THE REPUBLIC OF INDONESIA

PRE-FEASIBILITY STUDY

FOR

INDUSTRIAL ESTATE PROJECT IN UJUNG PANDANG

SEPTEMBER 1976

Japan International Cooperation Agency

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PREFACE

The Government of Japan, at the request of the Government of the Republic of Indonesia, decided to undertake a Pre-feasibility study in order to promote an industrial estate development plan in Ujung Pandang city in South Sulawesi Province, and entrusted its implementation to The Japan International Cooperation Agency.

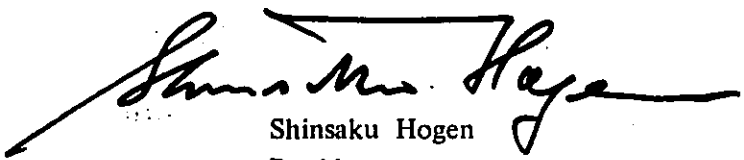
The Agency organized a survey team consisting of five experts, headed by Mr. Mikio ABE, director of Nomura Research Institute Co., Ltd. and dispatched the team to Indonesia for a period of 21 days from February 25 to March 16, 1976. The survey team visited existing industrial estates, collected basic data in Jakarta, and carried out a field survey concerning the economic situation, the existing enterprises, and the appropriate site for the industrial estate in Ujung Pandang City. Upon returning to Japan, the team promoted design work based on the data collected in Indonesia, and made up the report.

In this report, we presented a concept for the urban development plan of Ujung Pandang City, the necessity of creating an industrial estate in the city, the selection of appropriate industries and the basic policy for the industrial estate.

We hope that this report will contribute to the promotion of economic development in Indonesia, and will promote friendship between the two countries.

In conclusion, I would like to express our hearty gratitute to the survey team members for their effort to accomplish their task and to those governmental officials of Indonesia, the Embassy of Japan in Indonesia, the Ministry of Foreign Affairs and the Ministry of Trade and Industry who cooperated in this effort.

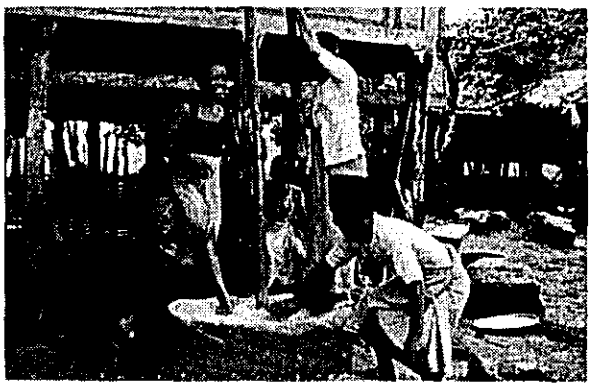
September, 1976



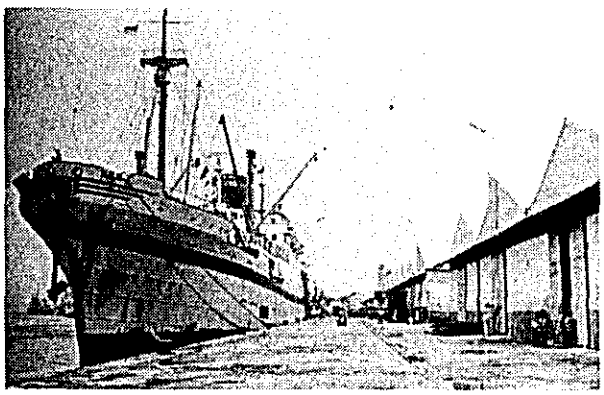
Shinsaku Hogen
President
Japan International Cooperation Agency

