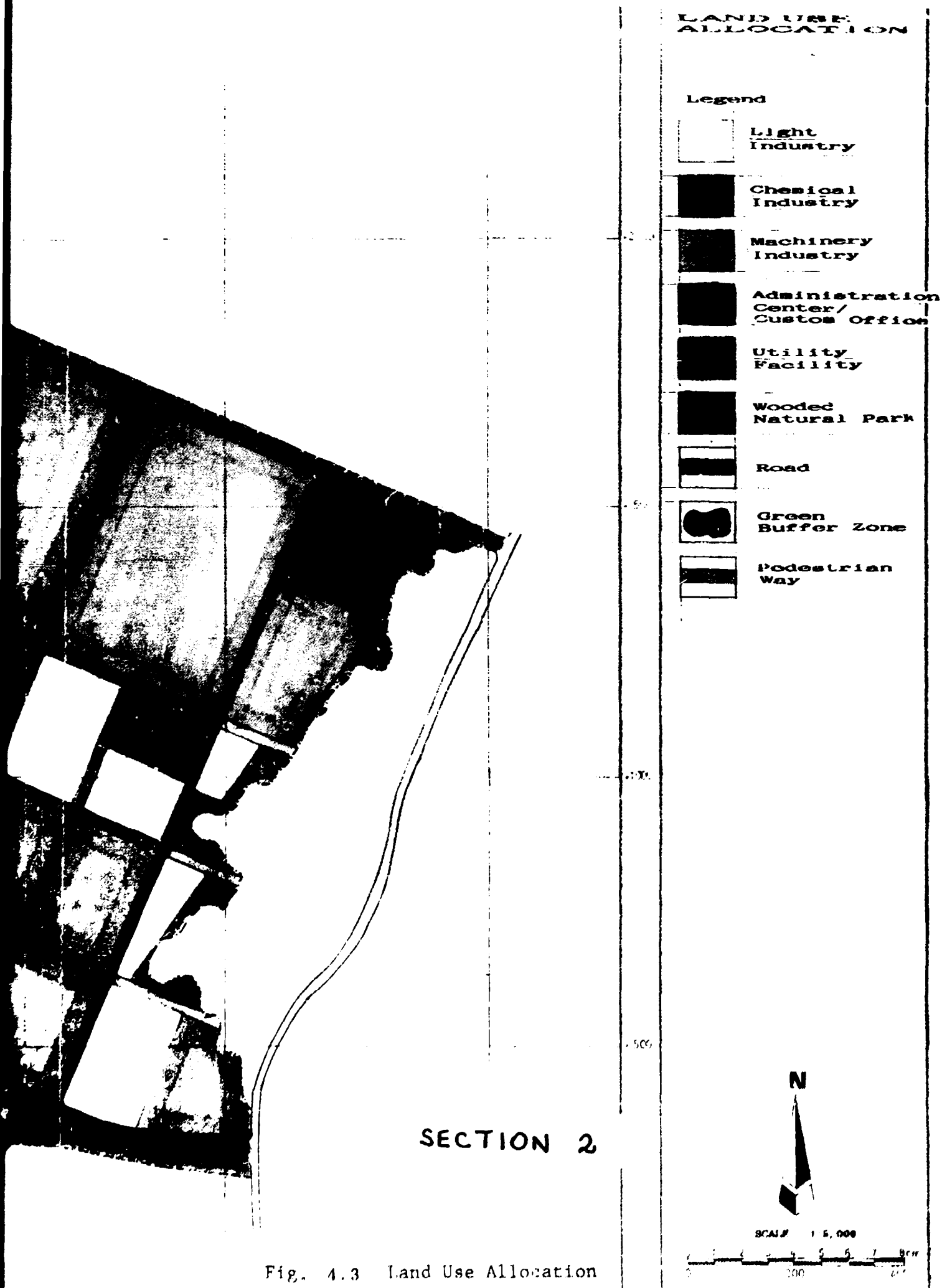
Table 4-7 land Use Allocation

Item	Area (m)	Share (%)
Salable land G.I.Z	1,555,000	74.0
Road Area	310,000	14.8
Green Area	110,000	5.2
Facility Area	125,000	6.0
Total	2,100,000	100.0

The standard grid, a basic unit of 4 ha plot area, is normally surrounded by roads.
A standard grid consists of 4 lots and the length to width ratio on plot follows the golden section rule.

The proposed lots and grids by factory size is shown in Table 4-8.

SECTION 1



SECTION 2

Fig. 4.3 Land Use Allocation

Table 1-8 Proposed Plot Size by Factory

Factory plot Size	Land Area (ha)	Standard Lot
SS	0.25 - 0.5	1/4 - 1/2 lots
S	0.5 - 1.0	1/2 - 1 lots
M	1.0 - 4.0	1 - 4 lots
L	4.0 - 16.0	1 - 4 grids
LL	more than 16.0	more than 4 grids

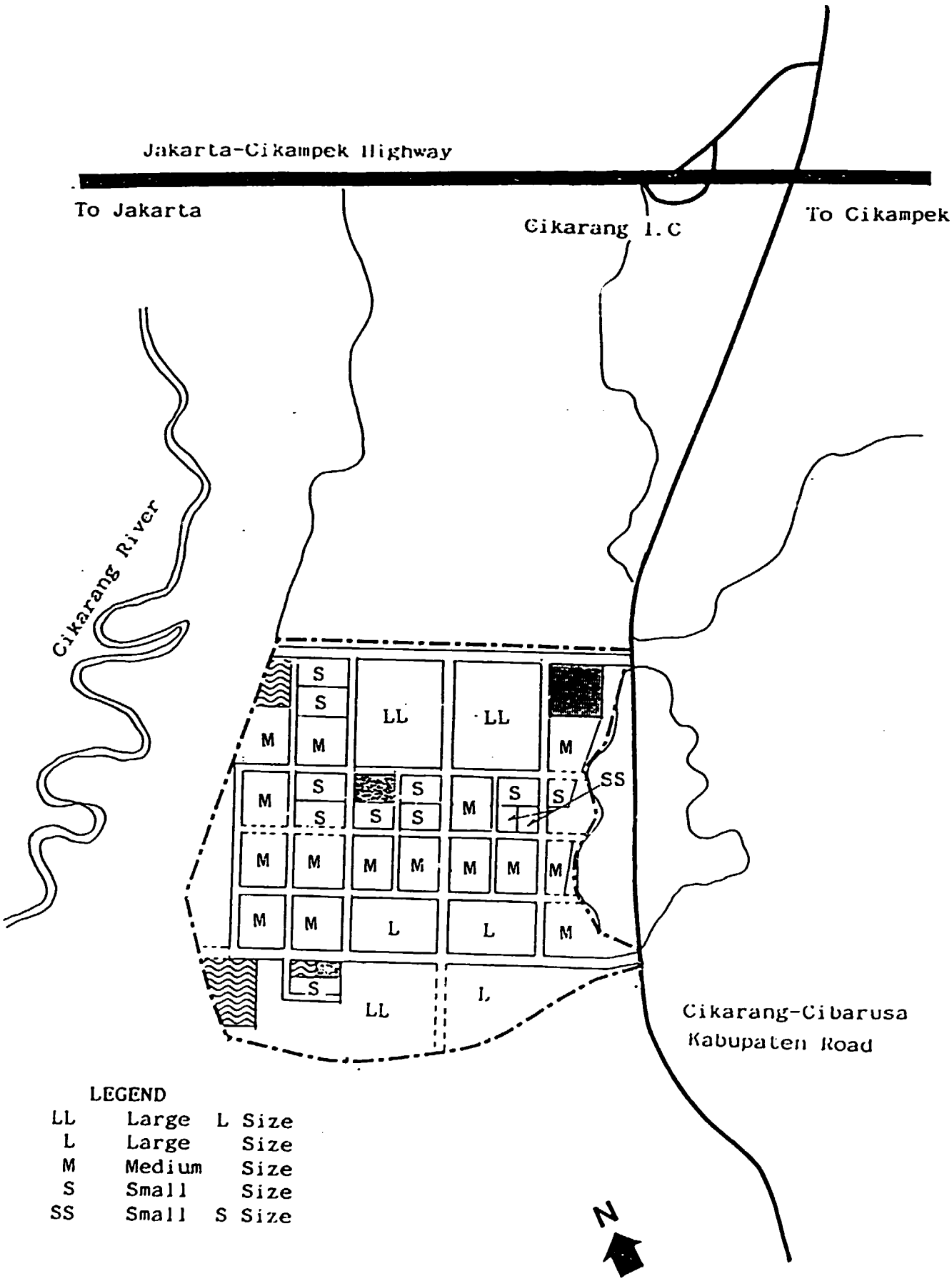


Fig 4-4 Allocation of Industry

(4) Land Preparation

In order to establish wholly harmonized industrial estate, the land preparation shall be considered based on the arrangement among land use plan, road and utility facilities.

The ground height in the site is expanded between 30 to 50m range, mainly 40 to 45m about mean sea level. The landform consists of flat to undulating plains.

The southern part of the site which is alluvial plain and a part of northern area shall be hauled and filled with the material within the site.

The quantity of cut and filling will be balanced with in each block as much as possible.

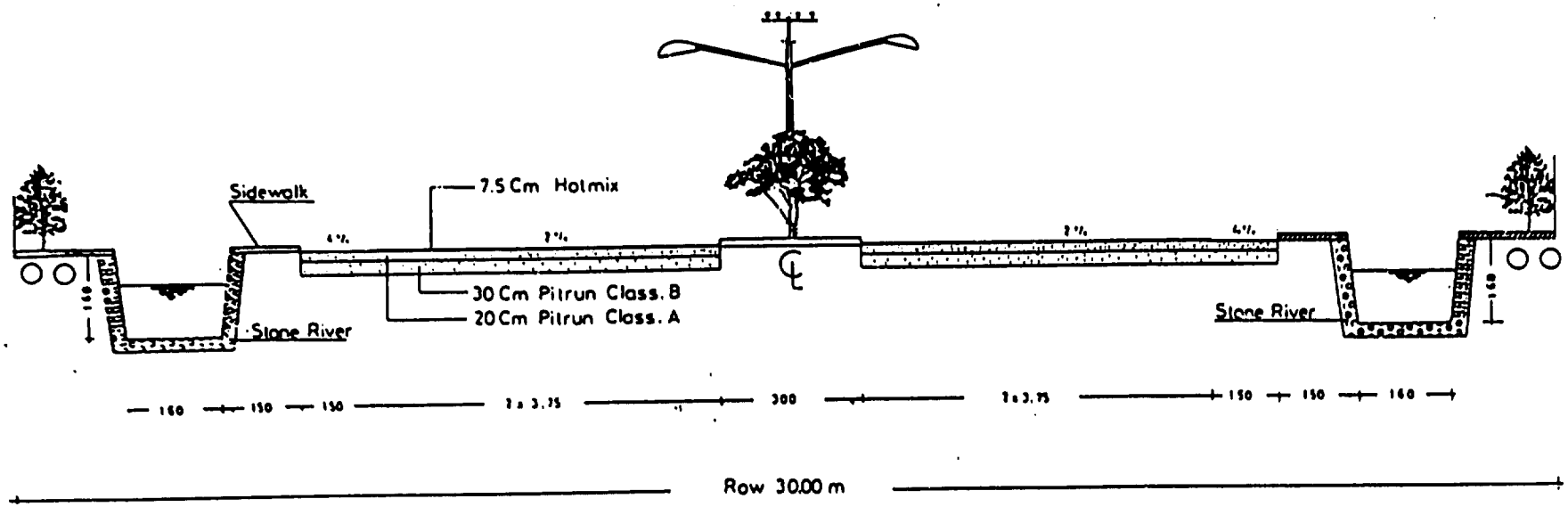
(5) Internal Road

1) Road Network

Movement of vehicles and pedestrians will be basically separated by installment of pedestrian ways.

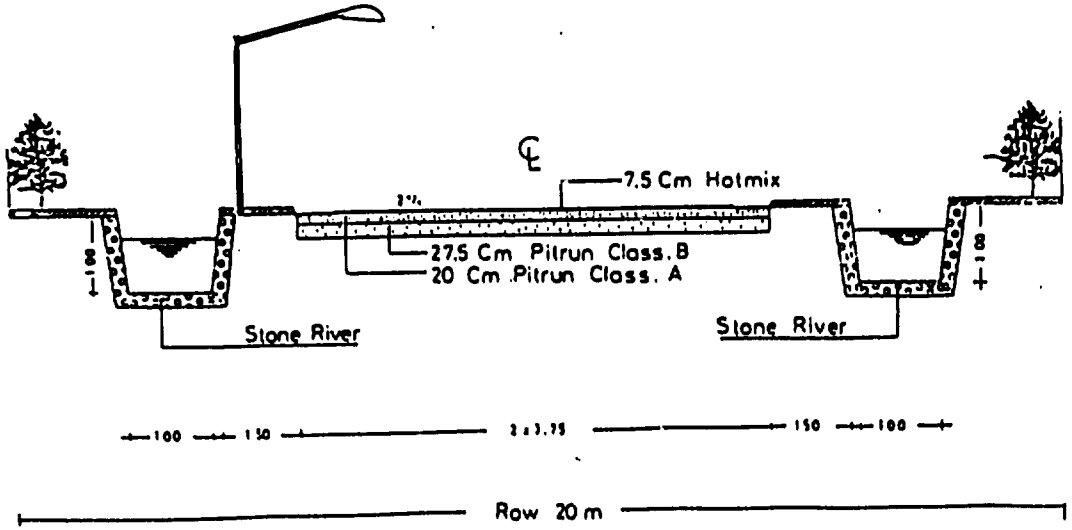
The road network will consist of main roads and secondary roads. The typical cross section of two types of road are shown in Fig. 4-5.

Main road has 4 lanes divided by median strip with right of way of 30m, whereas secondary road is undivided with right of way of 20m and 2 lanes.



TYPICAL CROSS SECTION PRIMARY ROAD

SCALE 1 : 100



TYPICAL CROSS SECTION SECONDARY ROAD

SCALE 1 : 100

Fig. 4-5 Typical Cross Section of Roads

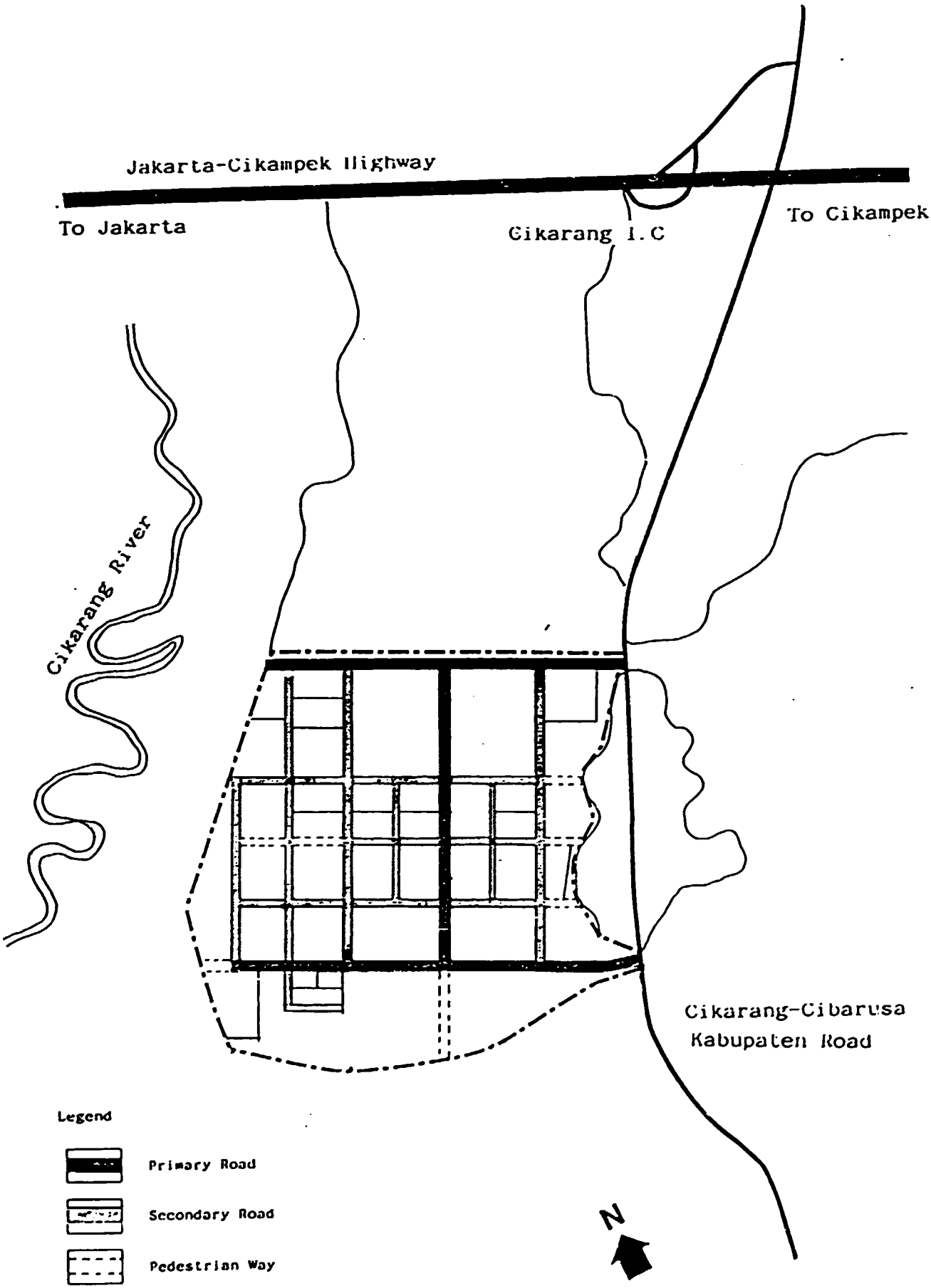


Fig. 4-6 Road Structure Plan

Table 4-9 Road Structure

Road Kind	Total Length (km)	Right of Way (m)	Carriage Way (m)
Primary road	4.10	30.0	18.0
Secondary road	8.50	20.0	9.0
Other road		15.0	9.0
Total	12.60	-	-

2) Future Traffic Demand

There is no available existing data for the Kabupaten road Cikarang-Cibarusa in Department of Public Works. The traffic volume of Kabupaten road Cikarang-Cibarusa can be assumed to be less than 1,000 vehicles/day. Therefore the existing traffic volume of the Kabupaten road is negligible for future traffic estimation.

The future traffic generation and attraction for the estate is mainly divided into commuter traffic caused by the workers and cargo traffic by input and output for production.

a) Traffic Demand of Commuter

Total number of workers are estimated at approximately 21,000 persons and 40,000 persons in the JIIEB and the BIEC respectively.

According to Report of "Arterial road system development study in Jakarta metropolitan area, JICA, 1987", the transport mode of "to work", 1985 and assumption for 2000 are shown in Table 4-10.

Table 1-10 Transportation Mode of "To work"

Transport Mode	1985 (%)	2000 (%)	2000 (/day) Person Trip	2000 (/day) Vehicle Trip
Public				
Railway	0.3	-		
Bus	33.9	60.0		
Taxi	0.4	-		
Bajaj, Helicak	1.6	-	39,650	4,000
Private				
Bus	4.6	5.0		
Own car	10.9	5.0	3,050	6,100
Motorcycle	19.1	25.0	15,250	30,500
Non-motorized				
Bicycle	3.1	5.0	3,050	-
Becak	2.1	-		
On foot	19.1	-		
Others	9.1	-		
Total	100.0	100.0	61,000	-

The general workers and executive workers will live in Bekasi or Cikarang and Jakarta respectively.

Total vehicle trips in terms of passenger car unit (p.c.u.) is estimated at 21,000 p.c.u./day for the both estates.

Bus	4,800 P.C.U./day
Private passenger car	6,100 P.C.U./day
Motorcycle	10,100 P.C.U./day
Total	21,000 P.C.U./day

b) Traffic Demand of Cargo

Based on the assumption of total cargo demand by this study, the cargo traffic is estimated at 640,400 tons per year at the full operation stage.

The annual cargo volume is translated to the average daily number of cargo trucks on the basis of the following assumption:

- based on the use of 13-ton trucks
- load factor per truck of 0.5
- annual average operation days of 240 days
- equivalent p.c.u. for truck of 2.5

Thus, the number of cargo truck per day is obtained at 2,100 p.c.u./day.

c) Total Traffic Volume

Total volume of both the cargo and the commuter traffic is assumed as 23,100 p.c.u./day at the full operation stage excluding traffic demand of service facilities. Therefore traffic more than 30,000 p.c.u./day will be assumed on the Kabupaten road including unrelated traffic of the estate (through traffic).

The current road capacity of Kabupaten road is less than 18,000 p.c.u./day with 2 lanes, therefore prior to the full operation of the estate, the expansion to 4 lane shall be required for to avoid the traffic congestion on the road.

(6) Green Structure

The present land use in the site consists of paddy fields, brick work fields and village area. Therefore valuable green area is not remained excluding residential area at the settlement in the site.

In order to establish attractive and healthy industrial estate and to preserve the environment in the surrounding area, afforestation will be promoted as much as possible.

Three types of green zone are proposed for the estate as follows:

- green zone for functions of buffer zone against the surrounding residential area, and demarcation of the estate
- green zone as park and recreation area
- green zone on median strip area of road and road side

The green structure plan is shown in Fig. 1-7.

Proposed Natural Wood Park will be located at existing village area in the site. The park will include a swimming pool, tennis court, fitness center, restaurant and so on.

(7) Drainage System

The drainage network for rain water will be formed with roadside ditchs of width of 1.6m for main road and 1.0m for secondary road. These ditchs will be excavated and lined with crushed stones and the drainage water will discharge into the Cikarang river.

(8) Water Supply

Based on the proposed industrial mix plan, total water demand will be assumed as 8,100 cu m/day (average) and 13,000 cu m/day (maximum) of which 7,700 cu m/day for industrial use and 400 cu m/day for potable use respectively as shown in Table4-11.

The in-take point from the Cikarang river will be allocated at the south-west ward of the estate.
In order to get raw water from the river during dry season, a water gate will be constructed into the river near the in-take point.

The purification plant will be installed at close location of the in-take point with 4.5 ha of land area. Purified water will be supplied to each factory by pumping distribution pipe.

A shallow well will be installed at the administration center for potable water and back up supply purpose.

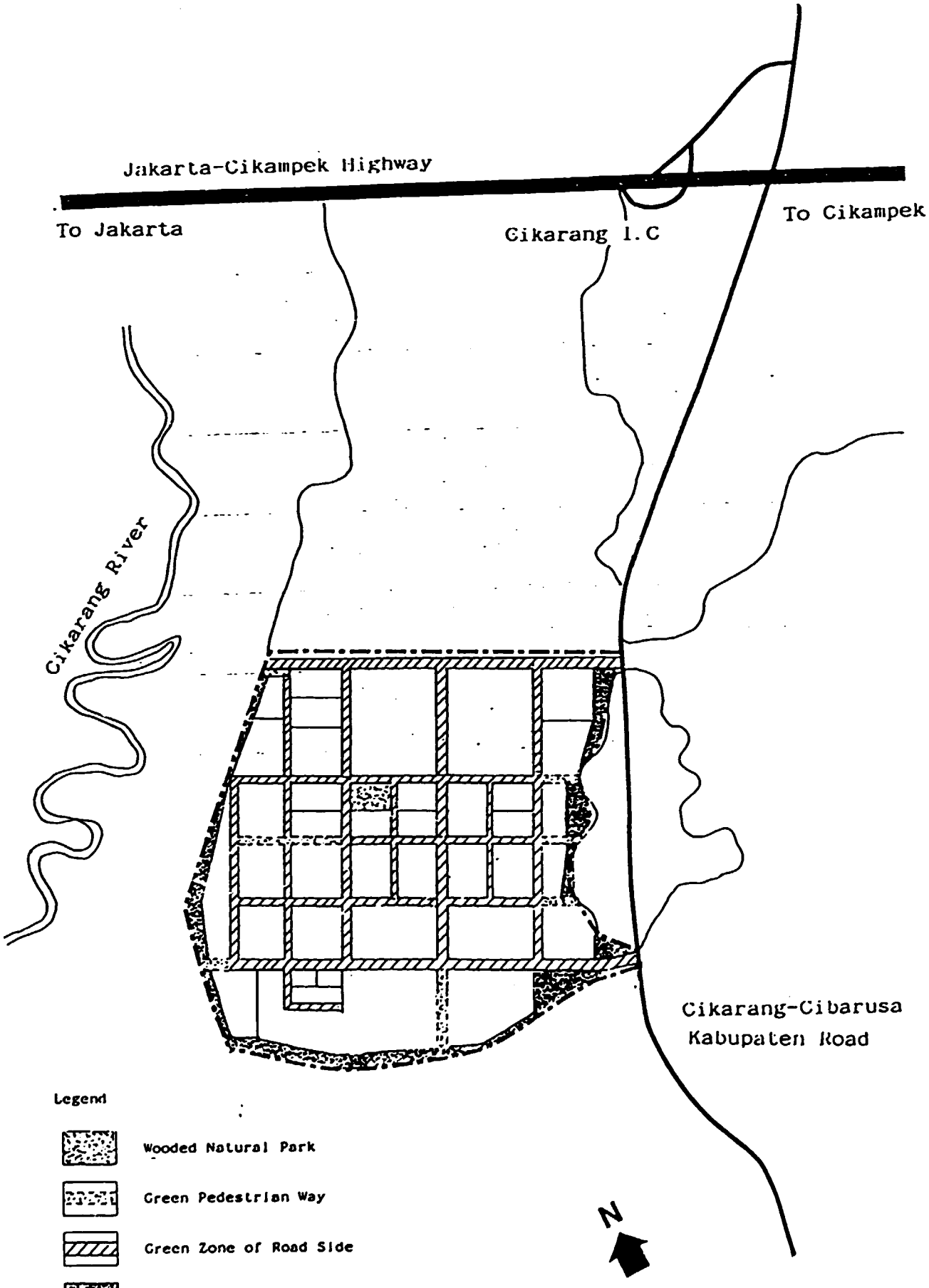


Fig. 4-7 Green Structure Plan

Table 4-11 Water Demand

	INDUSTRIAL USE								PORTABLE USE					Tot Water Cons.
	AREA (ha)			Cons. Rate (m^3/d/ha)		Water Cons (m^3/d)			Tot worker (n)			Cons Rate	Water Cons.	
	G.I.Z	E.P.Z	S U M	G.I.Z	E.P.Z	G.I.Z	E.P.Z	S U M	G.I.Z	E.P.Z	S U M	(l/d)	(m^3/d)	(m^3/d)
1. Food	2.0	1.0	3.0	70	60	140	60	200	-	-	448	20.0	9.00	209.0
2. Tex/Appa	2.0	7.0	9.0	50	50	100	350	450	-	-	1,861	ditto	37.22	487.2
3. Chem/Pras	5.0	2.0	7.0	80	80	400	160	560	-	-	710	ditto	14.20	574.2
4. Rubber	-	2.0	2.0	20	20	-	40	40	-	-	168	ditto	3.36	43.4
5. Wood/Furn	2.0	4.0	6.0	50	80	100	320	420	-	-	777	ditto	15.54	435.5
6. Glass/Cerm	3.0	2.0	5.0	50	50	150	100	250	-	-	250	ditto	5.00	255.0
7. Metal Prod	24.0	8.0	32.0	60	60	1,440	480	1,920	-	-	1,735	ditto	34.70	1,954.7
8. Machine	8.0	5.0	13.0	30	30	240	150	390	-	-	1,515	ditto	30.30	420.3
9. Tran Equi	36.0	6.0	42.0	50	30	1,800	180	1,980	-	-	8,850	ditto	177.00	2,157.0
10. Elect Prod	10.0	14.0	24.0	40	30	400	420	820	-	-	3,739	ditto	74.78	894.8
11. Other	4.0	8.5	12.5	50	50	200	425	625	-	-	791	ditto	15.82	640.8
Total Industries	96.0	59.5	155.5	-	-	4,970	2,685	7,655	-	-	20,845	-	416.92	8,071.9
Business	-	-	-	-	-	-	-	-	-	-	250	20.0	5.00	5.0
T O T A L	-	-	-	-	-	-	-	7,655	-	-	21,095	-	421.9	8,076.9

(9) Power Supply System

Total demand of electricity is estimated at 45,000KW, as shown in Table 4-12.

Electricity for the estate will be supplied from the Cikarang sub-station. The electricity supply from existing sub-station will be enough to satisfy the demand for the estate only at the initial stage of factory operation.

Expansion of the current capacity at the sub-station is proposed by PLN based on preliminary discussion between PLN and JIIEB & BIEC. The expansion project will be implemented until the initial stage of factory operation.

Based on the discussion to PLN, PLN will provide 150 KV transmission line to the site. It was estimated by PLN that the construction period for PLN electrical work will take one and half year.

JIIEB will pay connection charge and deposit charge to PLN in advance instead of each company for accelerating of the PLN Construction Work.

The electricity from the transformer sub-station will be distributed to each factory.

Table 4-12 Electricity Demand

Kind of factory	Land area (ha)	Standard unit (KW/ha)	Amount of electricity (KW)
1. Food	3.0	300	900
2. Textile/Apparel	9.0	200	1,800
3. Chemical/Plastic	7.0	300	2,100
4. Rubber	2.0	450	900
5. Wood/Furniture	6.0	250	1,500
6. Glass/Ceramic	5.0	800	4,000
7. Metal	32.0	250	8,000
8. Machine	13.0	230	2,990
9. Transport equipment	42.0	300	12,600
10. Electric	24.0	280	6,720
11. Others	12.5	200	2,500
Total	155.5	-	44,010

(10) Sewage Facility

A sewage facilities will be constructed with the capacity of 7,000 ton/day which is based on the method of standard unit for the assumed industrial mix of the estate.

Due to the variety of industries, primary treatment of waste water shall be conducted by each industries on individual basis prior to discharge into the central waste water treatment plant based on the industrial waste water standard for Indonesia (draft), May 1989 by the Office of Ministry of State for Population and Environment.

The central sewage system will consist of a treatment plant, discharge pipe line between each factory and treatment plant, a pumping station and open drainage ditch to the discharge river.

The discharge to the Cikarang river is strictly prohibited by the local government because the river is directly connected with the Tarum Barat Canal which is specified as a potable water resource for Jakarta.

The permissible discharge level at the outlet of each factory is set at BOD level of 100-300 ppm and the final treatment discharge from the central treatment plant 30 ppm of BOD level.

(11) Telecommunication System

The telephone system of totally 500 lines will be installed in the estate by the JIIEB of the estate prior to turning back over the system to PERUMTEL.

In order to serve both international and domestic uses including telex service for each company, a telephone exchange station with micro wave system will be required for the estate. Because there is no complete telephone system in Bakasi Region.

The whole system will consist of Jatinegara station in Jakarta or Bekasi station which will receive with microwave from the estate, and a microwave tower and an exchange station in the estate. Therefore the whole system will be constructed by the JIIEB.

The alternatives for construction cost recovery plan which is under discussion between PERUMTEL and JIIEB are as follows;

1. B.O.T. Method : Construction and operation by JIIEB

2. Transferring Method : i) The construction of whole system by JIIEB, then the system transfer to PERUMTEL.

ii) JIIEB will recover the construction cost from each company by selling the line.

iii) Each company will get special discount of user's charge to recover above cost from PERUMTEL.

(12) Solid Waste Disposal

The volume of the solid waste is estimated based on the standard unit rate per worker of industrial types including other workers of supporting service.
Total demand of solid waste will estimated at 5 ton/day.

The solid waste will be required to separate into two categories at the storage yard of the factory as follows:

- combustible : paper, wood, grass, garbage textile plastics and so on
- incombustible : metal, glass, dust, sludge and so on

Each company should make their own arrangement with the city authority for collection of solid waste. If the solid waste would be expected to generate harmful composition, pretreatment in each factory shall be required to undertake to non-harmful level before the solid waste are collected.

(13) Administration Facilities and Service Facilities

There are several facilities required to maintain efficient and convenient service for the industrial estate.
The following plots will be required for the supporting service facilities.

Table 4-13 List of Supporting Service Facilities

Kind of facilities	Plot area (m)
Administration complex	40,000
Custom office	500
Restaurant for executives	*1
Lunch pavilion	*1
Clinic	*1
Shops	*1, *2
Post office and bank	*1
Fire station	*1
Sport club *4	*3
Mosque	*1, *3

*1 within administration center
*2 within Custom office area
*3 within wooded natural park
*4 including swimming pool, tennis court, sauna, rest room and restaurants

(14) Arrangements for the EPZ As Option

Since the Government of Indonesia has not yet issued an official approval of EPZs' operation by private companies, this report only presents the feasibility study for the GIZ in detail. In case of the approval by the Indonesian government to this effect, following modifications should be made in the plan of the JIIEB.

1) Size

60 ha will be converted from the GIZ into a EPZ.

2) Management

Concerning forms of the management and operation body for the EPZ, several options should be taken into account at this stage:

a) Solely privately-run management and operation company authorized by the Government;

b) Joint venture between a state-owned management company such as KBN and the private company;

c) Sub-contracting to a state-owned management company such as KBN only for the EPZ; and

d) Solely by a state-owned management company such as KBN for the EPZ.

3) Facilities Required for the EPZ

This area will be surrounded by the fence, and separate gates will be built for the security and custom control purposes. In addition, a solid waste treatment plant, street lighting facilities, a custom office, bonded warehouses should be made available for the EPZ operation.

Solid waste disposal of 2 ton per day is expected from the EPZ. The solid waste will be collected by dump trucks from each factory and be sent to the incineration plant. After incineration, the ash will be hauled to the public disposal dumping site which is under construction in Bekasi by DKI Jakarta, roadside of the Jakarta-Cikampek Highway.

4.4 Construction and Operation

(1) Implementation Plan

The land acquisition is almost already finished in the estate of 210 ha. Until the end of November in this year the settlement in the estate will be relocated to another place which had already prepared to re-settle by the P.T. Gunungcermai Inti of the present land owner.

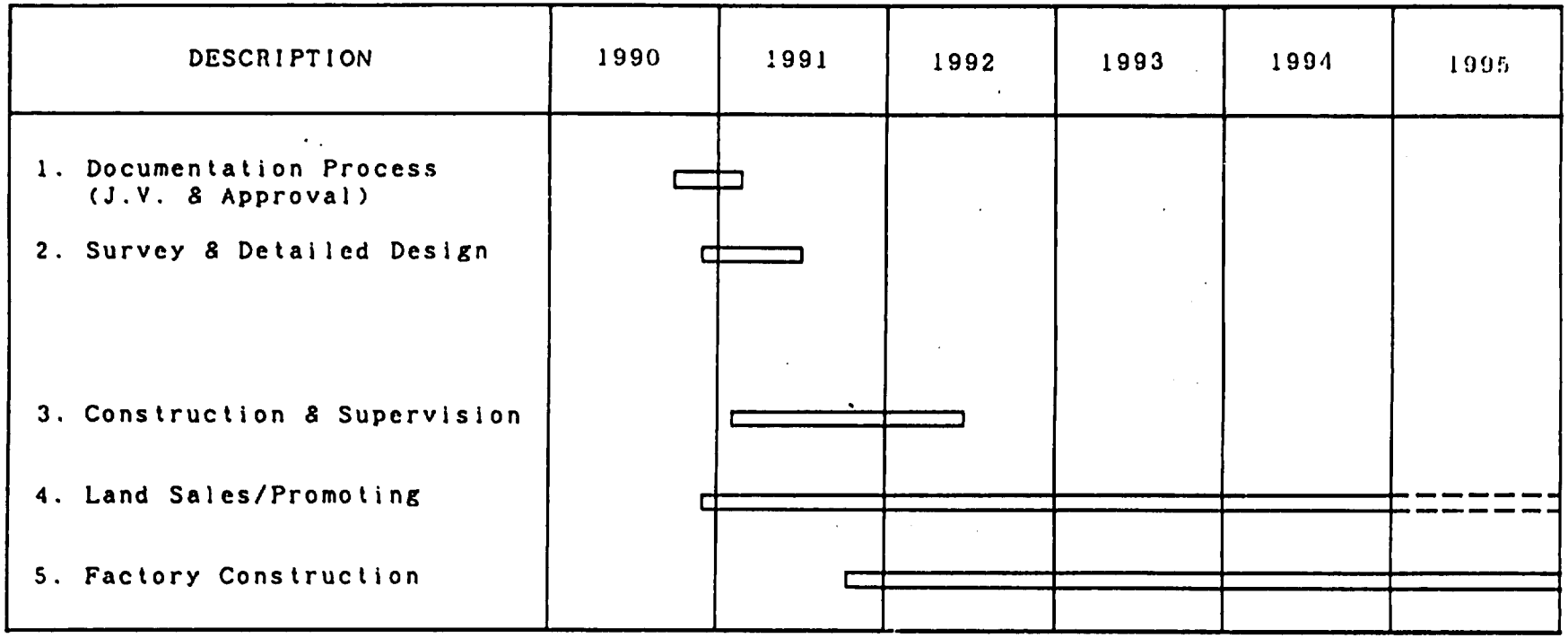
In order to start up the actual construction work immediately after the rainy season is over, around March in 1990, the detailed design and tender shall be started immediately.

All earth work and most part of the building construction will be desirable to be finished during dry season (between March and October) and the rest of the interior work will be continued after rainy season starts.

(2) Implementation Schedule

At the view point of the construction period and the various application procedure period such as establishment of JIIEB, negotiation of various utility facilities preparation to the related authorities and so on, the implementation schedule is proposed as shown in Fig. 4-8.

Fig. 4-8 Proposed Implementation Schedule



6. Factory Operation			10%	30%	50%	70%	90%
7. Management Operation			30%	50%	70%	90%	100%

(3) Management and Operation of JIIEB GIZ

1) Management and Operation Body

JIIEB management and operation company should be established as a subsidy of JIIEB (100%).

2) Roles of the Management and Operation Body

The main function of the management and operation body will be:

a) To invite firms to set up their plants in JIIEB;

b) To maintain facilities of JIIEB constantly in good conditions; and

c) To provide firms in JIIEB with several services in JIIEB.

3) Structure of the Management and Operation Body

JIIEB should assume a strategically leading role in the industrialization and maintain its operation profitable. To achieve these double goals, the recommended structure is described in Fig.4-9.

As shown in Fig.4-9., the recommended management and operation body will carry out at least the following six functions:

a) Policy and Legal Coordination
b) JIIEB Development
c) Customers Service
d) Sales & Promotion
e) Finance and Accounting
f) Engineering Service
g) Administration

a) Policy and Legal Coordination

This is to liaise with the government authorities concerning policies on industrial estates especially privately owned and managed. At the same time, the Division in charge for this could be the body which consults with the governmental offices regarding incentives for foreign investors. This Division will play very important role since the Government regulations are currently under frequent changes.

b) JIIEB Development Planning

This Division will be responsible for physical planning and development of the estate. The Division shall also consider further industrial estates development in Indonesia if any such opportunity exists.

c) Customers Service

The Customers Service Division is proposed to provide the investors in the estate with before and after-service to ensure their operations to take off and operate smoothly. The Division should be staffed with experts capable of assisting firms in establishing factories and of acting as a trouble shooter. The expertise deemed to be of most importance to investors are;

-feasibility study
-legal affairs concerning licence, incentives, taxes and trades
-design and construction of factories
-procurement of equipment and material and trades
-securing manpower
-other management in general

The provision of such expertise is extremely useful to foreign firms which are not familiar with local conditions.

d) Marketing

This Division will be responsible for sales promotion of JIIEB.

e) Finance and Budget Control

This Division will be responsible for financing of JIIEB company and budget control of its operation.

f) Accounting Division

This Division is responsible for book-keeping of the JIIEB company.

g) Engineering Service

This Division will provide engineering services (maintenance services) for the following facilities available in the estate:

-water supply
-waste water treatment

-road, parking area, green park
-solid waste disposal
-other utilities

h) Administration

This Division will carry out the general administration including the following functions:

-personnel
-logistic support
-procurement
-fee collection
-general administration

4) Forms of Management and Operation Body

Cooperation with the Government is very important for a privately-run industrial estate especially for private EPZ to function effectively and provide one-roof services to companies located in the estate.

Concerning the operation of the GIZ of JIIEB, a solely privately-run JIIEB management and operation body (joint venture between Japan and Indonesia) should be formed as soon as possible.

5) Relation between the Management and Operation Body and Firms

It is useful for clarifying responsibilities both of the management and operation body and invited firms to have a investors' guidance/estate regulation booklet which spell out the following items:

-legal condition
-regulation
-requirements (construction, environment, etc.)
-procedural explanation

6) Facilities to Be Provided by the JIIEB Operation and Management Company and Cost Recovery

a) Costs to be included in the land price

-Administration Office Bldg.
-water treatment plant
-sewage treatment plant
-huts of security service
-road
-green park
-fire station
-mosque

b)Costs to be recovered by rents or sale

-canteens
-restaurants
-shops
-bank
-post office
-sport facilities
(swimming pool, tennis courts, gymnasium, etc.)

7) Financial Administration of the Management and Operation Body

Main annual income sources of the management and operation body will consist of general maintenance fee and water and sewage fees and service charges, while main annual expenditure sources of the management and operation body will comprise the physical facilities maintenance expenses and the general administration expenses, including personnel expenses of the management and operation body.

a) General Maintenance Fee

It should be clarified in advance what services the firms can receive by paying the general maintenance fee. It is planned to cover the following items at this point:

-maintenance of road, parking, JIIEB building
-personnel
-miscellaneous (transportation, office - supplies, etc.)
-electricity(street light, JIIEB building)
-water(JIIEB company's usage)

b) Supporting Service Charges

It is necessary to determine service charge per hour but also special fees for the use at night if any for the following services:

purificated water and waste water treatment--> JIIEB

Each company will pay charges of telephone (including facsimile and telexes if any) to Perumtel and electricity to PLN respectively by themselves. Each company is also responsible for garbage collection fee.

c) Other Service Charges

Each charge should be made if the JIIEB company will provide any additional services such as follows:

-administrative support
-sports facilities(membership fee)
-conference facilities(rent)
-management consulting services(service fee)
-employees transportation service by bus
-workshop service

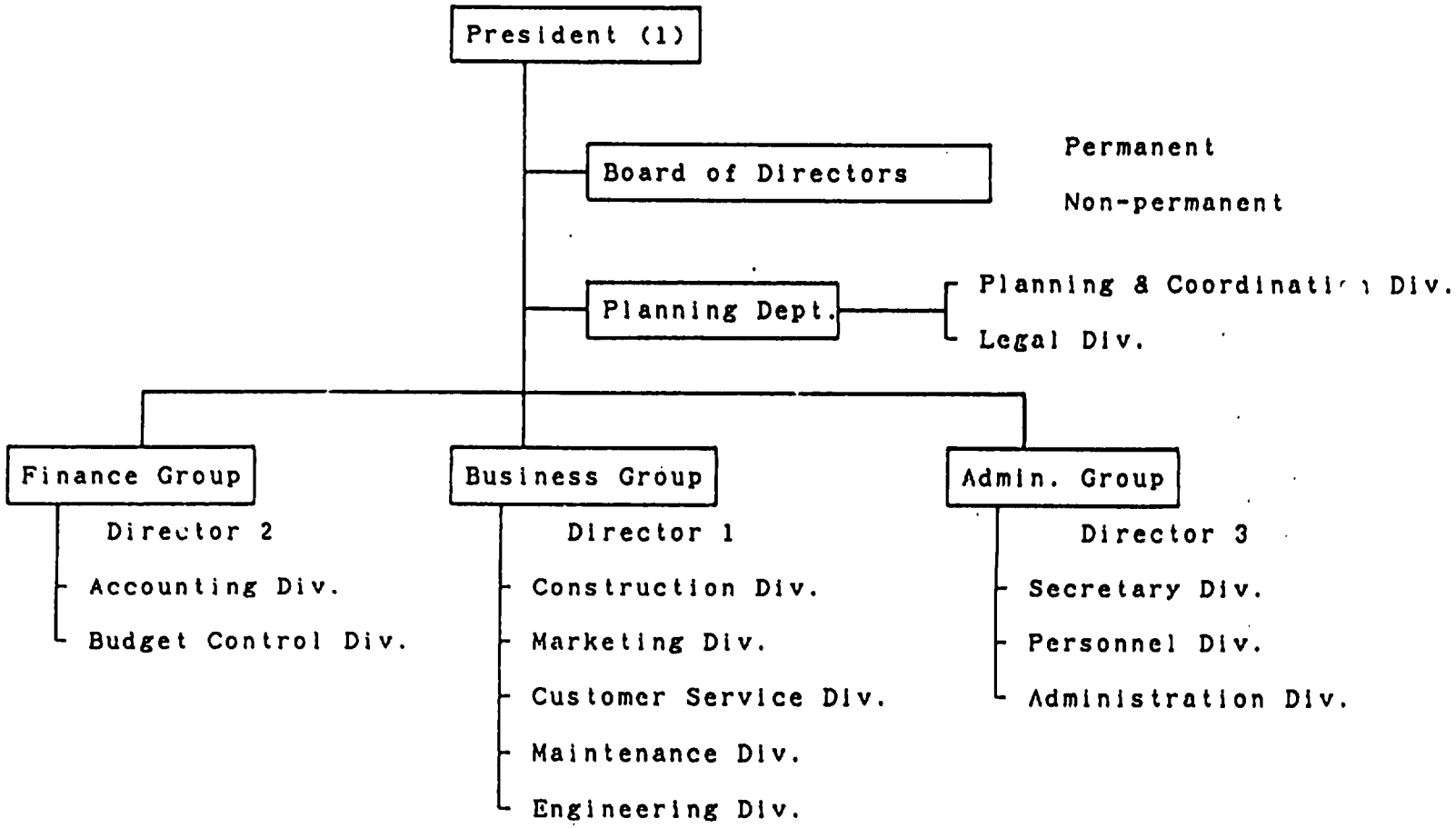


Fig. 4-9 JIIEB Organization Chart (Tentative)

1.5 Cost Estimate

(1) Condition of Estimate

1. The costs are based on the present construction conditions without allowances for future inflation.

2. In developing the unit cost, each item has been broken down into components such as labor, materials, equipment, overhead, profit, etc.