Panoramic View of Ujung Pandang City

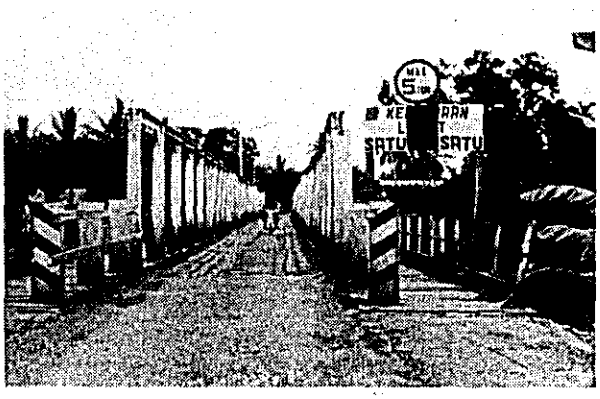
Downtown Street



A Life in Rural Area



Port of Ujung Pandang



A Bridge on the River Tallo

Terrain Suitable for Industrial Estate Site

Terrain Suitable for Industrial Estate Site

On-The-Spot Investigation

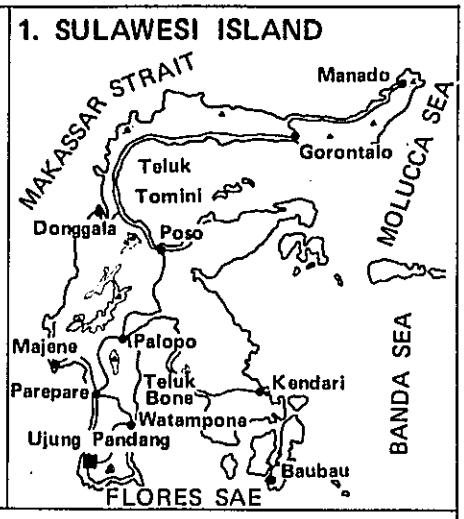
Meeting with Central Government Officials

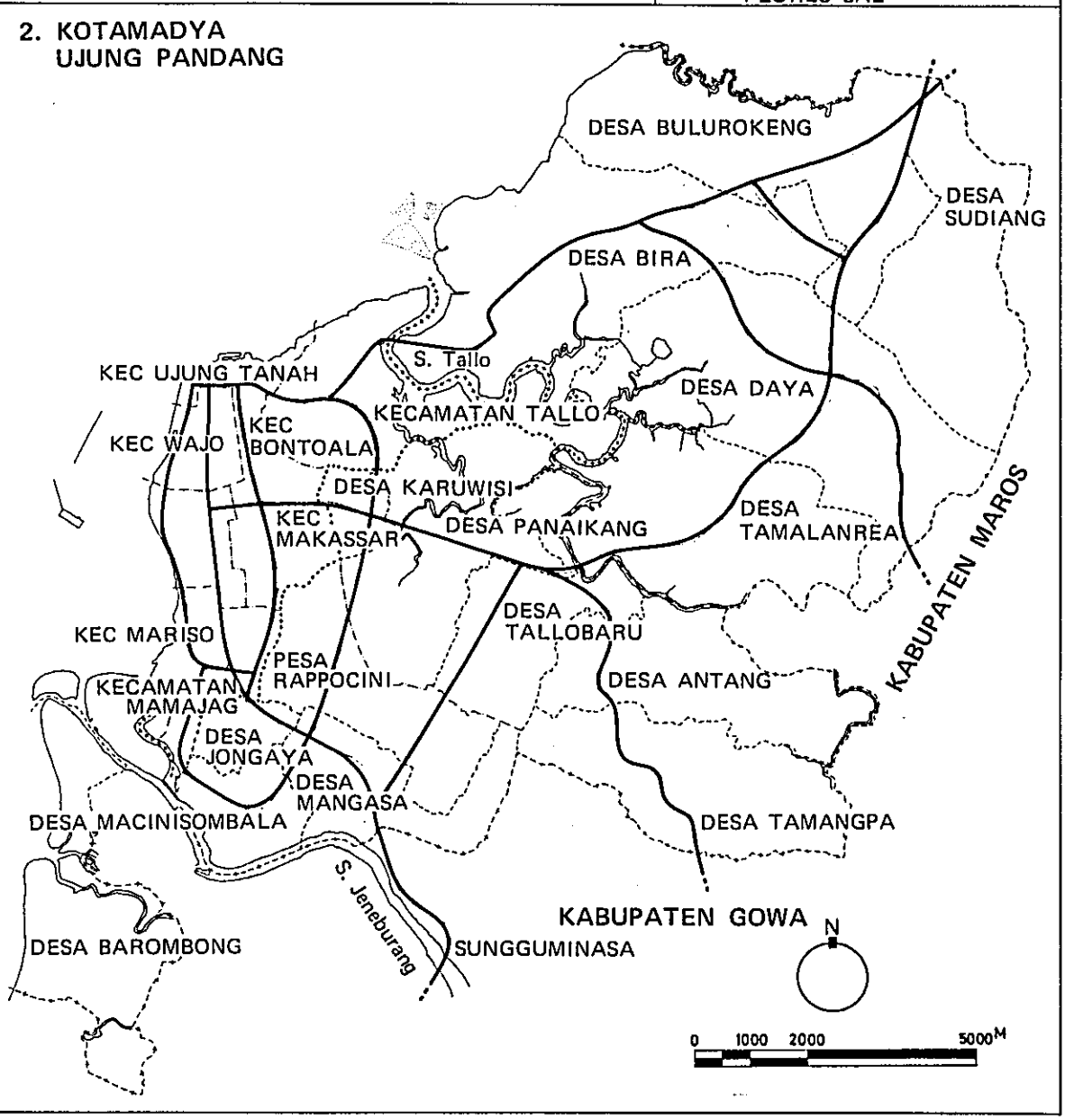
Discussion with Local Government Officials