3. Unit prices for materials are based on market prices in Jakarta, as shown in Table 4-14.

4. Unit prices for wages and salaries based on data available in Jakarta are shown in Table 4-15.

5. Unit prices for equipment and machinery are estimated for hourly or daily lease charges, on the basis of data obtained from Jakarta-Merak Tollway (Phase II) Project. Unit prices of major equipment and machinery are listed Table 4-16.

6. Based on material, labor and equipment costs estimated in the foregoing sections, standard unit prices for major work item in Jakarta are estimated as shown in Table 4-17.

7. Construction cost estimate are made for each section based on the quantities estimated in the preliminary design and on the unit prices for each work item. The results of the cost estimation are shown in Table 4-18.

Table 4-14 Unit Cost of Major Material

ITEM	UNIT	COST (Rp)
Fuel (Gasoline)	Lit	400
Plain Concrete Class A	Cu.m	68,995
Concrete Block SP-B	Ea	1,548
Cement	Kg	95
Reinforcing Steel	Kg	517

Table 4-15 Unit Cost for Labor

ITEM	UNIT	UNIT COST (Rp)
Superintendent	Man-Day	15,600
Foreman	Man-Day	8,000
Electrician	Man-Day	7,800
Carpenter	Man-Day	7,800
Driver	Man-Day	6,700
Mechanic	Man-Day	6,700
Masonry	Man-Day	6,700
Skilled Labor	Man-Day	5,500
Heavy Labor	Man-Day	3,900
Common Labor	Man-Day	2,800

Table 4-16 Unit Prices of Equipment and Machinery

ITEM	UNIT	COST (Rp)
Bulldozer 21 ton	Hr	37,974
Bulldozer w/ripper 32 ton	Hr	63,915
Tractor Shovel 1.8m	Hr	27,251
Dump Truck 6 ton	Hr	8,616
Flat Bed Truck 2 ton	Hr	3,084
Flat Bed Truck 6 ton	Hr	8,449
Truck Crane 30 ton	Hr	37,272
Motor Grader 3.1m	Hr	16,284
Macadam Roller 10-12 ton	Hr	10,821
Tire Roller 11-3½ ton	Hr	14,245
Asphalt Plan 30 ton/Hr	Hr	71,132
Generator 75 kva	Day	26,093
Welding Machine 300A	Day	1,034

Table 4-17 Unit Cost by Major Work Item

ITEM	UNIT	COST (Rp)
Concrete Placing by Pump	Cu.m	3,738
Excavation by Man Power	Cu.m	6,545
Excavation by Excavator	Cu.m	996
Form Work	Sq.m	8,189

(2) Cost Estimate for Construction

Table 4-18 Construction Cost

A. Direct Cost		
1.	Civil Work	
1.1	Land Preparation & Temporary Work	617,360,000
1.2	Earth Work	3,937,500,000
1.3	Road & Drainage Work	5,968,100,000
1.4	Other Exterior Work	798,000,000
1.5	Water Supply Work	9,219,000,000
1.6	Waste Water Treatment Work	10,261,830,000
1.7	Electrical Work	1,016,270,000
1.8	Solid Waste Incineration Work	0
	Total of Civil Work	31,816,060,000
2.	Building Work	
2.1	Administration Building	632,000,000
2.2	Clinic	111,450,000
2.3	Fire Station	52,500,000
2.4	Restaurant	63,200,000
2.5	Mosque	90,000,000
2.6	Guard hut	1,200,000
	Total of Building Work	950,350,000
	Total of Direct Cost (A)	32,766,410,000
B. Indirect Cost	20% of (A)	6,553,282,000
C. Engineering Fee	7% of (A) + (B)	2,752,378,000
D. Contingencies	10% of (A) + (B) + (C)	4,207,207,000
	Grand Total	46,279,277,000
	V.A.T (10%)	4,627,927,700
E. Other Work		
E-1	Electrical Work (PLN Charge)	2,956,000,000
E-2	Telecommunication Work	1,547,700,000
E-3	Building Work	104,500,000
	Total of Other Work	4,608,200,000

(3) Cost Estimate for Operation and Maintenance

The operation and maintenance costs of JIIEB are estimated as follows at 1990 price with 10 % inflationary factor:

1) Initial Investment

At least, following items should be taken care by the initial investment:

(unit mil. Rp.)

	unit price	no.	sub-total
fire engine	240	1	240
ambulance	60	1	60
sedan(3) & Jeeps (2)		5	360
sub-total			660
office equipments**	--	--	180
Total			840

Note: ** Following items are taken into account under this budget; one word processor, one each of facsimile &telex machine, one photo-copy machine, desks and chairs for executives, desks and chairs for staff, desks and chairs for conference, one sitting set, and book shelves.

2) Operation Costs

Necessary operation costs at full operation per anum are estimated a follows:

a) Personnel

Personnel cost is estimated at about, 1,600 million Rupiahs per year with the monthly break-down as below:

(unit 1,000 Rp.)

		no.	unit cost per month	sub-total
executives	foreign	2	15,000	30,000
	local	2	4,500	9,000
managers	directors	6	3,000	18,000
	division chiefs	12	1,700	20,400
administrative staff		71	350	24,850
engineers		35	500	17,500
fire fighters		10	200	2,000
security guards		30	150	4,500
doctors		2	2,000	4,000
nurses		2	400	800
clerk		1	200	200
Total		173		131,250

b) Maintenance Costs

Annual maintenance costs are estimated at 1,300 million Rupiahs based on the following depreciation rates which are taken from experiences:

civil work	1%
building	2%
road	3%
canal	2%
plants	5%

c) Miscellaneous

1,200 million Rupiahs per year are estimated for this budget to cover the costs for office supplies, transportation , and communication costs.

d)Electricity

To cover the cost of electricity for street lighting and JIIEB office buildings, 100 million Rupiahs per year are taken into account the financial analysis.

e) Water Supply and Waste Water Treatment

1,200 million Rupiahs per year are estimated for this purpose.

Based on the above mentioned assumption, total of 5,400 million Rupiahs per year are taken into account in the financial analysis as annual operation costs. Since this 5,400 million Rupiahs per year is the estimated O/M cost at full operation, actual annual expenses are gradually increasing depending on the intensiveness of sales promotion activities and degree of actual factories' operation. Therefore, the actual O/M expenses are assumed to be 30% of full O/M cost in 1990, 50% in 1991, 70% in 1992 and 1993, and 75% in 1994. In 1991, 840 million Rp. is added for initial investment such as vehicles and office equipment.

1.6 Financial Analysis

(1) Conditions of Financial Analysis

As discussed in previous chapters, the general outline of JIIEB project is as follows. Other two development alternatives will be discussed in the Section (3).

1) Land use plan

Area available for sale (GIZ 150ha)	150ha
Infrastructure and service facilities	60ha
TOTAL	210ha

2) Period for construction

18 months, January 1991 - June 1992

3) Project cost

Land acquisition cost	13,650 million Rupiah
Development cost	55,515 million Rupiah
TOTAL	69,165 million Rupiah

4) Commencement of sales

January 1991

5) Land price and sales schedule

Sales price: GIZ 60,000Rp/m2 (91's price and increase 10%p.a.)

year	sales schedule(%)
1991	30 (45ha)
1992	30 (45ha)
1993	30 (45ha)
1994	5 (7.5ha)
1995	5 (7.5ha)

6) Operation and maintenance cost

Initial investment(vehicles and office equipment/supply): 840 million Rp

Annual running cost at full operation: 5,400 million Rp/year

The following detailed assumptions were made for the financial analysis.

7) Other revenues

Power connection charge and telephone line connection charge will be collected at cost plus margin base. Operation and maintenance fee, and water supply and waste water treatment will also be charged at cost plus margin base. Unit prices are shown below. All these prices are 1990's price and subject to increase at ten per cent per annum.

Power connection charge	90,000Rp/kVA
Telephone line charge	5,000,000Rp/line
Water supply including waste water treatment	1,300Rp/m3
Operation and maintenance fee	100Rp/m2/year

Salable volume and sales schedule are shown in appendix B, page B-3.

The project life of JIIEB is assumed to be six years from 1990. JIIEB will be transferred to its operating company at 8,000 million Rupiah at the end of 1995.

8) Costs for sale

For the purpose of calculating operating profit, the development costs for salable items are distributed to each year in accordance with sales volume. Expenditure incurred on assets with a beneficial life of more than one year is distributed as depreciation and amortization as follows:

Vehicles and office supply: 50% declining balance

Water supply, waste water treatment, electrical work: 25% declining balance

Road, drainage, exterior work and buildings: 5% straight line

For the sales promotion, 3% of land sales revenue will be spent.

9) Taxes

There are three kinds of tax, namely value added tax (VAT), land and building tax, and corporate tax.

The rate of VAT is 10% of value added. For simplifying calculation, input cost is supposed to be 80% of gross revenue. Thus, the rate of VAT is 2% of its total sales.

The rate of corporate tax is as follows. The loss can be carried forward for a maximum of five years.

	Taxable income	Rate
On first	10,000,000Rp	15%
On next	40,000,000	25%
Over	50,000,000	35%

10) Financial plan

The total amount of 15,219 million Rupiah will be raised as equity. Out of 15,219 million Rupiah, 60% of equity will be from Japanese side and the rest from Indonesia.

The shortage of cash after the commencement of the project will be financed by loan. The conditions for loan is summarized below.

Currency	share	interest rate	repayment period
US$	60%	12%	3 years
Rp.	40%	25%	1 year

(2) Financial Analysis

As the base case for the financial analysis, cash flow tables are calculated based on the above conditions. The cash flow summary is shown in the Table 4-19 and detailed tables are attached in appendix B, pages B-2 to B-10.

The financial internal rates of return are 19.3 per cent on investment base and 21.6 per cent on equity base. The project will require the total amount of 25.4 billion Rupiah in 1990 and 1991 as loan.

The total operating income for five years is 123 billion Rupiah, of which 83 per cent will come from land sales. At the end of project period, in 1994, JIIEB will reserve 11 billion Rupiah in cash.

Table 4-19 Cash Flow Summary of BASE CASE

<CASH FLOW SUMMARY> BASE CASE

	1989	1990	1991	1992	1993	1994
Land Sales		27,000	29,700	32,670	5,990	6,588
Phase I						
GIZ		27,000	29,700	32,670	5,990	6,588
EPZ		0	0	0	0	0
Phase II						
GIZ		0	0	0	0	0
EPZ		0	0	0	0	0
Power Sales		1,697	1,867	2,054	377	414
Telephone Sales		750	825	908	166	183
Water Sales		0	1,030	2,265	3,737	4,340
Maintenance Fee		0	50	109	180	209
JIEB Sales						8,000
INFLOW TOTAL(ROI)		29,447	33,471	38,005	10,450	19,734
Loan		16,728	8,706	0	0	0
INFLOW TOTAL(ROE)		46,175	42,177	38,005	10,450	19,734
Development Cost	13,650	37,643	17,871			
O/M Cost		1,620	3,810	4,574	5,031	5,930
Sales Cost		810	891	980	180	198
Corporate Tax		6,592	3,021	5,250	0	0
Value Added Tax		589	669	760	209	235
Land and Bldg. Tax		14	27	27	27	27
OUTFLOW TOTAL(ROI)	13,650	47,269	26,290	11,591	5,447	6,389
Repayment of Debt		0	10,037	8,569	5,087	1,741
Interest on Debt		0	2,877	2,300	819	209
Remaining Debt						0
OUTFLOW TOTAL(ROE)	13,650	47,269	39,204	22,460	11,353	8,339
NETFLOW(ROI)	(13,650)	(17,821)	7,182	26,415	5,003	13,345
NETFLOW(ROE)	(13,650)	(1,093)	2,974	15,545	(903)	11,395

IRR(ROI)= 19.3%
IRR(ROE)= 21.6%

<NOTE>

	1990	1991	1992	1993	1994
SALES					
Unit Price(Rp/m2)		GIZ=	60,000	EPZ=	60,000
Phase I					
Salable Land(ha)		GIZ=	150	EPZ=	0
GIZ	30%	30%	30%	5%	5%
EPZ	0%	0%	0%	0%	0%
Phase II					
Salable Land(ha)		GIZ=	0	EPZ=	0
GIZ	0%	0%	0%	0%	0%
EPZ	0%	0%	0%	0%	0%

COST
100% of Original estimated cost

PHASING

FINANCIAL ARRANGEMENT

Equity	15,219				
Loan Requir	16,728	8,706	0	0	0
Source		Foreign=	60%Int.Rate=		12%
		Local=	40%Int.Rate=		25%

revised on Dec.15

(3) Sensitivity Analysis

There are two other scenarios for the JIIEB development plan. One is to provide EPZ and the other is to divide the project into two phases. The detail of each scenario is as follows.

1) Case A

In case A, 60ha of EPZ will be constructed. The additional development cost for the EPZ facilities such as solid waste incineration plant with 2 ton per day capacity, fence, lighting facilities, is estimated 2,154 million Rupiah. EPZ land will be sold at 65,000Rp/m2 (1991's price), which is 5,000Rp higher than that of GIZ. The other conditions are same as the base case.

2) Case DX

The case DX has two development phases. Starting with first half of 75ha salable land development in 1991, the second half development will be done in 1992.

Table 4-20 Key Financial Indicators for Development Alternatives

	IRR(%)		Loan Required
	ROI	ROE	(mil.Rp)
BASE CASE	19.3	21.6	25,434
CASE A	19.3	21.7	27,076
CASE DX	16.7	17.7	46,898

The cash flow summaries for case A and case DX are shown in the Tables 4-21 and 4-22. In the case A, the IRRs are almost equal to the ones of base case, because the negative effect of cost increase on the cash flow is nearly equal to the positive effect of revenue increase brought by the relatively high land price of EPZ. Since the sales schedule of the case A is assumed to be same as the base case, the real IRRs of the case A would be higher because the EPZ might bring additional customers.

On the other hand, the IRRs of case DX are much lower than the base case because of the double negative effects of development cost increase and sales delay.

Table 4-21 Cash Flow Summary of CASE A

<CASH FLOW SUMMARY>

CASE A (GIZ90ha/EPZ60ha)

	1989	1990	1991	1992	1993	1994
Land Sales		27,900	30,690	33,759	6,189	6,808
Phase I						
GIZ		16,200	17,820	19,602	3,594	3,953
EPZ		11,700	12,870	14,157	2,595	2,855
Phase II						
GIZ		0	0	0	0	0
EPZ		0	0	0	0	0
Power Sales		1,697	1,867	2,054	377	414
Telephone Sales		750	825	908	166	183
Water Sales		0	1,030	2,265	3,737	4,340
Maintenance Fee		0	50	109	180	209
JIIEB Sales						8,000
INFLOW TOTAL(ROI)		30,347	34,461	39,094	10,649	19,954
Loan		17,613	9,463	0	0	0
INFLOW TOTAL(ROE)		47,960	43,924	39,094	10,649	19,954
Development Cost	13,650	39,084	18,584			
O/M Cost		1,620	3,810	4,574	5,031	5,930
Sales Cost		837	921	1,013	186	204
Corporate Tax		6,892	3,171	5,453	0	0
Value Added Tax		607	689	782	213	239
Land and Bldg. Tax		14	27	27	27	27
OUTFLOW TOTAL(ROI)	13,650	49,053	27,202	11,849	5,457	6,400
Repayment of Debt		0	10,568	9,200	5,415	1,893
Interest on Debt		0	3,029	2,473	877	227
Remaining Debt						0
OUTFLOW TOTAL(ROE)	13,650	49,053	40,800	23,522	11,749	8,520
NETFLOW(ROI)	(13,650)	(18,706)	7,259	27,246	5,192	13,554
NETFLOW(ROE)	(13,650)	(1,093)	3,125	15,572	(1,100)	11,434

IRR(ROI)= 19.3%
IRR(ROE)= 21.7%

<NOTE>

	1990	1991	1992	1993	1994
SALES					
Unit Price(Rp/m2)		GIZ=	60,000	EPZ=	60,000
Phase I					
Salable Land(ha)		GIZ=	90	EPZ=	60
GIZ	30%	30%	30%	5%	5%
EPZ	30%	30%	30%	5%	5%
Phase II					
Salable Land(ha)		GIZ=	0	EPZ=	0
GIZ	0%	0%	0%	0%	0%
EPZ	0%	0%	0%	0%	0%
COST	100% of Original estimated cost				
PHASING					
FINANCIAL ARRANGEMENT					
Equity	15,219				
Loan Requir	17,613	9,463	0	0	0
Source		Foreign=	60%Int.Rate=		12%
		Local=	40%Int.Rate=		25%

revised on Dec.15

Table 4-22 Cash Flow Summary of CASE DX

<CASH FLOW SUMMARY> CASE DX (PHASING GIZ ONLY)

	1989	1990	1991	1992	1993	1994
Land Sales		18,000	19,800	32,670	23,958	13,177
Phase I						
GIZ		18,000	19,800	10,890	0	0
EPZ		0	0	0	0	0
Phase II						
GIZ		0	0	21,780	23,958	13,177
EPZ		0	0	0	0	0
Power Sales		1,132	1,245	2,054	1,506	828
Telephone Sales		500	550	908	666	366
Water Sales		0	686	1,510	2,907	4,111
Maintenance Fee		0	33	73	140	198
JIIEB Sales						8,000
INFLOW TOTAL(ROI)		19,632	22,314	37,214	29,176	26,680
Loan		14,453	29,077	3,368	0	0
INFLOW TOTAL(ROE)		34,085	51,391	40,582	29,176	26,680
Development Cost	13,650	28,564	32,493			
O/M Cost		1,620	3,216	3,267	3,594	5,534
Sales Cost		540	594	080	719	395
Corporate Tax		4,121	965	3,797	3,753	0
Value Added Tax		393	446	744	584	374
Land and Bldg. Tax		14	27	27	27	27
OUTFLOW TOTAL(ROI)	13,650	35,251	37,741	8,815	8,675	6,330
Repayment of Debt		0	8,672	20,337	10,727	6,489
Interest on Debt		0	2,486	5,695	2,322	860
Remaining Debt						674
OUTFLOW TOTAL(ROE)	13,650	35,251	48,899	34,847	21,724	14,352
NETFLOW(ROI)	(13,650)	(15,620)	(15,427)	28,399	20,501	20,350
NETFLOW(ROE)	(13,650)	(1,167)	2,492	5,735	7,452	12,328

IRR(ROI)= 16.7%
IRR(ROE)= 17.7%

<NOTE>

	1990	1991	1992	1993	1994
SALES					
Unit Price(Rp/m2)		GIZ=	60,000	EPZ=	65,000
Phase I					
Salable Land(ha)		GIZ=	75	EPZ=	0
GIZ	40%	40%	20%	0%	0%
EPZ	0%	0%	0%	0%	0%
Phase II					
Salable Land(ha)		GIZ=	75	EPZ=	0
GIZ	0%	0%	40%	40%	20%
EPZ	0%	0%	0%	0%	0%
COST	100% of Original estimated cost				
PHASING					
FINANCIAL ARRANGEMENT					
Equity	15,219				
Loan Requir	14,453	29,077	3,368	0	0
Source		Foreign=	60%Int.Rate=		12%
		Local=	40%Int.Rate=		25%

revised on Dec.15

In addition to the above development alternatives, four sensitivity analyses were done against the base case. The following table is the summary of the sensitivity analysis.

Table 4-23 Key Financial Indicators for Sensitivity Analyses

CASE	IRR(%) ROI	ROE	Loan Required (mil.Rp)
BASE CASE	19.3	21.6	25,434
Development Cost 10% Down	24.5	27.9	17,734
Development Cost 10% Up	14.8	14.2	33,134
Land Sales Price 65,000Rp/m2	24.7	28.9	21,288
Sales Delay 20%(30ha) per year	21.6	26.7	50,395

As is shown in the Table4-23, the development cost cut down of 10% and the land sales price increase of 5,000Rp/m2 have the almost same positive effects on IRRs. However, since the industrial estate market in the area will be a competitive one in the near future, the higher land price might have a large negative effect on sales volume. Therefore, efforts to reduce the development cost is strongly recommended to ensure high return from this project.

CHAPTER 5

MARKET STUDIES FOR THREE SUPPORTING INDUSTRIES

Chapter 5 MARKET STUDIES FOR THREE SUPPORTING INDUSTRIES

5.1 Introduction

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

In the strategy framework of both export diversification and import substitution, the existence of a dense network of supporting industries -- such as local parts/components manufacturers and sub-contracting industries -- assume critical importance in generating self-sustained industrial development.

A UNIDO/ECFA study report on "Supporting Industries in Indonesia" was completed in June 1988 elaborating recommendations of follow-up of this study. It mainly covers identification of specific investment projects and development of a suitable framework for their promotion.

Upon completion of the report, the UNIDO experts (ECFA Consultants) explored the specific follow-up possibilities with Japanese industrialists. The follow-up was also strongly supported by the Japanese Ministry of International Trade and Industry pointing out that the follow-up scheme has to be geared to generation and stimulation of interest of Japanese industrialists for actual participation in the promotion of supporting industries in Indonesia. This v[illegible] was also endorsed

by the Ministry of Industry of Indonesia.

Particularly one of the follow-up programmes mentioned in the project report i.e. promotion of new investment in the manufacture of (1) precision tools, moulds and dies, (2) jigs and fixtures, (3) metal cutting tools, (4) wood working machinery/equipment, (5) packaging machinery, (6) automotive components, and (7) metal components based on powder metallurgy, has been identified by UNIDO experts (ECFA consultants) as a high priority programme (pp. 24 to 40 of UNIDO/ECFA report refer). This priority was confirmed during recent follow-up discussions with Japanese Industrialists. Promotion of industrial investment in supporting industries is one of the high priority areas of Indonesia. Joint venture is one of the practical promotional means.

Lack of specific market data, however, is the most crucial bottleneck to promote the joint venture projects from an idea stage to more practical assessment of project' commercial profitability. Particularly the above mentioned products are mainly domestic market oriented and foreign potential investors expect to obtain marketing data as much as possible for preliminary assessment of investment potential. This project is, thus, expected to provide the potential investors with in-depth marketing data for further promotion of new investment projects.

The government has recently emphasized that their priority lies in (1) precision tools, moulds and dies, (2) packaging machinery, and (3) woodworking machinery. These three branches of industrial machinery were selected through a series of discussion with the Ministry of Industry of Indonesia.

Each market study contains the following:

(a) existing domestic market size.
(b) future growth rate and expected future demand including export potential.
(c) investigation of competing products.

(d) sales forecast and corresponding plant capacity.

(e) pricing considerations.

(f) distribution channels.

5.2 Precision Tools, Moulds and Dies

(1) Current Outlooks of the Industry

Precision tools, moulds and dies manufacture is a key building block of Indonesia's engineering industries. Tool, mould & die making facilities are not well developed when it comes to high grade production although it could provide crucial support to a high number of user industries and would contribute to reducing import requirements.

Although the branch is crucial to Indonesia's industrial progress, there is, at present, no specialized tools, moulds and die making industry in the country. The development has been slow mainly because of inadequate know-how and equipment in heat treatment technology. The successful operation of the venture will be crucially dependent on the availability of experienced tool engineers and competent toolmaker with knowledge also of the specific requirements of downstream user industries.

It is estimated that Indonesia is importing at least 80 percent of its needs in dies and moulds each year. In 1988, the amount was over US$ 25 million. As local engineering industries develop the market, demand is expected to develop at least at 10 percent per year for coming several years.

(2) Existing Domestic Market

Recent data on imports of dies and moulds to Indonesia is shown below:

(cif US$'000)

	1984	1986	1988
Dies	13,847	16,807	2,810
Moulds for metal	917	1,197	2,386
Moulds for glass	846	1,681	3,205
Moulds for mineral	1,018	1,572	2,679
Moulds for rubber and plastics	5,679	12,258	13,972
(Moulds Total	8,460	16,708	22,243)
Import Total	22,307	33,515	25,052
Total demand for Indonesia	26,800	40,200	30,100
(Demand for Moulds	10,150	20,000	26,700)

Source: Indonesian Foreign Trade Statistics

While imports of dies fluctuate greatly from year to year, imports of moulds have been growing strongly. During 4 years from 1984 to 1988, the amount of each kind of moulds has, at least, doubled. Among various kinds of moulds, moulds for rubber and plastics have dominant share which was over 60 percent in 1988. For an estimate of total Indonesian demand for dies and moulds, 20 percent could be added to the import figure.

(3) Future Growth Rate and Expected Demand

a. Expected Trend of Demand for Moulds and Dies

The major users of the products are;

- plastics moulding industry
- metal die casting industry
- sheet metal forming/pressing industry
- glass bottle industry

Among the market segments, important ones in assessing the future demand of dies and moulds are 1)automotive industry which has large tools and dies requirements and 2)plastic moulding industry which is a dominant user of moulds. Annual growth of these two industries are estimated as follows:

	1990	1991	1992	Annual Growth Rate
Vehicle (Unit)	174,992	184,000	193,000	5 percent
Plastics (Ton)	850,000	902,835	1,161,075	17 percent

(Source: Ministry of Industry)

It should be pointed out that it is rather difficult to penetrate into the automotive tools and dies market in the near future as the dies for such industries are mostly large and complex and require advanced technologies and quality controls.

On the other hand, plastic moulding industries would be the key market segment to be penetrated at first. Currently around 500 companies are making plastic products using mould. It is estimated that only about 20 percent of such domestic needs are covered by special and general domestic suppliers. Market size of moulds is around US$ 26,700,000 per year.

b. Growth Perspective of Moulding Industries

In order to identify specific target area within moulding industries, ECFA has conducted a field market survey in September 1990 in Jabotabek, Bandung Raya, and Gerbangkertosusilo (Surabaya). 26 manufacturing companies using moulds in production line have responded to the questionnaire. Growth perspective held by these manufactures from 1990 to 1992 are shown below:

Commodity	Annual Growth
Ice cream cup	20.5 %
Electric component	2.0 %
Gloves (rubber)	2.8 %
Housewares	10.7 %
Jar	14.5 %
Jogging Shoes	154.0 %
Other Plastic Products	0 %
Plastic Container	7.6 %
Plastic Sponge	30.8 %
Rubber Sponge Sole	-1.3 %
PVC Products	0 %
Sport Shoes	13.4 %
Vehicle Components	3.15 %

Source: Questionnaire Survey

Although the number of sample is limited, it can be said that producers have very optimistic views on future production growth.

Assessing from the expected strong future growth of users, growth rate of demand for moulds is estimated at least around 10 percent on average for the next few years.

c. Identification of Market Prospective of Machines.

Following items were examined by the survey mentioned above in order to identify the market prospective machines (moulds):

- usage frequency of machine

  The machine used in almost similar industries may be considered as prospective ones for market.

- life-time

  The shorter the life-time of the machine, the mote prospective the machine is for market; Therefor, of the three life-time intervals in the questionnaire namely 5-10, 10-15, and 15-20 years, the first one determines the most prospective machine for market.

- difficulty of obtaining spare parts

  In the questionnaire, the difficulty to obtain spare parts for machine is categorized as easy, fair, and difficult. The machine, spare parts of which is difficult to obtain, may be considered as prospective for market. It can be understood that if the user of the machine find it is difficult to obtain its spare parts, he tends to use locally produced machines more often; In turn, its market would be high.

By the three criteria, the prospective machines for production are categorized into several priorities as follows:

Priority I: Machines meeting tree criteria namely high frequency of user, low life-time, and difficult to obtain spare parts

Priority II: Machines with high frequency of usage and either low life-time or difficult to obtain spare parts

Priority III: Machines with high frequency of usage only;

Priority IV: Machines with low frequency of usage, low life-time, and difficult to obtain spare parts

Priority V: Machines with low frequency of usage, and either low life -time or difficult to obtain spare parts

The high priority moulds are as follows:

M-3,	Rubber Moulding	II
M-1,	Injection Moulding	III
M-2,	Blow Moulding	III
M-12,	Extruder	III
M-4,	Thermo Forming	V

Considering that expected growth of the users of such machines (e.g. plastic moulding industries) are strong as is mentioned above, market for machines in priority I,II and III are expected to have high market potential. Therefore, rubber moulding, injection moulding, blow moulding and extruder should be considered for domestic production in the near future in Indonesia.

(4) Outlooks of Competing Products

Moulds for rubber or artificial plastic materials have the largest share among moulds import. They are imported mainly from Taiwan, Japan, South Korea, Singapore and Hong Kong. Imports from these 5 countries consist 84 percent of the total imports in 1988. The trend of imports from these countries are shown below. Japan and Taiwan has been the largest exporters to

Indonesia while South Korea has been expanding the amount rapidly.

(,000 US$)

	1984	1986	1988
Taiwan	1,248	3,082	4,685
Japan	1,578	3,090	4,049
South Korea	43	374	1,274
Singapore	355	608	951
Hong Kong	384	771	746

(Source: Indonesian Foreign Trade Statistics)

In order to clarify competitiveness of domestic products, we have asked several questions to users of moulds. To make evaluation of imported/domestic moulds, they were asked to choose one from
1 (good/inexpensive) / 2 (fair) / 3 (poor/expensive)
for each question. The averages of such answers are shown below:

	Domestic	Imported
Price	2.0	2.8
Quality		
accuracy	1.8	1.1
durability	1.7	1.1
design	1.8	1.2
Delivery days	2.2	2.4
Information	2.1	1.8

(Source: Questionnaire Survey)

Although the imported moulds are by far competitive in their qualities such as accuracy, durability and design, prices are considered to be expensive. Delivery time of imported moulds are

slightly longer that those of domestic but the information channel seems to be developed better than those of domestic moulds.

To compete with imported moulds which currently dominating the market, much effort should be made to improve qualities while maintaining advantage of lower production costs. Also, the necessity of enhancing information and delivery channel should be examined.

(5) Technical Consideration

Die and mould making is a specialized and highly skilled metal working process. Business is generated as much by good reputation and delivery on time, as it is by price. It requires good understanding of the downstream manufacturing process, of limits, fits and tolerances and the particular behavioral characteristics of the material which will be processed through the dies and mould.

The process of die and mould manufacture begins in the client's manufacturing plant where overall parameters such as product to be produced, product material, manufacturing machine to be used, production rate, and expected die life are established. This would normally be a client activity with advice being supplied by a tool design engineer from the tool and die making facility.

Once theses parameters are finalized, the tool engineer would produce sketches and design data, culminating in manufacturing drawings of the proposed die or mould. Only after theses drawings had been agreed with the client would actual die and mould manufacture begin on the shop floor. One of the most critical processes to be carried out on the majority of dies and moulds would be heat-treatment so as to produce the desired combination of strength, hardness and toughness.

Following heat-treatment some grinding and polishing might be necessary before final inspection and possibly trial operation of the die or mould.

(6) Sales Forecast and Corresponding Plant Capacity

As is mentioned in section (1) and (2), the market for moulding is expected to grow at least 10 percent annually. Therefore, the future demand is projected as follows:

(cif. ,000 US$)

	1988	1992	1996
Demand of Moulds in Indonesia	26,700	39,091	57,200

Given the average cif price of US$ 8,300 per ton in 1988, the quantity would be:

(ton)

	1988	1992	1996
Demand of Moulds in Indonesia	3,217	4,710	6,892

In order to compete with high quality imported products, following machine tools would be most necessary:

- Electric discharge machines
- Electric discharge wire cutting machines
- Copy mills
- CNC mills
- Grinding equipment

- Hand tools

As the total cost of these machines is estimated to be over US$ 2 million, the capacity should be large enough to make the investment feasible. It is assumed to be realistic to set the production capacity of the factory around 250 ton per year which is expected to be 5 percent of mould market in 1992.

(7) Pricing Consideration

The questionnaire survey shows users have impression that moulds produced in Indonesia is cheaper but the quality is considerably inferior. Taking plastic moulding manufacturers, quality of moulds is absolutely important while the cost of moulds consists only limited percentage of the total production cost of their products.

It would be necessary for the newly established large-scale local producer to set selling price considerably lower than imported products until they successfully penetrate into the market. After establishing sound technological capability and acquiring customers, the prices can be increased up to the level of imported products.

(8) Sales and Distribution

a. Location

Unlike other products, moulds and dies are made to order and are not available off the shelf. Usually moulds and dies ordered by sheet metal fabricators or plastic processing firms are different in type, size and shape depending on the type, size and shape of products to be produced. Requirements for engineering design and machining accuracy for them are very high.

To make large factory successful, good communication and prompt delivery system must be established. In order to fulfil these needs for communication, delivery and advanced technology, the Jakarta area would be the obvious choice since the largest concentration of user industries is found around the area and availability of training opportunities and technology.

b. Distribution Time and Information

The interview survey has indicated that distribution time of domestic products are shorter slightly but information is less available when it is compared to imported products. This means that local producers are not making most use of comparative advantage. Basically, most mould and die users prefer to have their moulds and dies made locally than importing them as delivery time is shorter and there is no problem in communication. But in reality, they often encountered the problems of poor quality and long delivery time.

As the direct sales route is dominant for moulds and dies, enhancement of direct sale promotion and communication with customers would play vital role for sales promotion. Once large scale factory proves its capability to supply quality products at the right price, it would be possible to seize the market currently dominated by imported products through direct marketing promotion in which the local producer has comparative advantage.

5.3 Packaging Machinery

(1) Current outlook of the Industry

The packaging industry has just been developing since 1970. As most of the yield of the industrial products need packaging both for the use of the domestic market, as well as for products oriented towards the international markets, the industry is expected to grow in line with the industrial development in Indonesia.

The industrial development require not only the increased quantities of packaging but also a wider range of packaging with more specific properties.

The development of adequate packaging materials, techniques and facilities has recently become an area of special attention in Indonesia. Especially, high priority accorded to the packaging industry by the Indonesian Government responds to urgent requirements particularly in small and medium scale food industries. In many cases, processed food products undergo a degradation in their nutritional value due to damage during storage, handling and transportation which could be avoided through using appropriate packaging materials and techniques. Furthermore, improved packing could contribute to a rationalization of the distribution system of food products and enhance its competitiveness vis-a-vis imported products.

The packaging machinery industry is considered to have strong growth potential in view of the increasing demand for wider range of packing, the policy emphasis on packaging industry by Indonesian Government and the external support given to this sector.

The most important aspect that characterizes the packaging machinery industry is that it engages in the production of a large variety of items in limited quantities. As the shape, sizes, weights and type of materials of the objects to be

packaged vary so widely, it is impossible for one machine to take care of all types of packaging. Therefore various types of machines have been created.

Generally, packaging and packing machines are classified as follows.

A. Packaging Machines

Machines that keep packaged products individually as they are until they reach end users.

(a) Filling machines
Machines that fill containers such as bottles, cans tubes, boxes and bags with fixed amounts of products which include gases. fluids, pellets and so on.

(b) Bottling machines
A range of machines that clean, fill and cap or seal bottles. Checkers, sterilizers, labellers, etc are often added to complete production line.

(c) Can filling machines
A range of machines that clean, fill and seal cans. Can-checkers, heaters, etc. ate often added to complete production lines.

(d) Pouch packaging machines
Machines that make bags form heat-seal packaging rolls. Products are filled during or immediately after bag-making, sealed and cut apart. Both a vertical and a horizontal version are available. Packaging types include pillow-types. 3-side sealing and 4-side sealing.

(e) Forming and filling machines

Machines that containers form thermoplastic materials by heating and shaping, fill them and finish them with lids. Or, machines that fill special cardboard paper containers with products and seal them.

(f) Labeling machines
Machines that label products or packages.

(g) Cartoning machines
Machines that shape cardboard paper into small boxes, fill them and paste to finish or fold flaps into position.

(h) Over wrapping machines
Packaging machines that cover one or more products with very thin packaging materials twisting, covering or folding.

(i) Sealing machines
All machines designed for sealing. Functions include sealing, paper pasting, cap sealing, sewing up, heat sealing, pasting and taping up.

(j) Vacuum packaging machines.
Machines that vacuum-package products tightly using materials that are highly resistent to air permeation.

B. Packing machines

Machines designed to hold and protect products for their transportation or storage.

(a) Boxers
Machines that take out half-finished and flat-packed corrugated cardboard cased one by one from a magazine, stand them up, flaps on the bottom or site and fix them together.

(b) Casers

A range of machines that pick up corrugated cardboard boxes one by one, assemble them, fill them with products, fold the flaps and paste or tape them.

(c) Case glueing machines

Machines that paste the flaps of corrugated cardboard cases, fold them and press them for sealing.

(d) Case taping machines

Machines that fold the flaps of corrugated cardboard cases and seal them with them or adhesive tape.

(e) Staplers

Machines that staple the flaps of corrugated cardboard cases.

(f) Strapping Machines

Machines that band and tie one or several products or packaged goods. Band varieties range from polypropylene, paper strings to steel belts.

(g) Typing machines

Machines that string products or packaged goods and tie their ends to finish using string made of polyethylene, polyethylene, cotton or jute.

(h) Uncasers

Machines that take out products delivered in corrugated cardboard paper cases or containers and convey them to the packaging line.

(2) Existing Domestic Market

Recent data on import of packing and wrapping machines are as follows.

	1982	1986	1988
Value C.I.F (US$ '000)	16,303	11,045	14,885
Number	3,617	4,955	1,296
Weight (Kg)	481,261	453,261	2,008,487

(Source: Indonesian Trade Statistics)

Export of the packing or wrapping machine is negligible. In 1988, only one machine was exported to Thailand. As it is not realistic to expect export will grow rapidly in the near future, size of the market for future local producer is limited to import substitution, which amount about US$ 15,000,000 in 1988.

(3) Future Growth Rate and Expected Demand

a. Expected Trend of Demand.

The growth rate of the packaging machinery market largely depends on following two factors:

- Growth rate of industrial output
- Demand for replacement

During 1982 to 1986, GDP growth rate based on constant price 1983 was about 5 percent per year. In those years, about US$ 14,000 thousand of packaging machines were imported each year.

Average expected life time is around 13 years according to the local market survey conducted. As the amount of replacement included in the figure around 1982 is negligible (because the import of the machinery around 1969 was very small), US$ 14,000 thousand is considered to be the demand newly created by industrial development.

On the other hand, according to Indonesia's Fifth Five-year Development Plan, the growth rate of manufacturing sector is projected to be 8.5 percent a year during the period 1989/90-1993/94. This means that demand for packaging to be created by market growth would be at least about US$ 24,000 thousand per year (14,000 / 5 x 8.5). In addition, the machines purchased around 1982 would be replaced in 1995. This amount is expected to be about US$ 14,000 thousand.

Total demand would be, therefore, about 38,000 thousand per year in 1995. The growth rate is estimated to be about 15 percent per year.

Generally speaking, percentage of packaging within per capita expenditure increases as per capita disposable income increases. The demand projection could be higher if these factors are taken into consideration.

b. Identification of Market Perspectives of Machines

In order to identify the market perspectives of packaging machines, we have interviewed 20 packaging companies in Jabatabec, Bandung Raya and Gerbangkertasesilo (Surabaya). Following items were examined in the survey:

- usage frequency of machine
- life-time
- difficulty of obtaining spare parts

By the three criteria, market perspectives of machines are categorized into several priorities as follows:

Priority I: machines meeting tree criteria namely high frequency of user, low life-time, and difficult to obtain spare parts.

Priority II: machines with high frequency of usage and either low life-time or difficult to obtain spare parts.

Priority III: machines with high frequency of usage only:

Priority IV: machines with low frequency of usage, low life time, and difficult to obtain spare parts.

Priority V: machines with low frequency of usage, and either low life-time or difficult to obtain spare parts.

The machines used for packaging are categorized as follows:

	Usage Frequency	Life Time	Obtaining Spare Parts	Rank
1. Pouch packing machine	Low	10-15	Easy	-
2. Sealing machine	Low	10-15	Easy	-
3. Overwrapping machine	Low	10-15	Fair	-
4. Shrink packaging machine	Low	10-15	Fair	-
5. Vacuum packaging machine	High	15-20	Easy	III
6. Liquid filling machine	-	-	-	-
7. Labelling machine	High	10-15	Easy	III
8. Bag sealing machine	Low	10-15	Easy	-
9. Injection machine	High	10-15	Easy	III
10.Blow molding machine	High	15-20	Easy	III
11.Pressing machine	High	5-10	Easy	II
12.Extruder	High	15-20	Easy	III
13.Loom	High	15-20	Easy	III
14.Sewing machine	High	15-20	Easy	III
15.Cutting machine	High	15-20	Easy	III
16.Mixer	Low	10-15	Easy	-
17.Drier	Low	5-10	Easy	V

It is considered that machines categorized into I, II and III have high market potential. Therefor, vacuum packaging

machine, labelling machine, injection machine, blow molding machine, pressing machine, extruder, loom sewing machine, cutting machine and cutting machine should be considered for future domestic production in the near future in Indonesia.

(4) Outlook of Competitive Products

In 1988, major exporters of packaging machinery to Indonesia were as follows:

	'000 US$	Number	Unit price
Italy	8,414	45	187
W.Germany	2,100	34	61
Japan	1,418	390	4
U.K.	1,295	36	36
Taiwan	607	534	1

(Source: Indonesian Trade Statistics)

These five countries occupy 93 percent of total import. It can be said that expensive machines with high quality are from European countries such as Italy, Germany and U.K while Asian NIEs such as Taiwan is exporting inexpensive products.

In order to clarify the competitiveness of domestic products, several questions were asked to users of packaging machines in the survey mentioned above. To make evaluation of imported / domestic products, they were asked to choose one from 1 (good or cheap) / 2 (fair) / 3 (poor or expensive) for each question. Averages of such answers are shown below:

	Domestic	Imported
Price	1.3	2.3
Life time	2.7	1.8
Quality	1.7	1.1
Operation	2.0	1.2
Maintenance	1.7	1.2
Spare parts	1.3	1.6
Information	2.0	1.2

(Source: Questionnaire Survey)

Imported machines are by far competitive in their qualities including life-time, easiness of operation and maintenance. On the other hand, domestic products are competitive in its price and spare parts supply. Again, it is apparent that quality should be improved. At the same time, enhancing information network should be considered.

(5) Technological Trends

Packaging and packing were originally manual jobs depending on the function of human hands and eyes and decisions made about what products to pack in what container and with what packing material. Packaging machines have been designed to take over these human functions with mechanical means. Historically speaking, the machines started off as single-function machines, but they have come to be incorporated in production lines and systems to cope with a growing demand to fill automation needs as a natural result of progress on the field of electronics. Technologies required to fill system needs has advanced accordingly.

These system technologies include automatic feeding, automatic transfer, automatic control. etc. At present, manufacturers possess highly sophisticated mechanisms as a result

of mechatronication and are endeavoring to increase added-values.

But, as different industries have different packaging needs and the products to be packed, their packaging materials and packaging forms are combined in a variety of different ways. Therefore various kinds of packaging machinery are required, all of which requires different know-how. R & D had therefore become a heavy burden on the packaging machine industry.

Taking Japan as an example, technology related with packaging machines developed with the introduction and application of foreign technologies. Now, the packaging machine technologies of Japan reached world levels, which is evident also from the fact that the extent of technological introduction from abroad has diminished considerably.

In Japan, the industry is dominated by medium and small-scale firms capitalized at 100 million or less which represent 88 percent of the total. Firms employing 300 or less represent 89 percent of the total. Although the size of each companies are small, unlike other industries, they have no affiliations with big firms such as parent company and subsidiary. Each firm is on an equal standing with its users having their own technologies. In this connection, medium and small firms do not differ from the larger enterprises.

This standing is partially ascribable to the fact that their products are made to order and they seldom engage in mass production of standardized products. Characteristics of the industry include its handing of a wide variety of products in limited quantities, and user leadership. Users, products to be packed and packaging materials vary widely. Natural consequence is the limited number of production of a huge variety of products.

Productivity of the industry in Japan is therefore never very high. Big firms entered the market boasting a steady annual growth ratio of 10 percent in the expectation of winning a niche,

but only a few survive today and most of them had to create separate, subsidiary-like divisions comparable with medium and small scale firms. In this industry, therefore, even medium and small scale firms can compete on the same level with large firms if they have sufficient technology.

(6) Sales Forecast and Plant Capacity

Taking the above mentioned technical aspects into consideration, optimal number of workers at the beginning is assumed to be between 50 to 100. To compete with foreign producers who have highly sophisticated technologies, it is recommended to form a joint venture with foreign company which have advanced technologies and experience.

In this case, annual production scale would be around US$ 1,200 thousand or 8 percent of the current market.