GENERAL MAP

OF

UJUNG PANDANG





CONTENTS

INTRODUCTION

INTRODUCTION

i) Background of Study

In November 1976, the Government of the Republic of Indonesia submitted a formal application to our government requesting a Japanese survey team to undertake basic studies on the development of The Ujung Pandang Industrial Estate in South Sulawesi Province. In compliance with this request, JICA organized a "Survey Team for the pre-feasibility study on The Ujung Pandang Industrial Estate in the Republic of Indonesia"; this five man team, lead by Mr. Mikio ABE carried out field studies for a period of approximately three weeks beginning from February 25, 1976 in the Republic of Indonesia. The Survey Team has prepared this Report based on various data made available to the team in Indonesia and according to the results of field investigation conducted during their stay in the Republic of Indonesia.

ii) Objectives of Study

The objectives of the study are to undertake a basic investigation of the significance and possibility of industrial estate development in Ujung Pandang City in the Republic of Indonesia. The major relevant items are as follows.

(1) Survey of the present situation and the future prospectives for development of the Ujung Pandang area

(2) Significance of development of an industrial estate in the Ujung Pandang area

(3) Study of the desirable size and the appropriate site for the industrial estate from viewpoints of city planning and regional planning

(4) Analysis of the present situation in the province of South Sulawesi for its industrial development

(5) Identification of appropriate industries

(6) Presentation of a conceptual plan for the Layout of the industrial estate

iii) Team Composition

The composition of the Survey Team was as follows:

Leader	Mikio ABE	A director and a Chief of International Department, Nomura Research Institute Co., Ltd.
Sub Leader	Akira KONNO	President of Regional Planning Union Co., Ltd.
Member	Hiroyuki FUJIWARA	International Department Nomura Research Institute Co., Ltd.
Member	Tetsuo WAKUI	International Department Nomura Research Institute Co., Ltd.
Member	Yukitoshi NAGASAWA	A Chief of the Industrial Survey Division, Mining and Industrial Survey Department, Japan International Cooperation Agency

iv) Field Investigations

The Field investigation was carried out by the Survey Team from February 25 to March 16, 1976 including travel time. During this period, The Survey Team held discussions with those concerned at the Embassy of Japan in Indonesia, BKPM and BAPPENAS, obtained information and opinions from the counterpart team members from BKPM and BAPPENAS, and inspected existing industrial estates at PLOGADONG and ANCOR. In Ujung Pandang City, the Survey Team held discussions with the Ujung Pandang industrial estate project team which was our counterpart, the governor, the mayor and those concerned at the universities, the bureau of public works and the bureau of industry. They inspected an appropriate site for the industrial estate, surveyed ports, roads, water intake, electric power etc. and called on the main enterprises in the area. An outline of the results of the investigation was submitted to the Government of the Republic of Indonesia in the four of a "Note" before the team's departure from Indonesia. Details of the Survey are as indicated in the schedule below.

Date	Place	Time	Remarks
Feb. 25 (Wed.)		8:15	Leave Tokyo
	JAKARTA	18:25	Arrival at Jakarta
Feb. 26 (Thu.)	JAKARTA	9:00	Arrangement for the schedule etc. at the Embassy Embassy: Mizuno, Watanabe (Secretaries) JICA Jakarta office: Mr. Onozaki
		10:00	Greeting to Ambassador and Counsellor
		10:30	Greeting to JICA Jakarta office
		11:00	Visit the Jakarta Progadung Industrial Estate in Jakarta
			P. T. Estate President: Mr. M. Surihandoho Director: Mr. Drs. R. G. P. Harahap
		15:00	Discussion with Mr. Kinoshita, specialist (who is dispatched to BAPPENAS by JICA) at the Embassy
		18:30	Reception in honor of the mission held by the Ambassador's (at the Ambassador's official residence)
Feb. 26 (Fri.)	JAKARTA	9:00	Joint Meeting with the BKPM and the BAPPENAS People
			BKPM Chairman: Drs. Barli Halim Chief of Application: Mr. Darmawan Ir. Isa Kariandinata Drs. Bambang Djatniko
			BAPPENAS Director General for Mining, Industry and Electric Power, Ir. Soegeng Soendjaswadi Miss Suwarti
			Embassy: First Secretary, Mizuno Special Assistant, Watanabe
		6:30	Leave Jakarta
Feb. 28 (Sat.)	UJUNG PANDANG	10:30	Arrival at Ujung Pandang
		13:00	Meeting with Counterpart Member of the Gov't of South Sulawesi Province (local Counterpart)