(7) Sales and Distribution

Direct sales rote is dominant because of the higher incidence of production tailored to individual specifications over speculative production. The needs for individual specifications of users are often stringent and cannot be met satisfactorily without placing orders directly. The foreign makers have successfully developed systems to handle these needs while domestic manufacturers are not yet capable of doing this.

Universal machines including strapping and stringing machines are sold indirectly via agents. In some cases, pock packaging machines, filling machines, shrink-package machines and vacuum packaging machines are also sold by agents as ready-made machines.

What is most important for marketing is the continuous information exchange with users. In addition, enough effort

should be made to improve delivery times, after-sales service and maintenance.

Considering the importance of communication with users, delivery time and after-sales maintenance, Jakarta area would be the best location for the factory because the largest concentration of user industry is found around the area.

(8) Pricing Consideration

General view held by users are that local packaging machines are low-price and low-quality. In order to compete with highly qualified foreign manufacturers, it is recommended initially for local manufactures to concentrate in machines universally used rather than machines tailored to individual specification.
At the beginning, it would be necessary for the newly established local manufactures to set selling price considerably lower until they acquire customers.

After building good relationship with customers through providing such universal machines and establishing sales channels, it would be possible for the manufacture to penetrate into the market of machines with stringent individual specification.

5.4 Woodworking Machinery

(1) Current Outlook of the Industry

The wood products industry is one of the most important segments of Indonesia's manufacturing sector accounting for 10 percent of manufacturing value added in 1985. In the 1980s, the Indonesian wood industry has been passing through a periods of rapid industrial restructuring as a consequence of the phased ban on log exports in 1980 with a view to developing the country's plywood industry. More recent measures have included: (a) an export restriction of unimproved sawn timber of the species white meranti, agathis and ramin, (b) a ban on the export of raw rattan so as to develop a local furniture industry, and (c) a ban on the export of dried veneer.

The Government's overall objective in the wood-processing sector is to invigorate the process of 'export substitution' through a higher degree of domestic processing. In particular, attempts are being made to develop so-called 'secondary processing' activities, such as furniture making, in Indonesia itself. Already now, many wood-processing plants in Japan, Republic of Korea and Taiwan threatened with shutdowns because of their former dependence on Indonesian logs as inputs, have relocated to Indonesia.

The log export ban has led to the creation of the largest hardwood plywood industry in the world as well as to a buoyant saw milling industry: by the end of 1986, the plywood industry in Indonesia had an annual capacity of 6.89 million m3, while the sawmill industry had a total capacity of 15.9 million m3 a year. Total exports of plywood, sawn timber and wood-based industry at the top of non-oil exports, even ahead of textiles, rubber and coffee. Approximately one third of sawn timber exports and one eighth of plywood exports went to Japan, implying that Indonesia now supplies around 95 percent of total Japanese plywood imports.

The excellent prospects of Indonesia's woodworking industry would seem to guarantee a high sustained demand for woodworking machinery/equipment in the medium- to long-term. Woodworking machinery is currently predominantly imported, but there appears to be scope for efficient domestic production.

(2) Existing Domestic Market

Demand for wood processing machinery and equipment in Indonesia once peaked in the early 1980s as a result of the accelerated pace of plywood mill development in Indonesia. But the demand for machinery and equipment has recovered strongly due to the recovery of international plywood market.

Recent data on import of wood-processing machinery and equipment are as follows:

	1982	1984	1986	1988
Sawing machine				
Value(US$'000)	8,005	4,248	3,470	13,962
Number	3,849	2,309	1,113	4,059
Other wood-working machines				
Value(US$'000)	40,701	20,837	19,180	100,870
Number	5,957	6,398	5,025	30,656
Total value(US$'000)	48,706	25,085	22,650	114,832
Total number	9,851	8,707	6,438	34,715

Source: Indonesian Trade Statistics

The following lists the main machinery and equipment used by sawmill with and annual installed capacity of 30,000 m3.

a) Sawmilling Machine tools	
1. log winch complete with 20HP electric motor	1
2. Band saw complete with 60 HP electric motor	1
3. Log conveyor system	1
4. 42" circular saw bench with 40 HP electric motor	2
5. 24" circular saw bench with 20 HP electric motor	1
6. 24" circular saw bench with 20 HP electric motor	1
7. 18" circular saw bench with 5.5 HP electric motor	3
8. 18" circular saw bench with 3 HP electric motor	6
9. 5.5 HP conveyer belt electric motor with production gear	4
10.Saw dust system complete with saw dust blower and 60 HP electric motor	1
11.Electric panel	1
12.Wheel loader	1
13.forklift 3-10 ton	2
b)Saw doctoring equipment	
1. Band saw grinding machine	1
2. Vollmer grinding machine 120 W	1
3. MSSG saw grinding machine	1
4. Circular saw grinding machine	1
5. Volmer werke circular saw doctoring machine	1
6. Saw doctoring machine	1
7. Band saw grinding machine	1
8. Saw equalizing machine	1
9. Saw grinding machine	1
10.Sawing machine	1
11.Self manufacturing saw joining machine	1
Total	36

A plywood mill, which requires some quite sophisticated machinery than in saw milling, with an annual installed capacity of 30,000 m3 uses such machineries as roller , stackers, sanders, clippers as detailed in the following table:

1. Chainsaw	2
2. Electric Hoist	3
3. Knife grinder	2
4. Saw sharpener	1
5. Log charger	1
6. Rotary lathe	2
7. Reeling & unreeling	2
8. Balance conveyor	2
9. Chip conveyer	1
10.Auto clipper	2
11.Manual clipper	6
12.Auto stacker	2
13.Roller dryer	2
14.Net dryer	1
15.Dryer conveyor	2
16.Glue speader	3
17.Cold press	3
18.Hot press	3
19.Table lifter	23
20.Double saw	1
21.Sander	2
22.Inspection conveyor	2
23.Sliding conveyor	1
24.Glue mixer	2
25.Putty mixer	1
Total	75

Such equipment as surface planing and thicknessing machine, dimension saws, circular saw etc. are employed by furniture pants. For example, a furniture factory with an annual production capacity of 2,500 m3 employs the following machinery

and equipment.

1. Combined surface planning and thicknessing machines with tools	2
2. Sliding table dimension saw with tools	2
3. Circular sawbench with rise and fall saw with tools	2
4. Thicknesser with tools	1
5. Bandsawing machine with tools	1
6. Hollow mortising machine with vibratory head with tools	2
7. Wadkin high speed router with tools	1
8. Westain timber seasoners	4
Total	16

The output of wood processing industry in Indonesia in 1985 was estimated as follows. Since production in furniture and woodworking is extremely diversified and normally recorded in number of pieces, the output of these subsectors were measured by roundwood equivalent volume (r).

	('000 m3)	CRV('000 US$)
Sawn timber	7,000	760,028
Plywood	4,847	894,960
Blockboard	300	34,399
Particle board	60	96,220
Veneer	95	inc. in Plywood
Woodworking(r)	398	87,700
Furniture(r)	315	306,994

The current replacement value (CRV) of the Indonesian wood processing industry, which was estimated by the 1987's Wood Processing Industry Sector Study, is also shown in the above-table. Accordingly, the total current replacement value for the Indonesian wood processing industry amounts to US$ 2.18 billion.

(3) Future Growth Rate and Expected Demand

a. Expected Trend of Demand

The growth rate of the woodworking machinery market largely depends on growth rate of wood-working industry and demand for replacement. Future growth rate of Indonesian sales of wooden products (in 1,000 m3) is estimated by the World Bank in 1987 as follows:

	1985	2000	Increment p.a.
Sawn timber	7,000	10,700	2.9 %
Plywood	4,874	7,714	3.1 %
Blockboard	300	840	7.1 %
Particle Board	60	190	8.1 %
Veneer	95	400	10.0 %
Woodworking(r)	398	1,040	6.6 %
Furniture(r)	315	1,063	8.4 %
	13,042	21,974	

Based on the current replacement value in 1985, the current replacement value in the year 2000 is estimated as follows.

	CRV(US$)/m3	Output ('000m3)	CRV (million US$)
Sawn timber	108.6	10,700	1,162
Plywood/Veneer	181.1	8,114	1,469
Blockboard	114.7	840	96
Particle Board	1,603.7	190	305
Woodworking(r)	220.4	1,040	229
Furniture(r)	974.6	1,063	1,036
Total			4,298

The estimation shows that the CRV in 2000 is about twice as much as the CRV in 1985, which is equivalent to 5 percent annual increase of CRV for the 15 years. The targeted CRV can be achieved by replacing existing machinery and by installing machinery for incremental capacity. Assuming that the all existing machinery/equipment in 1985 be replaced by the year 2000, the annual replacement value would be US$ 145 million. And the new purchase for incremental capacity would be US$ 110 - 200 million per year from 1986 to 2000. Thus, the annual investment for woodworking machinery in Indonesia is estimated to be about US$ 280 million in 1991 and US$ 350 million in 2000.

b. Identification of Market Prospective of Machines.

Following items were examined by the questionnaire survey in order to identify the market prospective machines:

- usage frequency of machine

  The machine used in almost similar industries may be considered as prospective ones for market.

- life-time

  The shorter the life-time of the machine, the mote prospective the machine is for market; Therefor, of the three life-time intervals in the questionnaire namely 5-10, 10-15, and 15-20 years, the first one determines the most prospective machine for market.

- difficulty of obtaining spare parts

  In the questionnaire, the difficulty to obtain spare parts for machine is categorized as easy, fair, and difficult. The machine, spare parts of which is difficult to obtain, may be considered as prospective for market. It can be understood that if the user of the machine find it is difficult to obtain its spare parts, he tends to use locally

produced machines more often; in turn, its market would be high.

By the three criteria, the prospective machines for production are categorized into several priorities as follows:

Priority I: Machines meeting tree criteria namely high frequency of user, low life-time, and difficult to obtain spare parts

Priority II: Machines with high frequency of usage and either low life-time or difficult to obtain spare parts

Priority III: Machines with high frequency of usage only;

Priority IV: Machines with low frequency of usage, low life-time, and difficult to obtain spare parts

Priority V: Machines with low frequency of usage, and either low life -time or difficult to obtain spare parts

The priority machines used for woodworking are categorized as follows:

Type of Machine		Priority
W-1	Vertical/Horizontal Sawing M	III
W-2	Band Sawing Machine	III
W-3	Circular Sawing Machine	III
W-4	Planing Machine	III
W-5	Moulding Machine	III
W-6	Boring Machine	III
W-11	Shooting Pin Tool	III
W-12	Jig Saw	V

Since priority III indicates these machines are widely used ones, prospects for domestic production of the above-listed woodworking machineries are high if the products would have

competitive quality with imported machines.

(4) Outlooks of Competing Products

Among the total imports (34,715 units, US$ 115 million) of woodworking machinery in 1988, imports from Japan accounts for about 50 percent (US$ 56 million) in value and that from Taiwan accounts for 65 percent (25,455) in units.

In order to clarify competitiveness of domestic products, we have asked several questions to users of woodworking machinery. To make evaluation of imported/domestic woodworking machinery, they were asked to choose one from
1 (good/inexpensive) / 2 (fair) / 3 (poor/expensive)
for each question. The averages of such answers are shown below:

	Domestic	Imported
Price	1.9	2.5
Quality		
accuracy	2.4	1.1
durability	2.8	1.6
design	2.1	1.4
Delivery days	1.3	1.9
Information	1.3	1.7

(Source: Questionnaire Survey)

Although the imported woodworking machines are by far competitive in their qualities such as accuracy, durability and design, prices are considered to be expensive. Delivery time of domestic machine is slightly shorter that those of imported and the information channel seems to be developed better than those of imported machines.

In order to compete with imported woodworking machinery, much effort should be made to improve qualities while maintaining advantage of lower production costs.

(5) Sales Forecast and Corresponding Plant Capacity

As is mentioned in section (3), the expected demand for woodworking machinery is as follows.

(US$ million)

	1991	1995	2000
Demand of woodworking machinery in Indonesia	280	310	350

Although some high precision instrument and control equipment are difficult to be produced in Indonesia in short period of time, small to medium scale various types of sawing machine, log intake equipment, driers and general purpose woodworking machine are technically feasible to be produced in Indonesia. The growth of demand is large enough to absorb the products of the new woodworking manufacturing company with 100 employee producing 1000 units of woodworking machinery with the value of US$ 2 million.

(6) Pricing Consideration

The questionnaire survey shows users have impression that woodworking machinery produced in Indonesia is cheaper but the quality is considerably inferior. Since the market of wood products is not only in Indonesia but also in foreign countries, the production quality of wood processing industry should be kept in high level, especially for the products oriented to export market. Therefore, it would be necessary for the newly established local producer to set selling price considerably

lower than imported machinery until they successfully penetrate into the market. After establishing sound technological capability and acquiring customers, the prices can be increased up to the level of imported machinery.

APPENDIX

A. QUESTIONAAIRE FOR POTENTIAL INVESTORS SURVEY

B. LIST OF INDUSTRIAL ESTATES IN INDONESIA

C. FINANCIAL ANALYSIS TABLES FOR PROPOSED INDUSTRIAL ESTATE

D. QUESTIONNAIRE FOR THREE SUPPORTING INDUSTRIES

A. QUESTIONNAIRE FOR POTENTIAL INVESTORS SURVEY

BEKASI INDUSTRIAL ESTATE

(B.I.E)

PLAN

4 MAJOR CHARACTERISTICS OF B.I.E.

1. CLOSE TO THE CENTRAL JAKARTA

2. ABUNDANT MANPOWER

3. WELL EQUIPPED WITH MODERN FACILITIES
   --esp. TELECOMMUNICATION

4. MAINTENANCE SERVICE

OUTLINE OF THE PLAN

The Bekasi Industrial Estate (BIE) Plan is an Indonesian-Japanese joint-venture project of industrial estate development.

1. Project Site: CIKARANG, BEKASI REGION, WEST JAVA
   30km from the Sumangi intersection, Jakarta
   70km from the Soekarno-Hatta International Airport
   45km from Tanjung Priok Port

2. Schedule: Construction: Feb. 1990 - Dec. 1990
   Partial Operation: June 1990

3. Development Area: 210 ha

4. Composition of the Estate:

General Industrial Zone (GIE)	94ha	
Export Processing Zone (EPZ)	56ha	*subject to government approval)
Public Facilities	60ha	

5. Utilities Available:
   1)Electricity: Enough electricity will be supplied by PLN.
   2)Water: Adequate supply, in terms of both volume and quality, will be available from both the nearby Cikarang river and deep wells in BIE.
   3)Drainage: BIE will be equipped with drainage treatment system.
   4)Telecommunication: 500 telephone lines will be made available from the PERMUTEL(State Telecommunication Company) BEKASI (3 lines or more per factory).
   5)Maintenance: A BIE management office will be in charge of operation and maintenance of utility facilities.
   6)Other Facilities: An independent fire department, security guards, cafeteria, clinic, bank, greenery zone, mosque, etc will be also operated in the BIE.
   7)Export Processing Zone (EPZ): EPZ is a bonded zone where an export manufacturer can both import raw materials (for export products) and export its products duty free.

6. Surrounding Environment:
   1)Availability of manpower: Large number of manpower will be available from the JABOTABEC area.
   2)Residence: Wide range of houses will be available since housing constructions are already planned along the highway connecting BIE and Central Jakarta.

Questionnaire

1. Are you considering either re-location or expansion of your production facilities in JABOTABEK ? (please check)

   ☐ 1. Yes, we have concrete plan of re-location or expansion.

   ☐ 2. Yes, but not concrete plan yet.

   ☐ 3. Maybe.

   ☐ 4. No.

2. If you are considering, when are you planning to re-locate or expand ?

   Year _____ Month _____

3. Are you interested in the "Bekasi Industrial Estate" as a possible site for your new factory ? (please check)

   ☐ 1. Yes, very much intrested.

   ☐ 2. Yes, I have some interest.

   ☐ 3. Not very much.

   ☐ 4. Not at all.

4. What are the prospective product(s) in the new factory ?

   _____

   _____

   _____

5. How many workers will you employ for the new factory ?

   _____

   (Number of workers)

6. Have you found a site (land) for the new factory ? (please check)

☐ 1. Yes, I purchased/decided a project site

area _____ m2

place _____

☐ 2. No, but we are looking for one.

☐ 3. No, we have not started looking for.

7. FOR THOSE WHO ARE NOW LOOKING FOR A SITE

What kinds of physical facilities would you need for the new factory ? (please specify numbers)

1. Land area _____ m2
2. Electricity _____ KVA
3. Water _____ Tons/day
4. Telephone line(s) _____ line(s)
5. Telefax line(s)_____ line(s) (faximile)
6. Telex _____ line(s)
7. Any other facility you need (please specify)

_____

_____

_____

8. Would you prefer Export Processing Zone (EPZ)* if any ? (please check)

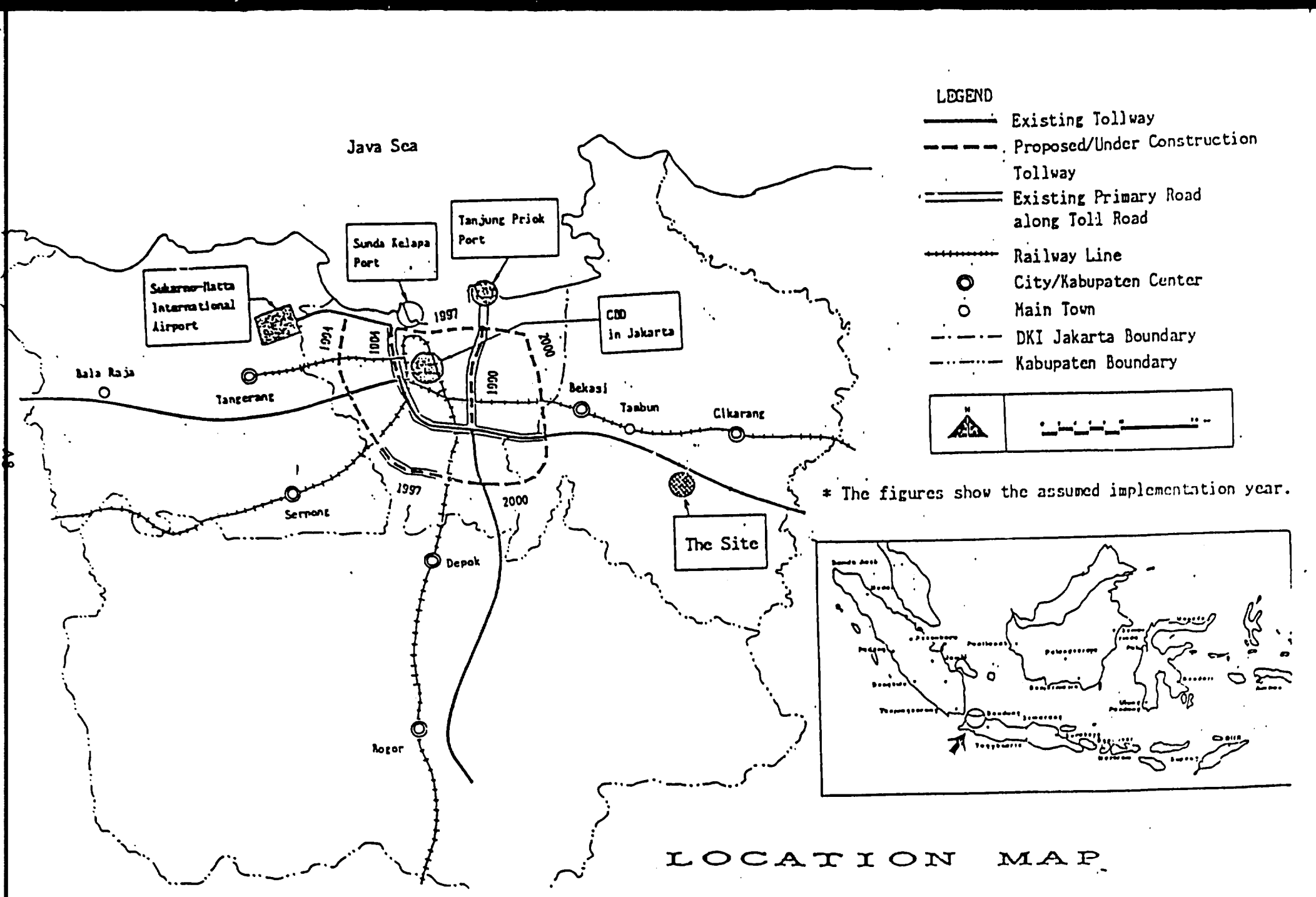
☐ 1. Yes, we prefer EPZ.

☐ 2. No, we would rather not have a land in EPZ.

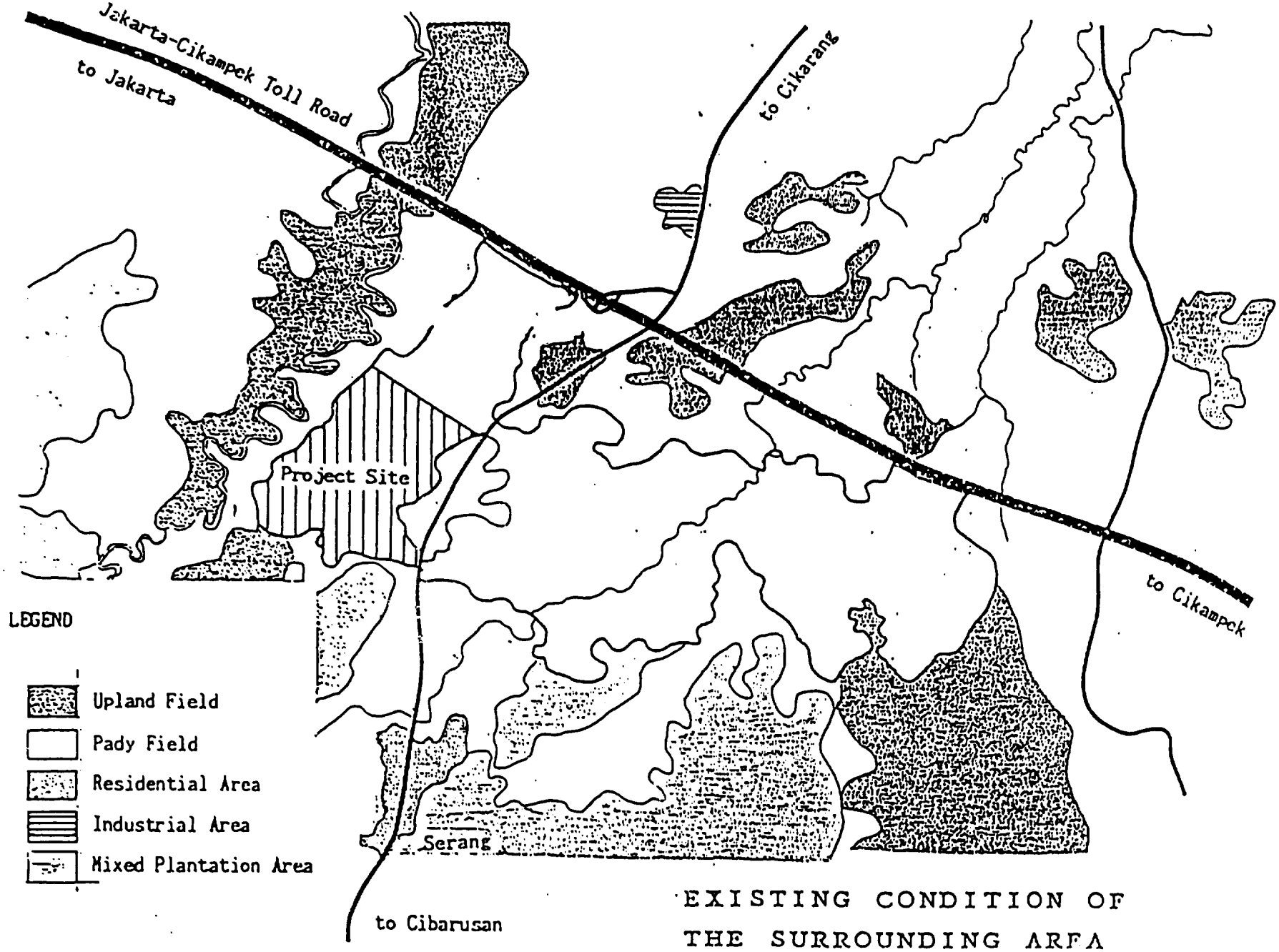
☐ 3. We do not care whether EPZ or not.

Note: * Export Processing Zone (EPZ) is a bonded zone where an export manufacturer can both import raw materials (for export products) and export its products duty free.

9. Additional comments : Your opinion, comments or any question concerning our "Bekasi Industrial Estate" plan will be highly appreciated.



LOCATION MAP



EXISTING CONDITION OF THE SURROUNDING AREA

B. LIST OF INDUSTRIAL ESTATES IN INDONESIA

APPEXDIX B. LIST OF INDUSTRIAL ESTATES IN INDONESIA

1 Province	2 No	3 Name of Industrial Estate	4 Owner	5 Status	6 Location	7 Total Area (ha)	8 Developed Area (ha)	9 Occupancy Rate (%)
NORTH SUMATERA	1	PT.KAWASAN INDUSTRI MEDAN.	Goverment	Operational	Medan.	220	78.5	95
RIAU	1	BATAM INDUSTRIAL ESTATE	Private	Aplicated	Batam	200		
	2	SUGAR BATAM	-'-	Aplicated	Batam	330		
LUMPUNG	1	LUMPUNG INDUSTRIAL ESTATE PROJECT	Goverment	Under construction	Lampung Selatan	275	77.2	0
DKI JAKARTA	1	PT.JIEP	Government	Operational	JAKARTA	5688	326.2	
	2	PT.MARUNDA	Government	Operational	North Jakarta	410	410	40
	3	PT.KAWASAN BERIKAT NUSANTARA	Government	Operational	Tanjung Priok	173	173	100
					TanJung Priok	10	10	100
	4	CILANDAK COMERCIAL ESTATE	Private	Operational	Jakarta	12	12	100
	5	B.P.P.P.ANCOL	Private	Operational	Jakarta	107.3	97.3	100
	6	PULO MAS	Private	Operational	Jakarta	350		
	7	CEMPAKA PUTIH PROJECT AUTHORITY	Private	Operational	Jakarta	14	14	100
	8	BPPL.MUARA KARANG	Private	Operational	Jakarta	25	25	100
	9	B.P.P.L.PLUIT.	Private	Operational	Jakarta	285	25	100

1 Province	2 No	3 Name of Industrial Estate	4 Owner	5 Status	6 Location	7 Total Area (ha)	8 Development Area (ha)	9 Occupancy Rate (%)
WEST JAWA	1	PT. KRAKATAU INDUSTRIAL ESTATE CILEGON	Government	Operational	Cilegon	550	116	
	2	CIREBON INDUSTRIAL ESTATE PROJECT	Government	Under construction	Cirebon	61.8	41	
	3	PT.KAWASAN INDUSTRI KUJANG-CIKAMPEK	Government	Aplication	Karawang			
	4	DAAN MOGOT	Private	Operational	Tangerang	40	40	10
	5	ANUGRAH BUANA PERMAI (JATAKE)	Private	Operational	Tangerang	180	180	65
	6	GUNUNG CERMAI INTI	Private	Under construction	Bekasi	1000	380	
	7	EAST JAKARTA INDUSTRIAL PARK	Private	Under construction	Bekasi	330	210	
	8	JARABEKA	Private	Under construction	Bekasi	510	150	
	9	LANGGENG SAHABAT	Private	Under construction	Serang	500	200	
	10	BEKASI FAJAR INDUSTRIAL ESTATE	Private	Permit	Bekasi	500		

1 Province	2 No	3 Name of Industrial Estate	4 Owner	5 Status	6 Location	7 Total Area (ha)	8 Development Area (ha)	9 Occupancy Rate (%)
WEST JAWA	11	HYUNDAY INTI JOINT VENTURE	Private	-'-	Bekasi	200		
	12	RAWA INTAN	Private	Permit	Bekasi	300		
	13	HUTAN LESTARI PERTIWI	-'-	-'-	Karawang	3232		
	14	BEKASI METROPOLITAN	-'-	-'-	Kawawang	700		
	15	MAYA NOVA INDAH	-'-	-'-	Serang	500		
	16	SARI KURNIA NUGRAHA	Private	Application	Serang	250		
	17	WAHANA GARUDA LESTARI	Private	Application	Serang	150		
	18	DASAR REZEKI GRAHA TERA	Private	Application	Serang	300		
	19	CITRA HABITAT	-'-	-'-	Tangerang	500	500	
	20	GRAHA MITRA SANTOSA	Private	Application	Tangerang	500		
	21	PENTA BINANGUN SEJAH TREA	Private	Permit	Tangerang	150	150	
	22	PUTERA DAYA PERKASA	Private	Permit	Tangerang	300	300	
	23	CIBINONG CENTRE INDUSTRIAL ESTATE	Private	Application	Bogor	250		
	24	GUNUNG NAGA MAS	Private	Application	Bekasi	300		
	25	MALIGI PERMATA INDUSTRIAL ESTATE	Private	Application	Karawang	500		
	26	KREASI INTAN BEKASI INDUSTRIAL ESTATE	Private	Application	Bekasi	300		
	27	TELENTA ANUGRAH PRATAMA	Private	Application	Bogor	300		

1 Province	2 No	3 Name of Industrial Estate	4 Owner	5 Status	6 Location	7 Total Area (ha)	8 Development Area (ha)	9 Occupancy Rate (%)
CENTRAL JAVA	1	TUGU NDAH ABADI	Private	Under construction	Semarang	300	300	
	2	GUNA MEKAR	Private	Permit	Semarang	300		
	3	MERDEA WIRASTAWA	Parivate	Permit	Semarang	300		
	4	PT. KAWASAN INDUSTRI CILACAP	Government	Operational	Cilacap	240	78	Not Available
EAST JAVA	1	PT.SIER	Goverment	Operational	Surabaya	319	246.1	95
	2	INTI MEKANIKA USAHA MUKTI	Private	Under construction	Pasuruan	500	500	
	3	Sidoarjo, Waru Industrial Estate Tambak Sari	Private	Permit	Sidoardjo	318		
	4	MASPION	Private	Application	Sidoardjo	500		
	5	INDAL INDUSTRIAL ESTATE	Private	Application	Sidoardjo	500		
	6	DHARMA SEJAHTERA SAKTI	Private	Application	Mojokerto	200		
	7	ALTAP PROMA	Private	Application	Surabaya	500		
	8	ALUMINDO	Private	Application	Surabaya	500		
	9	SINAR SATELIT	Private	Application	Gresik	1000		
	10	PT.GRESIK INDUSTRIAL ESTATE	Government	Application	Gresik	100		
	11	PRESINDO AREA	Private	Application	Gresik	6000		
	12	PT.SAWASAN INDUSTRI PETRO KIMIA GRESIK	Government	Application	Gresik	90		
	13	KAWASAN INDUATRI	Private	Application	Gresik	1000		

1 Province	2 No	3 Name of Industrial Estate	4 Owner	5 Status	6 Location	7 Total Area (ha)	8 Development Area (ha)	9 Occupancy Rate (%)
EAST KALIMANTAN	1	PT.KAWASAN PUPUK KALIMANTAN TIMUR	Government	Application	Kutai	230		
SOUTH SULAWESI	1	PT.KIMA	Government	Operational	Ujung Pandang	203	86.1	73.4
CENTRAL SULAWESI	1	LEMBAH HIJAU NAGOYA	Private	Under construction		100	100	

C. FINANCIAL ANALYSIS TABLES FOR PROPOSED INDUSTRIAL ESTATE

The detailed data tables for the financial analysis are shown in this Appendix B.

	pages
BASE CASE	B-2 - B-10
CASE A (GIZ 90ha/EPZ 60ha)	B-11 - B-19
CASE DX(GIZ only, two phases)	B-20 - B-28

Each case consists of the following nine tables.

1) CASH FLOW SUMMARY
2) SALES PLAN
3) COST ESTIMATES
4) COST OF SALES
5) DEPRECIATION
6) INCOME STATEMENT
7) FUND FLOW STATEMENT
8) LOAN SCHEDULE
9) CASH FLOW TABLE

<CASH FLOW SUMMARY> BASE CASE

	1989	1990	1991	1992	1993	1994
Land Sales		27,000	29,700	32,670	5,990	6,588
Phase I						
GIZ		27,000	29,700	32,670	5,990	6,588
EPZ		0	0	0	0	0
Phase II						
GIZ		0	0	0	0	0
EPZ		0	0	0	0	0
Power Sales		1,697	1,867	2,054	377	414
Telephone Sales		750	825	908	166	183
Water Sales		0	1,030	2,265	3,737	4,340
Maintenance Fee		0	50	109	180	209
JIIEB Sales						8,000
INFLOW TOTAL(ROI)		29,447	33,471	38,005	10,450	19,734
Loan		16,728	8,706	0	0	0
INFLOW TOTAL(ROE)		46,175	42,177	38,005	10,450	19,734
Development Cost	13,650	37,643	17,871			
O/M Cost		1,620	3,810	4,574	5,031	5,930
Sales Cost		810	891	980	180	198
Corporate Tax		6,592	3,021	5,250	0	0
Value Added Tax		589	669	760	209	235
Land and Bldg. Tax		14	27	27	27	27
OUTFLOW TOTAL(ROI)	13,650	47,269	26,290	11,591	5,447	6,389
Repayment of Debt		0	10,037	8,569	5,087	1,741
Interest on Debt		0	2,877	2,300	819	209
Remaining Debt						0
OUTFLOW TOTAL(ROE)	13,650	47,269	39,204	22,460	11,353	8,339
NETFLOW(ROI)	(13,650)	(17,821)	7,182	26,415	5,003	13,345
NETFLOW(ROE)	(13,650)	(1,093)	2,974	15,545	(903)	11,395

IRR(ROI)= 19.3%
IRR(ROE)= 21.6%

<NOTE>

	1990	1991	1992	1993	1994
SALES					
Unit Price(Rp/m2)	GIZ=	60,000	EPZ=	60,000	
Phase I					
Salable Land(ha)	GIZ=	150	EPZ=	0	
GIZ	30%	30%	30%	5%	5%
EPZ	0%	0%	0%	0%	0%
Phase II					
Salable Land(ha)	GIZ=	0	EPZ=	0	
GIZ	0%	0%	0%	0%	0%
EPZ	0%	0%	0%	0%	0%
COST	100% of Original estimated cost				
PHASING					
FINANCIAL ARRANGEMENT					
Equity 15,219					
Loan Requir 16,728	8,706	0	0	0	
Source	Foreign=	60%Int.Rate=	12%		
	Local=	40%Int.Rate=	25%		

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<SALES PLAN> BASE CASE (mil. Rp.) base-1

		1989	1990	1991	1992	1993	1994	Total	Escalat'n
1. Land Sales			27,000	29,700	32,670	5,990	6,588	101,948	
Phase I									
GIZ	Sales Price(Rp/m2,'90 price):				60,000				0.1
	Salable Land(ha):				150				
	Sales Schedule:		30%	30%	30%	5%	5%		
	Revenue:		27,000	29,700	32,670	5,990	6,588	101,948	
EPZ	Sales Price(Rp/m2,'90 price):				60,000				0.1
	Salable Land(ha):				0				
	Sales Schedule:		0%	0%	0%	0%	0%		
	Revenue:		0	0	0	0	0	0	
Total Revenue			27,000	29,700	32,670	5,990	6,588	101,948	
Phase II									
GIZ	Sales Price(Rp/m2,'90 price):				55,000				0.1
	Salable Land(ha):				0				
	Sales Schedule:		0%	0%	0%	0%	0%		
	Revenue:		0	0	0	0	0	0	
EPZ	Sales Price(Rp/m2,'90 price):				60,000				0.1
	Salable Land(ha):				0				
	Sales Schedule:		0%	0%	0%	0%	0%		
	Revenue:		0	0	0	0	0	0	
Total Revenue			0	0	0	0	0	0	
2. Power Connection Charge									
	Unit Price(,000Rp/KVA,'90 price):				90				0.1
	Salable Lines(KVA):				62,870				
	Sales Schedule:		30%	30%	30%	5%	5%		
Revenue			1,697	1,867	2,054	377	414	6,409	
3. Telephone Line Sales									
	Unit Price(,000Rp/ln,'90 price):				5,000				0.1
	Salable Lines:				500				
	Sales Schedule:		30%	30%	30%	5%	5%		
Revenue			750	825	908	166	183	2,832	
4. Water Sales	Unit Price(Rp/m3,'90 price):				1,300 (incl. waste water treat't)				0.1
	Capacity(m3/day):				8,000				
	Utilization Rate:		0%	30%	60%	90%	95%		
Revenue			0	1,030	2,265	3,737	4,340	11,372	
5. Maintenance Fee	Unit Price(,000Rp/ha/year,'90 price):				1,000				0.1
	Chargeable Area(ha):				150				
	Utilization Rate:		0%	30%	60%	90%	95%		
Revenue			0	50	109	180	209	547	
TOTAL REVENUE			29,447	33,471	38,005	10,450	11,734	123,108	

<COST ESTIMATES> BASE CASE (mil. Rp.) base-2

	DASE('89)	1989	1990	1991		TOTAL	TTL including c,d,e,f		Escalatio
1. Development Cost									
Land Acquisition		13,650	0			13,650			
PHASE I ----------									
a.Land Development	31,816		22,271	9,545		31,816	49,431		
Land Preparation	617	COST	432	185		617	959		
Earth Work	3,938	100%	2,757	1,181		3,938	6,118		
Road & Drainage	5,966		4,176	1,790		5,966	9,269		
Other Exterior Work	798		559	239		798	1,240		
Water Supply	9,219		6,453	2,766		9,219	14,323		
Waste Water Treatment	10,262		7,183	3,079		10,262	15,943		
Electrical Work	1,016		711	305		1,016	1,578		
Solid Waste Incineration	0		0	0		0	0		
b.Buildings	950		475	475		950	1,476		
c.Indirect Cost(20% of a+b)			4,549	2,004		6,553			
d.Engineering Fee(7% of a+b+c)			1,911	842		2,752			
e.Contingency(10% of a+b+c+d)			2,921	1,287		4,207			
f.V.A.T.(10% of a+b+c+d+e)			3,213	1,415		4,628			
g.Other Work	4,608		2,304	2,304		4,608	4,608		
(Building)	104		52	52					
PHASE I TOTAL----------			37,643	17,871		55,515	55,515		
PHASE II----------									
a.Land Development	0		0	0		0	0		0.1
Land Preparation	0	COST	0	0		0	0		
Earth Work	0	100%	0	0		0	0		
Road & Drainage	0		0	0		0	0		
Other Exterior Work	0		0	0		0	0		
Water Supply	0		0	0		0	0		
Waste Water Treatment	0		0	0		0	0		
Electrical Work	0		0	0		0	0		
Solid Waste Incineration	0		0	0		0	0		
b.Buildings	0		0	0		0	0		
c.Indirect Cost(20% of a+b)			0	0		0			
d.Engineering Fee(7% of a+b+c)			0	0		0			
e.Contingency(10% of a+b+c+d)			0	0		0			
f.V.A.T.(10% of a+b+c+d+e)			0	0		0			
g.Other Work	0		0	0		0	0		
(Building)									
PHASE II TOTAL----------			0	0		0	0		
Development Cost Total		13,650	37,643	17,871		69,165	69,165		
2. Operation and Maintenance Cost									
Equipment				840					
Full Load Cost	5,400								0.1
Operation Load Factor			30%	50%	70%	70%	75%		
Operation and Maintenance Cost Total			1,620	3,810	4,574	5,031	5,930	20,965	

3. Sales Cost (3% of Land Sales)		810	891	980	180	198	3,058
4. Tax							
a.Corporate Tax		6,592	3,021	5,250	0	0	14,863
b.Value Added Tax		589	669	760	209	235	2,462
c.Land and Buildings Tax		14	27	27	27	27	122
Tax Total		7,195	3,718	6,037	236	262	17,448
TOTAL COST	13,650	47,269	26,290	11,591	5,447	6,389	110,035

<COST OF SALES> BASE CASE (mil. Rp.) base-3

		1989	1990	1991	1992	1993	1994	Total
1. Land Sales Cost	Total Cost =	20,727						
	Distribution:		30%	30%	30%	5%	5%	
	Sales Cost:		6,218	6,218	6,218	1,036	1,036	20,727
2. Power Connection Cost								
	Total Cost =	2,932						
	Distribution:		30%	30%	30%	5%	5%	
	Sales Cost:		880	880	880	147	147	2,932
3. Telephone Line Sales Cost								
	Total Cost =	1,548						
	Distribution:		30%	30%	30%	5%	5%	
	Sales Cost:		464	464	464	77	77	1,548
4. Operation and Maintenance Cost			1,020	3,810	4,574	5,031	5,030	20,065
5. Sales Cost			810	891	980	180	198	3,058
6. Value Added Tax			589	669	780	209	235	2,482
7. Land and Building Tax			14	27	27	27	27	122
8. Depreciation and Amortization				8,980	6,785	5,188	4,016	24,974
TOTAL COST OF SALES			10,595	21,945	20,088	11,895	11,065	76,788

<DEPRECIATION> BASE CASE (mil. Rp.)

	Phase I(mid'91)	Phase II(end'91)
Depreciable and Amortizable Assets		
a.Land Development		
Road & Drainage	9,269	0
Other Exterior Work	1,240	0
Water Supply********	14,323	0
Waste Water Treatment***	15,943	0
Electrical Work********	1,578	0
Solid Waste Incineration	0	0
b.Buildings	1,580	0
A.Depreciable Assets without *****	12,089	0
B.Depreciable Assets with *****	31,845	0
C.Equipment for Operation and Maintenance	840	

	1991	1992	1993	1994	Total
A.Depreciation and Amortization for A (5%, straight line)	604	604	604	604	2,418
Net Fixed Assets of A at End of Period	11,484	10,880	10,275	9,671	
B.Depreciation for B (25%, declining balance)	7,961	5,971	4,478	3,359	21,769
Net Fixed Assets of B at End of Period	23,884	17,913	13,435	10,076	
C.Depreciation for C (50%, declining balance)	420	210	105	53	788
Net Fixed Assets of C at End of Period	420	210	105	53	
TOTAL DEPRECIATION AND AMORTIZATION	8,986	6,785	5,188	4,016	24,974

<INCOME STATEMENT> BASE CASE (mil. Rp.) base-5

	1989	1990	1991	1992	1993	1994	Total
Gross Profit on Sales		18,852	11,526	17,317	(1,445)	69	46,320
Operating Income		29,447	33,471	38,005	10,450	11,734	123,108
Cost of Sales		10,595	21,945	20,688	11,895	11,665	76,788
Non-operating Expenses							
Interest on Debt		0	2,077	2,300	819	209	6,206
Loss from Sale of JIIEB						11,799	11,799
Net Profit before Tax		18,852	8,649	15,017	(2,265)	(11,939)	28,314
Corporate Tax		6,592	3,021	5,250	0	0	14,863
Net Profit after Tax		12,260	5,628	9,767	(2,265)	(11,939)	13,451
Dividends		0	0	0	0	0	0
Retained Earnings		12,260	5,628	9,767	(2,265)	(11,939)	13,451

<FUNDS FLOW STATEMENT> BASE CASE (mil. Rp.) base-6

	1989	1990	1991	1992	1993	1994	Total
Source of Fund	15,219	36,550	30,882	24,114	4,103	1,337	112,205
Cash Generated from Operation							
Net Profit after Tax		12,260	5,628	9,767	(2,205)	(11,939)	13,451
Depreciation and Amotization		0	8,986	6,785	5,188	4,016	24,974
Sales Cost of Land, Power, Tel		7,562	7,562	7,562	1,260	1,260	25,207
Non-operating Income(sales of JIIEB)						8,000	8,000
Financial Resources							
Equity	15,219						
Debt	0	16,728	8,706	0	0	0	25,434
Use of Fund	13,853	37,917	30,881	10,027	6,018	1,950	100,804
Development Cost	13,650	37,643	17,871				69,165
Change in Working Capital	203	274	95	57	112		
Debt Service							
Repayment of Foreign Debt		0	3,346	5,087	5,087	1,741	15,260
Interest on Foreign Debt		0	1,204	1,430	810	209	3,802
Repayment of Local Debt		0	6,691	3,482	0	0	10,174
Interest on Local Debt		0	1,673	871	0	0	2,543
Dividends		0	0	0	0	0	0
Cash Increase or (Decrease)	1,367	(1,367)	1	13,188	(1,835)	(614)	
Beginning Cash Balance	0	1,367	(0)	0	13,188	11,353	
Ending Cash Balance	1,367	(0)	0	13,188	11,353	10,739	

<LOAN SCHEDULE> BASE CASE (mil. Rp.) base-7

		1989	1990	1991	1992	1993	1994	Total
Loan Amount Needed			16,728	8,706	0	0	0	25,434
US$ Portion	60%		10,037	5,224	0	0	0	15,260
Rp. Portion	40%		6,691	3,482	0	0	0	10,174
Repayment Schedule								
US$ Repayment				3,346	5,087	5,087	1,741	15,260
Interest	12%			1,204	1,430	819	209	3,662
Balance after Repayment			10,037	11,915	6,828	1,741	0	
Rp. Repayment				6,691	3,482	0	0	10,174
Interst	25%			1,673	871	0	0	2,543
Balance after Repayment			6,691	3,482	0	0	0	

<CASH FLOW TABLE> BASE CASE (mil. Rp.) base-8

Cash Flow on ROI Basis	1989	1990	1991	1992	1993	1994	Total
Cash Outflow	13,650	47,269	26,290	11,591	5,447	6,389	110,635
Cash Inflow		29,447	33,471	38,005	10,450	19,734	131,108
Net Cash Flow	(13,650)	(17,821)	7,182	26,415	5,003	13,345	20,473

Cash Flow on ROE Basis	1989	1990	1991	1992	1993	1994	Total
Cash Outflow	13,650	47,269	39,204	22,460	11,353	8,339	142,275
Cash Inflow		46,175	42,177	38,005	10,450	19,734	156,542
Net Cash Flow	(13,650)	(1,093)	2,974	15,545	(903)	11,395	14,267

Discount Rate	Net Present Value (ROI)	(ROE)
0%	20,473	14,267
10%	6,939	5,410
20%	(377)	536
30%	(4,416)	(2,233)
40%	(6,647)	(3,832)

Internal Rate of Return

(ROI)	19.3%
(ROE)	21.6%

<CASH FLOW SUMMARY>　　CASE A (GIZ90ha/EPZ60ha)

	1989	1990	1991	1992	1993	1994
Land Sales		27,900	30,690	33,759	6,189	6,808
Phase I						
GIZ		16,200	17,820	19,602	3,594	3,953
EPZ		11,700	12,870	14,157	2,595	2,855
Phase II						
GIZ		0	0	0	0	0
EPZ		0	0	0	0	0
Power Sales		1,697	1,867	2,054	377	414
Telephone Sales		750	825	908	166	183
Water Sales		0	1,030	2,265	3,737	4,340
Maintenance Fee		0	50	109	180	209
JIIEB Sales						8,000
INFLOW TOTAL(ROI)		30,347	34,461	39,094	10,649	19,954
Loan		17,613	9,463	0	0	0
INFLOW TOTAL(ROE)		47,960	43,924	39,094	10,649	19,954
Development Cost	13,650	39,084	18,584			
O/M Cost		1,620	3,810	4,574	5,031	5,930
Sales Cost		837	921	1,013	186	204
Corporate Tax		6,892	3,171	5,453	0	0
Value Added Tax		607	689	782	213	239
Land and Bldg. Tax		14	27	27	27	27
OUTFLOW TOTAL(ROI)	13,650	49,053	27,202	11,849	5,457	6,400
Repayment of Debt		0	10,568	9,200	5,415	1,893
Interest on Debt		0	3,029	2,473	877	227
Remaining Debt						0
OUTFLOW TOTAL(ROE)	13,650	49,053	40,800	23,522	11,749	8,520
NETFLOW(ROI)	(13,650)	(18,706)	7,259	27,246	5,192	13,554
NETFLOW(ROE)	(13,650)	(1,093)	3,125	15,572	(1,100)	11,434

IRR(ROI)= 19.3%
IRR(ROE)= 21.7%

<NOTE>

	1990	1991	1992	1993	1994
SALES					
Unit Price(Rp/m2)	GIZ=	60,000	EPZ=	60,000	
Phase I					
Salable Land(ha)	GIZ=	90	EPZ=	60	
GIZ	30%	30%	30%	5%	5%
EPZ	30%	30%	30%	5%	5%
Phase II					
Salable Land(ha)	GIZ=	0	EPZ=	0	
GIZ	0%	0%	0%	0%	0%
EPZ	0%	0%	0%	0%	0%

COST
100% of Original estimated cost

PHASING

FINANCIAL ARRANGEMENT

Equity	15,219				
Loan Requir	17,613	9,463	0	0	0
Source	Foreign=		60%Int.Rate=		12%
	Local=		40%Int.Rate=		25%

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<SALES PLAN> CASE A (GIZ90ha/EPZ60ha) (mil. Rp.)

		1989	1990	1991	1992	1993	1994	Total	base-1 Escalat'n
1. Land Sales			27,900	30,690	33,759	6,189	6,808	105,346	
Phase I									
GIZ	Sales Price(Rp/m2,'90 price):				60,000				0.1
	Salable Land(ha):				90				
	Sales Schedule:		30%	30%	30%	5%	5%		
	Revenue:		16,200	17,820	19,602	3,594	3,953	61,169	
EPZ	Sales Price(Rp/m2,'90 price):				65,000				0.1
	Salable Land(ha):				60				
	Sales Schedule:		30%	30%	30%	5%	5%		
	Revenue:		11,700	12,870	14,157	2,595	2,855	44,177	
Total Revenue			27,900	30,690	33,759	6,189	6,808	105,346	
Phase II									
GIZ	Sales Price(Rp/m2,'90 price):				55,000				0.1
	Salable Land(ha):				0				
	Sales Schedule:		0%	0%	0%	0%	0%		
	Revenue:		0	0	0	0	0	0	
EPZ	Sales Price(Rp/m2,'90 price):				60,000				0.1
	Salable Land(ha):				0				
	Sales Schedule:		0%	0%	0%	0%	0%		
	Revenue:		0	0	0	0	0	0	
Total Revenue			0	0	0	0	0	0	
2. Power Connection Charge									
	Unit Price(,000Rp/KVA,'90 price):				90				0.1
	Salable Lines(KVA):				62,870				
	Sales Schedule:		30%	30%	30%	5%	5%		
Revenue			1,697	1,867	2,054	377	414	6,409	
3. Telephone Line Sales									
	Unit Price(,000Rp/ln,'90 price):				5,000				0.1
	Salable Lines:				500				
	Sales Schedule:		30%	30%	30%	5%	5%		
Revenue			750	825	908	166	183	2,832	
4. Water Sales	Unit Price(Rp/m3,'90 price):				1,300 (incl. waste water treat't)				0.1
	Capacity(m3/day):				8,000				
	Utilization Rate:		0%	30%	60%	90%	95%		
Revenue			0	1,030	2,265	3,737	4,340	11,372	
5. Maintenance Fee	Unit Price(,000Rp/ha/year,'90 price):				1,000				0.1
	Chargeable Area(ha):				150				
	Utilization Rate:		0%	30%	60%	90%	95%		
Revenue			0	50	109	180	209	547	
TOTAL REVENUE			30,347	34,461	39,094	10,649	11,954	126,506	

<COST ESTIMATES> CASE A (GIZ90ha/EPZ60ha) (mil. Rp.) base-2

	BASE('89)	1989	1990	1991		TOTAL	TTL including c,d,e,f	Escalatio
1. Development Cost								
Land Acquisition		13,650	0			13,650		
PHASE I								
a.Land Development	32,986		23,090	9,896		32,986	51,248	
Land Preparation	617	COST	432	185		617	959	
Earth Work	3,938	100%	2,757	1,181		3,938	6,118	
Road & Drainage	5,966		4,176	1,790		5,966	9,269	
Other Exterior Work	1,156		809	347		1,156	1,796	
Water Supply	9,219		6,453	2,766		9,219	14,323	
Waste Water Treatment	10,262		7,183	3,079		10,262	15,943	
Electrical Work	1,308		916	392		1,308	2,032	
Solid Waste Incineration	520		364	156		520	808	
b.Buildings	950		475	475		950	1,476	
c.Indirect Cost(20% of a+b)			4,713	2,074		6,787		
d.Engineering Fee(7% of a+b+c)			1,979	871		2,851		
e.Contingency(10% of a+b+c+d)			3,026	1,332		4,357		
f.V.A.T.(10% of a+b+c+d+e)			3,328	1,465		4,793		
g.Other Work	4,944		2,472	2,472		4,944	4,944	
(Building)	440		220	220				
PHASE I TOTAL			39,084	18,584		57,668	57,668	
PHASE II								
a.Land Development	0		0	0		0	0	0.1
Land Preparation	0	COST	0	0		0	0	
Earth Work	0	100%	0	0		0	0	
Road & Drainage	0		0	0		0	0	
Other Exterior Work	0		0	0		0	0	
Water Supply	0		0	0		0	0	
Waste Water Treatment	0		0	0		0	0	
Electrical Work	0		0	0		0	0	
Solid Waste Incineration	0		0	0		0	0	
b.Buildings	0		0	0		0	0	
c.Indirect Cost(20% of a+b)			0	0		0		
d.Engineering Fee(7% of a+b+c)			0	0		0		
e.Contingency(10% of a+b+c+d)			0	0		0		
f.V.A.T.(10% of a+b+c+d+e)			0	0		0		
g.Other Work	0		0	0		0	0	
(Building)								
PHASE II TOTAL			0	0		0	0	
Development Cost Total		13,650	39,084	18,584		71,318	71,318	
2. Operation and Maintenance Cost								
Equipment				840				
Full Load Cost	5,400							0.1
Operation Load Factor			30%	50%	70%	70%	75%	
Operation and Maintenance Cost Total			1,620	3,810	4,574	5,031	5,930	20,965

3. Sales Cost (3% of Land Sales)		837	921	1,013	186	204	3,160
4. Tax							
a.Corporate Tax		6,892	3,171	5,453	0	0	15,516
b.Value Added Tax		607	689	782	213	239	2,530
c.Land and Buildings Tax		14	27	27	27	27	122
Tax Total		7,513	3,887	6,262	240	266	18,168
TOTAL COST	13,650	49,053	27,202	11,849	5,457	6,400	113,611

<COST OF SALES> CASE A (GIZ90ha/EPZ60ha) (mil. Rp.) base-3

		1989	1990	1991	1992	1993	1994	Total
1. Land Sales Cost	Total Cost =	20,727						
	Distribution:		30%	30%	30%	5%	5%	
	Sales Cost:		6,218	6,218	6,218	1,036	1,036	20,727
2. Power Connection Cost								
	Total Cost =	2,932						
	Distribution:		30%	30%	30%	5%	5%	
	Sales Cost:		880	880	880	147	147	2,932
3. Telephone Line Sales Cost								
	Total Cost =	1,548						
	Distribution:		30%	30%	30%	5%	5%	
	Sales Cost:		464	464	464	77	77	1,548
4. Operation and Maintenance Cost			1,620	3,810	4,574	5,031	5,930	20,965
5. Sales Cost			837	921	1,013	186	204	3,160
6. Value Added Tax			607	689	782	213	239	2,530
7. Land and Building Tax			14	27	27	27	27	122
8. Depreciation and Amortization				9,346	7,067	5,410	4,193	26,015
TOTAL COST OF SALES			10,640	22,355	21,024	12,127	11,854	77,999

<DEPRECIATION> CASE A (GIZ90ha/EPZ60ha) (mil. Rp.)

	Phase I(mid'91)	Phase II(end'91)
Depreciable and Amortizable Assets		
a.Land Development		
Road & Drainage	9,269	0
Other Exterior Work	1,796	0
Water Supply********	14,323	0
Waste Water Treatment***	15,943	0
Electrical Work********	2,032	0
Solid Waste Incineration	808	0
b.Buildings	1,916	0
A.Depreciable Assets without *****	12,981	0
B.Depreciable Assets with *****	33,107	0
C.Equipment for Operation and Maintenance	840	

	1991	1992	1993	1994	Total
A.Depreciation and Amortization for A (5%, straight line)	649	649	649	649	2,596
Net Fixed Assets of A at End of Period	12,332	11,683	11,034	10,385	
B.Depreciation for B (25%, declining balance)	8,277	6,207	4,656	3,492	22,631
Net Fixed Assets of B at End of Period	24,830	18,622	13,967	10,475	
C.Depreciation for C (60%, declining balance)	420	210	105	53	788
Net Fixed Assets of C at End of Period	420	210	105	53	
TOTAL DEPRECIATION AND AMORTIZATION	9,346	7,067	5,410	4,193	26,015

<INCOME STATEMENT> CASE A (GIZ90ha/EPZ60ha) (mil. Rp.) base-5

	1989	1990	1991	1992	1993	1994	Total
Gross Profit on Sales		19,707	12,107	18,070	(1,478)	100	48,507
Operating Income		30,347	34,461	39,094	10,649	11,954	126,506
Cost of Sales		10,640	22,355	21,024	12,127	11,854	77,999
Non-operating Expenses		0	3,029	2,473	877	227	6,607
Interest on Debt						12,912	12,912
Loss from Sale of JIIEB							
Net Profit before Tax		19,707	9,077	15,597	(2,355)	(13,039)	28,988
Corporate Tax		6,892	3,171	5,453	0	0	15,516
Net Profit after Tax		12,816	5,906	10,144	(2,355)	(13,039)	13,472
Dividends		0	0	0	0	0	0
Retained Earnings		12,816	5,906	10,144	(2,355)	(13,039)	13,472

<FUNDS FLOW STATEMENT> CASE A (GIZ90ha/EPZ60ha) (mil. Rp.) base-0

	1989	1990	1991	1992	1993	1994	Total
Source of Fund	15,219	37,991	32,277	24,773	4,315	414	114,989
Cash Generated from Operation							
Net Profit after Tax		12,816	5,906	10,144	(2,355)	(13,039)	13,472
Depreciation and Amotization		0	9,346	7,067	5,410	4,193	26,015
Sales Cost of Land, Power, Tel		7,562	7,562	7,562	1,260	1,260	25,207
Non-operating Income(sales of JIIEB)						8,000	8,000
Financial Resources							
Equity	15,219						
Debt	0	17,613	9,463	0	0	0	27,076
Use of Fund	13,853	39,358	32,277	11,751	6,404	2,120	105,001
Development Cost	13,650	39,084	18,584				71,318
Change in Working Capital	203	274	95	57	112		
Debt Service							
Repayment of Foreign Debt		0	3,523	5,415	5,415	1,893	16,246
Interest on Foreign Debt		0	1,268	1,527	877	227	3,899
Repayment of Local Debt		0	7,045	3,785	0	0	10,830
Interest on Local Debt		0	1,761	946	0	0	2,708
Dividends		0	0	0	0	0	0
Cash Increase or (Decrease)	1,367	(1,367)	(0)	13,042	(2,089)	(1,706)	
Beginning Cash Balance	0	1,367	(0)	(0)	13,042	10,953	
Ending Cash Balance	1,367	(0)	(0)	13,042	10,953	9,247	

<LOAN SCHEDULE> CASE A (GIZ90ha/EPZ60ha) (mil. Rp.) base-7

		1989	1990	1991	1992	1993	1994	Total
Loan Amount Needed			17,613	9,403	0	0	0	27,076
US$ Portion	60%		10,568	5,678	0	0	0	16,246
Rp. Portion	40%		7,045	3,785	0	0	0	10,830
Repayment Schedule								
US$ Repayment				3,523	5,415	5,415	1,893	16,246
Interest	12%			1,268	1,527	877	227	3,899
Balance after Repayment			10,568	12,723	7,308	1,893	0	
Rp. Repayment				7,045	3,785	0	0	10,830
Interst	25%			1,761	946	0	0	2,708
Balance after Repayment			7,045	3,785	0	0	0	

<CASH FLOW TABLE> CASE A (GIZ90ha/EPZ60ha) (mil. Rp.) base-8

Cash Flow on ROI Basis	1989	1990	1991	1992	1993	1994	Total
Cash Outflow	13,650	49,053	27,202	11,849	5,457	6,400	113,611
Cash Inflow		30,347	34,461	39,094	10,649	19,954	134,506
Net Cash Flow	(13,650)	(18,706)	7,259	27,246	5,192	13,554	20,895

Cash Flow on ROE Basis	1989	1990	1991	1992	1993	1994	Total
Cash Outflow	13,650	49,053	40,800	23,522	11,749	8,520	147,294
Cash Inflow		47,960	43,924	39,094	10,649	19,954	161,582
Net Cash Flow	(13,650)	(1,093)	3,125	15,572	(1,100)	11,434	14,288

Discount Rate	Net Present Value (ROI)	Net Present Value (ROE)
0%	20,895	14,288
10%	7,069	5,443
20%	(399)	571
30%	(4,519)	(2,199)
40%	(6,791)	(3,801)

Internal Rate of Return

(ROI)	19.3%
(ROE)	21.7%

<CASH FLOW SUMMARY> CASE DX (PHASING GIZ ONLY)

	1989	1990	1991	1992	1993	1994
Land Sales		18,000	19,800	32,670	23,958	13,177
Phase I						
GIZ		18,000	19,800	10,890	0	0
EPZ		0	0	0	0	0
Phase II						
GIZ		0	0	21,780	23,958	13,177
EPZ		0	0	0	0	0
Power Sales		1,132	1,245	2,054	1,506	828
Telephone Sales		500	550	908	666	366
Water Sales		0	686	1,510	2,007	4,111
Maintenance Fee		0	33	73	140	198
JIIEB Sales						8,000
INFLOW TOTAL(ROI)		19,632	22,314	37,214	29,176	26,680
Loan		14,453	29,077	3,368	0	0
INFLOW TOTAL(ROE)		34,085	51,391	40,582	29,176	26,680
Development Cost	13,650	28,564	32,493			
O/M Cost		1,620	3,218	3,267	3,504	5,534
Sales Cost		540	594	980	719	395
Corporate Tax		4,121	905	3,797	3,753	0
Value Added Tax		393	446	744	584	374
Land and Bldg. Tax		14	27	27	27	27
OUTFLOW TOTAL(ROI)	13,650	35,251	37,741	8,815	8,675	6,330
Repayment of Debt		0	8,672	20,337	10,727	6,489
Interest on Debt		0	2,486	5,695	2,322	860
Remaining Debt						674
OUTFLOW TOTAL(ROE)	13,650	35,251	48,899	34,847	21,724	14,352
NETFLOW(ROI)	(13,650)	(15,620)	(15,427)	28,399	20,501	20,350
NETFLOW(ROE)	(13,650)	(1,167)	2,492	5,735	7,452	12,328

IRR(ROI)= 16.7%
IRR(ROE)= 17.7%

<NOTE>

	1990	1991	1992	1993	1994
SALES					
Unit Price(Rp/m2)	GIZ=	60,000	EPZ=	65,000	
Phase I					
Salable Land(ha)	GIZ=	75	EPZ=	0	
GIZ 40%	40%	40%	20%	0%	0%
EPZ 0%	0%	0%	0%	0%	0%
Phase II					
Salable Land(ha)	GIZ=	75	EPZ=	0	
GIZ 0%	0%	40%	40%	20%	
EPZ 0%	0%	0%	0%	0%	

COST
100% of Original estimated cost

PHASING

FINANCIAL ARRANGEMENT
Equity 15,219
Loan Requir 14,453 29,077 3,368 0 0
Source Foreign= 60%Int.Rate= 12%
Local= 40%Int.Rate= 25%

revised on Dec.15

<SALES PLAN> CASE DX (PHASING GIZ ONLY) (mil. Rp.) base-1

		1989	1990	1991	1992	1993	1994	Total	Escalat'n
1. Land Sales			18,000	19,800	32,670	23,958	13,177	107,605	
Phase I									
GIZ	Sales Price(Rp/m2,'90 price):				60,000				0.1
	Salable Land(ha):				75				
	Sales Schedule:		40%	40%	20%	0%	0%		
	Revenue:		18,000	19,800	10,890	0	0	48,690	
EPZ	Sales Price(Rp/m2,'90 price):				65,000				0.1
	Salable Land(ha):				0				
	Sales Schedule:		0%	0%	0%	0%	0%		
	Revenue:		0	0	0	0	0	0	
Total Revenue			18,000	19,800	10,890	0	0	48,690	
Phase II									
GIZ	Sales Price(Rp/m2,'90 price):				60,000				0.1
	Salable Land(ha):				75				
	Sales Schedule:		0%	0%	40%	40%	20%		
	Revenue:		0	0	21,780	23,958	13,177	58,915	
EPZ	Sales Price(Rp/m2,'90 price):				65,000				0.1
	Salable Land(ha):				0				
	Sales Schedule:		0%	0%	0%	0%	0%		
	Revenue:		0	0	0	0	0	0	
Total Revenue			0	0	21,780	23,958	13,177	58,915	
2. Power Connection Charge									
	Unit Price(,000Rp/KVA,'90 price):				90				0.1
	Salable Lines(KVA):				62,870				
	Sales Schedule:		20%	20%	30%	20%	10%		
Revenue			1,132	1,245	2,054	1,508	828	6,765	
3. Telephone Line Sales									
	Unit Price(,000Rp/ln,'90 price):				5,000				0.1
	Salable Lines:				500				
	Sales Schedule:		20%	20%	30%	20%	10%		
Revenue			500	550	908	666	366	2,989	
4. Water Sales	Unit Price(Rp/m3,'90 price):				1,300 (incl. waste water treat't)				0.1
	Capacity(m3/day):				8,000				
	Utilization Rate:		0%	20%	40%	70%	90%		
Revenue			0	686	1,510	2,907	4,111	9,215	
5. Maintenance Fee	Unit Price(,000Rp/ha/year,'90 price):				1,000				0.1
	Chargeable Area(ha):				150				
	Utilization Rate:		0%	20%	40%	70%	90%		
Revenue			0	33	73	140	198	443	
TOTAL REVENUE			19,632	22,314	37,214	29,176	18,680	127,017	

<COST ESTIMATES> CASE DX (PHASING GIZ ONLY) (mil. Rp.) base-2

	DASE('89)	1989	1990	1991		TOTAL	TTL including c,d,e,f		Escalatio
1. Development Cost									
Land Acquisition		13,650	0			13,650			
PHASE I ----------									
a.Land Development	24,303		17,054	7,309		24,363	37,851		
Land Preparation	373	COST	261	112		373	580		
Earth Work	2,835	100%	1,985	851		2,835	4,405		
Road & Drainage	3,455		2,419	1,037		3,455	5,368		
Other Exterior Work	418		293	125		418	649		
Water Supply	8,698		6,089	2,609		8,698	13,514		
Waste Water Treatment	7,958		5,571	2,387		7,958	12,364		
Electrical Work	626		438	188		626	973		
Solid Waste Incineration	0		0	0		0	0		
b.Buildings	775		388	388		775	1,204		
c.Indirect Cost(20% of a+b)			3,488	1,539		5,028			
d.Engineering Fee(7% of a+b+c)			1,465	646		2,112			
e.Contingency(10% of a+b+c+d)			2,240	988		3,228			
f.V.A.T.(10% of a+b+c+d+e)			2,463	1,087		3,550			
g.Other Work	2,932		1,466	1,466		2,932	2,932		
(Building)	52		26	26					
PHASE I TOTAL----------			28,504	13,423		41,987	41,987		
PHASE II----------									
a.Land Development	9,903		0	10,893		10,893	10,924		0.1
Land Preparation	330	COST	0	363		363	564		
Earth Work	1,575	100%	0	1,733		1,733	2,692		
Road & Drainage	3,455		0	3,801		3,801	5,906		
Other Exterior Work	400		0	440		440	684		
Water Supply	575		0	633		633	983		
Waste Water Treatment	3,062		0	3,368		3,368	5,233		
Electrical Work	506		0	557		557	865		
Solid Waste Incineration	0		0	0		0	0		
b.Buildings	175		0	193		193	200		
c.Indirect Cost(20% of a+b)			0	2,217		2,217			
d.Engineering Fee(7% of a+b+c)			0	931		931			
e.Contingency(10% of a+b+c+d)			0	1,423		1,423			
f.V.A.T.(10% of a+b+c+d+e)			0	1,566		1,566			
g.Other Work	1,678		0	1,846		1,846	1,846		
(Building)	52		0	57					
PHASE II TOTAL----------			0	19,009		19,009	19,069		
Development Cost Total		13,650	28,564	32,493		74,707	74,707		
2. Operation and Maintenance Cost									
Equipment				840					
Full Load Cost	5,400								0.1
Operation Load Factor			30%	40%	50%	50%	70%		
Operation and Maintenance Cost Total			1,620	3,216	3,267	3,504	5,534	17,231	

3. Sales Cost (3% of Land Sales)		540	594	980	719	395	3,228
4. Tax							
a.Corporate Tax		4,121	965	3,797	3,753	0	12,635
b.Value Added Tax		393	446	744	584	374	2,540
c.Land and Buildings Tax		14	27	27	27	27	122
Tax Total		4,528	1,439	4,568	4,363	401	15,298
TOTAL COST	13,650	35,251	37,741	8,815	8,075	6,330	110,403

<COST OF SALES> CASE DX (PHASING GIZ ONLY) (mil. Rp.) base-3

		1989	1990	1991	1992	1993	1994	Total
1. Land Sales Cost	Total Cost =	21,890						
	Distribution:		20%	20%	30%	20%	10%	
	Sales Cost:		4,378	4,378	6,567	4,378	2,189	21,890
2. Power Connection Cost								
	Total Cost =	2,932						
	Distribution:		20%	20%	30%	20%	10%	
	Sales Cost:		586	586	880	586	293	2,932
3. Telephone Line Sales Cost								
	Total Cost =	1,548						
	Distribution:		20%	20%	30%	20%	10%	
	Sales Cost:		310	310	464	310	155	1,548
4. Operation and Maintenance Cost			1,620	3,216	3,267	3,594	5,534	17,231
5. Sales Cost			540	594	980	719	395	3,228
6. Value Added Tax			393	446	744	584	374	2,540
7. Land and Building Tax			14	27	27	27	27	122
8. Depreciation and Amortization				7,496	7,725	5,919	4,591	25,731
TOTAL COST OF SALES			7,841	17,053	20,654	16,116	13,558	75,222

<DEPRECIATION>	CASE DX (PHASING GIZ ONLY)	(mil. Rp.)	base-4
	Phase I(mid'91)	Phase II(end'91)	
Depreciable and Amortizable Assets			
a.Land Development			
Road & Drainage	5,308	5904.608	
Other Exterior Work	649	883.6010	
Water Supply********	13,514	982.0773	
Waste Water Treatment***	12,364	5232.070	
Electrical Work********	973	864.7500	
Solid Waste Incineration	0	0	
b.Buildings	1,256	351	
A.Depreciable Assets without *****	7,273	6,030	
B.Depreciable Assets with *****	26,850	7,080	
C.Equipment for Operation and Maintenance	840		

	1991	1992	1993	1994	Total
A.Depreciation and Amortization for A (5%, straight line)	364	711	711	711	2,496
Net Fixed Assets of A at End of Period	13,849	13,138	12,428	11,717	
B.Depreciation for B (25%, declining balance)	6,713	6,804	5,103	3,828	22,448
Net Fixed Assets of B at End of Period	27,218	20,413	15,310	11,483	
C.Depreciation for C (50%, declining balance)	420	210	105	53	788
Net Fixed Assets of C at End of Period	420	210	105	53	
TOTAL DEPRECIATION AND AMORTIZATION	7,490	7,725	5,910	4,591	25,731

<INCOME STATEMENT> CASE DX (PHASING GIZ ONLY) (mil. Rp.) base-5

	1989	1990	1991	1992	1993	1994	Total
Gross Profit on Sales		11,791	5,261	16,560	13,060	5,122	51,795
Operating Income		19,632	22,314	37,214	29,176	18,680	127,017
Cost of Sales		7,841	17,053	20,654	16,116	13,558	75,222
Non-operating Expenses							
Interest on Debt		0	2,486	5,605	2,322	000	11,362
Loss from Sale of JIIEB						15,252	15,252
Net Profit before Tax		11,791	2,775	10,865	10,739	(10,989)	25,180
Corporate Tax		4,121	965	3,797	3,753	0	12,635
Net Profit after Tax		7,670	1,810	7,068	6,986	(10,989)	12,545
Dividends		0	0	0	0	0	0
Retained Earnings		7,670	1,810	7,068	6,986	(10,989)	12,545

<FUNDS FLOW STATEMENT> CASE DX (PHASING GIZ ONLY) (mil. Rp.) base-6

	1989	1990	1991	1992	1993	1994	Total
Source of Fund	15,219	27,397	43,657	26,072	18,179	4,238	134,762
Cash Generated from Operation							
Net Profit after Tax		7,670	1,810	7,068	6,986	(10,989)	12,545
Depreciation and Amotization		0	7,496	7,725	5,919	4,591	25,731
Sales Cost of Land, Power, Tel		5,274	5,274	7,911	5,274	2,637	26,370
Non-operating Income(sales of JIIEB)						8,000	8,000
Financial Resources							
Equity	15,219						
Debt	0	14,453	29,077	3,368	0	0	46,898
Use of Fund	13,853	28,763	43,657	26,073	13,291	7,349	132,293
Development Cost	13,650	28,564	32,493				74,707
Change in Working Capital	203	200	6	41	243		
Debt Service							
Repayment of Foreign Debt		0	2,891	8,706	0,380	6,489	27,465
Interest on Foreign Debt		0	1,041	2,787	1,985	860	6,672
Repayment of Local Debt		0	5,781	11,631	1,347	0	18,759
Interest on Local Debt		0	1,445	2,908	337	0	4,690
Dividends		0	0	0	0	0	0
Cash Increase or (Decrease)	1,367	(1,366)	0	(1)	4,888	(3,110)	
Beginning Cash Balance	0	1,367	0	0	(0)	4,888	
Ending Cash Balance	1,367	0	0	(0)	4,888	1,777	

<LOAN SCHEDULE> CASE DX (PHASING GIZ ONLY) (mil. Rp.) base-7

		1989	1990	1991	1992	1993	1994	Total
Loan Amount Needed			14,453	29,077	3,368	0	0	46,898
US$ Portion	60%		8,672	17,446	2,021	0	0	28,139
Rp. Portion	40%		5,781	11,631	1,347	0	0	18,759
Repayment Schedule								
US$ Repayment				2,891	8,706	9,380	6 489	27,465
Interest	12%			1,041	2,787	1,985	860	6,672
Balance after Repayment			8,672	23,227	16,542	7,163	674	
Rp. Repayment				5,781	11,631	1,347	0	18,759
Interst	25%			1,445	2,908	337	0	4,690
Balance after Repayment			5,781	11,631	1,347	0	0	

<CASH FLOW TABLE> CASE DX (PHASING GIZ ONLY) (mil. Rp.) base-8

Cash Flow on ROI Basis	1989	1990	1991	1992	1993	1994	Total
Cash Outflow	13,650	35,251	37,741	8,815	8,675	6,330	110,463
Cash Inflow		19,632	22,314	37,214	29,176	26,680	135,017
Net Cash Flow	(13,650)	(15,620)	(15,427)	28,399	20,501	20,350	24,553

Cash Flow on ROE Basis	1989	1990	1991	1992	1993	1994	Total
Cash Outflow	13,650	35,251	48,899	34,847	21,724	14,352	168,724
Cash Inflow		34,085	51,391	40,582	29,176	26,680	181,915
Net Cash Flow	(13,650)	(1,167)	2,492	5,735	7,45-	12,328	13,191

Discount Rate	Net Present Value (ROI)	(ROE)
0%	24,553	13,191
10%	6,705	4,003
20%	(2,400)	(854)
30%	(7,083)	(3,487)
40%	(9,434)	(4,921)

Internal Rate of Return

(ROI)	16.7%
(ROE)	17.7%

D. QUESTIONNAIRE FOR THREE SUPPORTING INDUSTRIES

DAFTAR PERTANYAAN STUDI PASAR UNTUK CETAKAN/ DIES

I. INFOMASI UMUM.

1. Nama Perusahaan : .....
2. Alamat Kantor : .....
3. Telepone : .....
4. Jumlah Pabrik : ..... Perusahaan.

   Lokasi : 1. .....
   2. .....
   3. .....
   4. .....
   5. .....

5. Jenis Usaha : a. PMA
   b. PMDN
   c. Non PMA/PMDN

   Apabila PMA : Nama Perusahaan : .....
   Negara : .....

6. Tahun Pendirian : Tahun .....
7. Jumlah Tenaga Kerja : ..... Orang.

II. PRODUKSI.

1. PRODUKSI YANG LALU :

JENIS PRODUKSI	UNIT	1985	1986	1987	1988	1989
PRODUK PLASTIK:						
PRODUK KARET :						

2. RENCANA PRODUKSI MENDATANG :

JENIS PRODUKSI	SATUAN	1990	1991	1992
PRODUK PLASTIK:				
PRODUK KARET :				

III. CETAKAN / DIES YANG DIBENTUKKAN :

1. CETAKAN YANG DIBELI TAHUN 1989.

JENIS MESIN YANG DIBELI	JUMLAH MESIN	BERAT TOTAL	JUMLAH PRODUKSI	PABRIK PEMBUAT		PENYALUR / AGENSI LOKAL	TOTAL HARGA
				NAMA PABRIK PEMBUAT	LOKASI (NEGARA)		
CETAKAN PLASTIK (MESIN INJEKSI)							
CETAKAN PLASTIK (MESIN TEKANAN / LAINNYA)							
CETAKAN PLASTIK (UNTUK PRODUKSI)							
NAMA							

2. TINGKAT KETELITIAN YANG DIPERLUKAN : ..... MM.

3. MENGGUNAKAN CETAKAN BEKAS PAKAI /YANG TELAH DIREPARASI :

a. YA.
b. TIDAK.

Jika YA. sebutkan prosentase jumlah cetakan bekas pakai/ yang telah direparasi yang digunakan. (.....%)

IV. PABRIK PEMBUAT CETAKAN :

3 (tiga) buah pabrik cetakan terbesar yang digunakan oleh perusahaan Saudara pada tahun 1989.

NAMA	NEGARA	JUMLAH YG DIBELI	KAPASITAS PABRIK : Perkiraan JUMLAH KARYAWAN	TOTAL PRODUKSI (1989 / Ton)
1.				
2.				
3.				

V. INFORMASI MENGENAI PEMASARAN.

1. DALAM NEGERI / EKSPOR :

a. Pemasaran Dalam Negeri : ..... %

b. Pemasaran Luar Negeri : .....%

2. PRODUK AKHIR / PRODUK ANTARA :

a. Produk akhir : untuk pasaran ini : .....%

b. Produk antara : untuk pasaran industri lain : .....%

: 100 %

1. [illegible]

1. EVALUASI :

	HARGA	KETELITIAN	KETAHANAN	DESAIN
LOKAL :	- Mahal - Sedang - Murah	- Baik - Sedang - Buruk	- Baik - Sedang - Buruk	- Baik - Sedang - Buruk
IMPOR :	- Mahal - Sedang - Murah	- Baik - Sedang - Buruk	- Baik - Sedang - Buruk	- Baik - Sedang - Buruk

	WAKTU PENGIRIMAN	KETERANGAN	KETERANGAN LAIN
LOKAL :	- Cepat (...Hr) - Sedang (...Hr) - Lama (...Hr)	- Mudah - Sedang - Sulit	- - -
IMPOR :	- Cepat (...Hr) - Sedang (...Hr) - Lama (...Hr)	- Mudah - Sedang - Sulit	- - -

2. RENCANA PEMBELIAN MESIN-MESIN PERALATAN BUATAN DN/IMPOR :

a. Buatan Lokal :

b. Impor :

3. Usulan/ pendapat terhadap rencana Produksi Cetakan di Dalam Negeri.

CATATAN :

1. Jawaban pertanyaan harus lengkap.
2. Brosur.
3. Kartu nama responden.

Pewawancara :
Tanggal :

[illegible]

DAFTAR PERTANYAAN UNTUK STUDY PASAR MESIN PEMBUAT KEMASAN.

I. KETERANGAN UMUM.

1. Nama Perusahaan : .....
2. Alamat Kantor : .....
3. Telepone : .....
4. Jumlah Pabrik : ..... Perusahaan.

   Lokasi : 1. .....
   2. .....
   3. .....
   4. .....
   5. .....

5. Jenis Usaha : a. PMA
   b. PMDN
   c. Non PMA/PMDN

   Apabila PMA : Nama Perusahaan : .....
   Negara : .....

6. Tahun Pendirian : Tahun .....
7. Jumlah Tenaga Kerja : ..... Orang.

II. PRODUKSI.

1. Produksi yang lalu.

Jenis Produksi	Satuan	1985	1986	1987	1988	1989
Lentur						
Wadah Plastik - Botol/Ples - Peti Kemas - Silinder		-				
Karung Tenun-Plastik						

2. Rencana Produksi.

Jenis Produksi	Satuan	1990	1991	1992
Lentur				
Wadah Plastik				
- Botol/Ples				
- Peti Kemas				
- Silinder				
Karung Tenun-Plastik				

III. INFORMASI MENGENAI PERALATAN.

1. MESIN DAN PERALATAN YANG TERPASANG.

JENIS MESIN	MODEL	JUMLAH MESIN	KAPASITAS MESIN	PABRIK		PENYALUR APABILA ADA	TAHUN PEMBELIAN	JANGKA WAKTU [illegible] MESIN	BARU/BEKAS	[illegible]
				NAMA PABRIK PEMBUAT	LOKAL/IMPOR					

2. Kapasitas Total pada saat operasi penuh (1989): ..... Unit/Tahun
..... Ton/Tahun

3. Kapasitas yang Terpakai : ..... %

4. Adakah Rencana Pemasangan Mesin-mesin Baru : a. Ya

b. Tidak

Apabila Ya :

Jenis	Model	Nama Produsen	Negara	Kapasitas/ Unit	Jumlah Unit		
					1990	1991	1992

IV. PASAR UNTUK PRODUK.

1. Produk yang dikemas (1989)	Isi	Unit
Food (Makanan)		
Beverage (Minuman)		
Tabacco (Tembakau)		
Apparel		
Paper Products (Produk Kertas)		
Fertilizer (Pupuk)		
Plastik Proudcts (Produk Plastik)		
Cosmetics (Kosmetik)		
Pharmacenticals (Obat-obatan)		
Lubricants/Oil (Pelumas)		
Others		

2. 3 (tiga) Langganan Terbesar.

No.	Nama Pelanggan (Perusahaan)	Produk	Kontribusi Jual (%)
1.			
2.			
3.			

V. EVALUASI MESIN PEMBUATAN KEMASAN.

1. Umum.

	Harga	Daya Tahan	Kualitas	Pengoperasian	Pemeliharaan	Pengadaan Suku Cadang	Informasi Pengadaan Mesin	Pendapat Lain
Produksi Lokal	Tinggi Sedang Murah	5-10 Tahun 10-15 Tahun 15-20 Tahun	Baik Sedang Jelek	Mudah Sedang Sulit	Mudah Sedang Sulit	Mudah Sedang Sulit	Mudah Sedang Sulit	
Impor	Tinggi Sedang Murah	5-10 Tahun 10-15 Tahun 15-20 Tahun	Baik Sedang Jelek	Mudah Sedang Sulit	Mudah Sedang Sulit	Mudah Sedang Sulit	Mudah Sedang Sulit	

2. Rencana Pembelian Mesin-mesin Peralatan Buatan Dalam Negeri/Impor Untuk Mendatang :

Jenis Mesin	Produksi Dalam Negeri/ Impor	Nama Produsen
	-	

Adakah alasan-alasan khusus, mengapa menggunakan mesin tsb.

3. Rekomendasi Untuk Mesin-mesin yang diproduksi di Indonesia.

4. Saran Untuk Mesin-mesin yang diproduksi di Dalam Negeri.

- Ukuran mesin
- Teknologi yg digunakan
- Lainnya

Catatan : 1. Jawaban Pertanyaan Harus Lengkap.
2. Brosur.
3. Kartu Nama.

A. Pewawancara : .....

B. Hari & Tanggal : .....

P-1 LIST (PACKAGING MACHINERY ITEM)

P-1 Pouch Packing Machine
P-2 Sealing Machine
P-3 Overrapping Machine (Mesin Pembungkus)
P-4 Shrink Packaging Machine
P-5 Vaccume Packaging Machine (Mesin Kemas Hampa Udara)
P-6 Liquid Filling Machine (Mesin Pengisi Cairan)
P-7 Labelling Machine (Mesin Pembuat Label)
P-8 Bag Sealing Machine
P-9 Other Machine (Lain-lain)

Quis-1

DAFTAR PERTANYAAN UNTUK STUDY PASAR INDUSTRI PERKAYUAN.

I. INFOMASI UMUM.

1. Nama Perusahaan : .....

2. Alamat Kantor : .....

3. Telepone : .....

4. Jumlah Pabrik : ..... Perusahaan.

   Lokasi : 1. .....
   2. .....
   3. .....
   4. .....
   5. .....

5. Jenis Usaha : a. PMA
   b. PMDN
   c. Non PMA/PMDN

   Apabila PMA : Nama Perusahaan : .....
   Negara : .....

6. Tahun Pendirian : Tahun .....

7. Jumlah Tenaga Kerja : ..... Orang.

II. PRODUKSI.

1. Produksi yang lalu.

Jenis Produksi	Satuan	1985	1986	1987	1988	1989

2. Rencana Produksi.

Jenis Produksi	Satuan	1990	1991	1992

III. INFORMASI MENGENAI PERALATAN.

1. MESIN DAN PERALATAN YANG TERPASANG.

JENIS MESIN	MODEL	JUMLAH MESIN	KAPASITAS MESIN	MANUFACTURE		PERKIRAAN (APABILA ADA)	TAHUN PEMBELIAN	JANGKA WAKTU KEPEMILIKAN MESIN	BARU/ BEKAS	HARGA/UNIT
				NAMA PABRIK PEMBUAT	LOKAL/ IMPOR					

2. Kapasitas Total pada saat operasi penuh (1989): ..... Unit/Tahun

3. Kapasitas yang digunakan : ..... %

4. Adakah Rencana Pemasangan Mesin-mesin Baru : a. Ya

b. Tidak

Apabila Ya :

Jenis	Model	Nama Produsen	Negara	Kapastas/ Unit	Jumlah Kebutuhan		
					1990	1991	1992

IV. INFORMASI MENGENAI PEMASARAN.

1. Skala Pasar.

a. Lokal : : ..... %

a.1. Grosir/Party Besar : ..... %

a.2. Eceran : ..... %

a.3. Langsung Pengguna : ..... %

b. Ekspor : ..... %

Total : ..... %

V. EVALUASI SINGKAT TENTANG PENGGUNAAN MESIN-MESIN PERKAYUAN.

1. Umum.

	Harga	Daya Tahan	Kualitas	Pengoperasian	Pemeliharaan	Pengadaan Suku Cadang	Informasi Pengadaan Mesin	Pendapat Lain
Produksi Lokal	Tinggi Sedang Murah	5-10 Tahun 10-15 Tahun 15-20 Tahun	Baik Sedang Jelek	Mudah Sedang Sulit	Mudah Sedang Sulit	Mudah Sedang Sulit	Mudah Sedang Sulit	
Impor	Tinggi Sedang Murah	5-10 Tahun 10-15 Tahun 15-20 Tahun	Baik Sedang Jelek	Mudah Sedang Sulit	Mudah Sedang Sulit	Mudah Sedang Sulit	Mudah Sedang Sulit	

2. Rencana Pembelian Mesin-mesin Peralatan Buatan Dalam Negeri/Impor :

Jenis Mesin	Produksi Dalam Negeri/ Impor	Nama Produsen

Adakah alasan-alasan khusus, mengapa menggunakan mesin tsb.

3. Rekomendasi Untuk Mesin-mesin yang diproduksi di Indonesia.

4. Saran Untuk Mesin-mesin yang diproduksi di Dalam Negeri.

- Ukuran mesin
- Teknologi yg digunakan
- Lainnya

Catatan : 1. Jawaban Pertanyaan Harus Lengkap.
2. Brosur.
3. Kartu Nama.

A. Pewawancara : .....

B. Hari & Tanggal : .....

W-1 LIST (WOODWORKINGS/ FURNITURE PRODUCT ITEM)

A. WOODWORKING :

A-1	PANEL	(Panil)
A-2	PACKAGING/ BOX	(Kotak)
A-3	WALL	(Dinding)
A-4	WINDOW	(Jendela)
A-5	DOOR	(Pintu)
A-6	FLOOR	(Lantai)
A-7	CONSTRUCTION MATERIAL	(Material untuk Pekerjaan Konstruksi).
A-8	PIECE FOR FURNITURE	(Bagian-bagian perabotan)
A-9	TOOLS/ TOYS.	(Mainan Anak-anak).
A-10	MOULDING	(Kusen-kusen).
A-11	POLE	(Tiang-tiang)
A-12	SLEEPER	(Sandal)
A-13	PIECE FOR SHIP	(Bahan-bahan kapal)
A-14	OTHERS	(Lainnya)

B. FURNITURE :

B-1	SOFA	(Kursi panjang)
B-2	CHAIR	(Kursi)
B-3	TABLE	(Meja)
B-4	DESK	(Meja belajar)
B-5	CUPBOARD	(Lemari)
B-6	CABINET/ RACK	(Rak)
B-7	WARDROBE/ DRAWER	( )
B-8	BED	(Tempat tidur)
B-9	OTHERS	(Lainnya)

W-2 LIST (WOODWORKING/ FURNITURE MACHINERY ITEM):

C-1	VERTICAL/ HORIZONTAL SAWING MACHINE	(Alat potong)
C-2	BAND SAWING MACHINE	
C-3	CIRCULAR SAWING MACHINE	(Gergaji pembolong)
C-4	PLANNING MACHINE	(Mesin pembentuk)
C-5	MOULDING MACHINE	
C-6	BORING MACHINE	(Mesin bor)
C-7	LATLES/ COPYING MACHINE	
C-8	SANDING MACHINE	(Mesin amplas)
C-9	KILN DRYING MACHINE	
C-10	BANDING MACHINE	
C-11	OTHERS MACHINE	

QUIS-1