Feb. 29 (Sun.)	UJUNG PANDANG		Field Survey (Trunk Road, Water Intake, Irrigation, canal)
Mar. 1 (Mon.)	UJUNG PANDANG	9:30	Greeting to the Mayor of the City of Ujung Pandang
		11:30	Greeting to the Governor, General Haji Achmao Lamo, of the South Sulawesi Province
		14:00	Discussion Meeting with the Local Counterpart
Mar. 2 (Tue.)	UJUNG PANDANG	9:00	Meeting with City Staff Members and Briefing of City Planning of Ujung Pandang
		10:30	Working with the Local Counterpart
		15:00	Visiting P. T. Sermani and discussion of the Company Operation (Mr. Takeo Nozaki, Managing Director and others)
Mar. 3 (Wed.)	UJUNG PANDANG	9:00	Survey of Northen Part of the City
		14:00	(Team A) Major Facilities Survey in the City
			(Team B) Visiting and Discussion of Company Operation of P. T. Gormak Motor Ltd. (Mr. Haman Hasanuddin, General Manager)
			Visiting and Discussion of Company Operation of a Coconut Oil Extraction Plant
Mar. 4 (Thu.)	UJUNG PANDANG	9:00	Survey of Southern Part of the City and the Seacoast
		14:00	(Team A) Visiting and Discussion at the Vocational training Center
			Meeting with the Chief of Labor Department, Mr. Nyompa, of S.S. Province and Discussion of Labor Situation
			(Team B) Visiting and Discussion of Company Operation of P. T. Prima Floor Mill (Mr. Khoe Tjien Hui, Manager and others)

			Visiting and Discussion of Company Operation of P. T. Selniwa (Mr. Samisdin, President)
Mar. 5 (Fri.)	UJUNG PANDANG	9:00	(Team A) Visiting the Water Treatment Project (Ir. A. R. Tambig)
			(Team B) Working with the Local Counterpart Team
		14:00	Working with the Local Counterpart Team
Mar. 6 (Sat.)	UJUNG PANDANG	9:00	(Team A) Visiting the Electric Power Tello
			Visiting and Discussion of Company Operation of Gowa Paper Mill (Ir. Sumarta)
			(Team B) Working with the Local Counterpart Team
		14:00	Working with the Local Counterpart Team
Mar. 7 (Sun.)	UJUNG PANDANG	9:00	Survey of the Sea Coast, Tello River and Lai-lai and other Islands by Boat
Mar. 8 (Mon.)	UJUNG PANDANG	9:00	(Team A) Visiting the Hatta and Sukarno Warf and Discussion of Port Facilities (Mr. Soemar and others)
			(Team B) Working with the Local Counterpart Team
		14:00	Visiting and Discussion of Shipyard Project
Mar. 9 (Tue.)	UJUNG PANDANG	9:00	(Team A) Location Site Survey
			(Team B) Working with the Local Counter-Part Team
		14:00	Working with the Local Counterpart Team
Mar. 10 (Wed.)	UJUNG PANDANG	10:00	Discussion Meeting with the Local Counterpart Team
		12:00	Greeting to the Governor of the South Sulawesi Province
		13:00	Leave Ujung Pandang
Mar. 11 (Thu.)	JAKARTA	9:00	Discussion among the mission members

Mar. 12 (Fri.)	JAKARTA	9:00	Discussion Meeting with Drs. Barli Halim Drs. Bainbang Djatmiko Miss Suwarti Mr. Agus Dasuki First Secretary Mr. Mizuno
		14:00	Data Collection Meeting with Mr. Doi (Specialist of Statistics)
Mar. 13 (Sat.)	JAKARTA		Preparation of Interim Report and Data Collection
Mar. 14 (Sun.)	JAKARTA	9:00	Investigation to Northern Industrial Development site (Jakarta-Bogor)
		15:00	Preparing The Report
Mar. 15 (Mon.)	JAKARTA	9:00	Farewell Greeting to the Japan Embassy and JICA Office (Jakarta)
		9:30	(Team A) Inspection to the Ancor Industrial Estate Mr. Agois Achir (BKPM) Mr. Koemolontang P. T. Pemhangaman (Team B) Data Collection at The Central Bureau of Statistics with Mr. Mr. Agus Dasuki
		11:30	The Joint Meeting with the Central Government Officials concerned. Ir. Soegeng Soendjdswadi Ir. Isa Kariandinata Mr. Agus Dasuki (Team B) Data Collection at JETRO, The Embassy of Japan
		15:00	Visit to the Embassy of Canada (Data Collection)
		21:00	Arrangement with JICA (Mr. Onozaki)
Mar. 16 (Tue.)	JAKARTA	7:00	Leave Jakarta
		22:00	Arrival at Haneda

CONCLUSIONS AND SUMMARY

i) Conclusions

As is known among the economists, the concept of industrial estate has arisen as an extensively effective tools for regional development, and recently in the countries which have achieved a certain measure of industrialization, it has assumed another significance as a working tool to enhance a higher level of industrialization.

It is apparently with this in mind that the Government of Indonesia is now promoting some industrial estate projects in its extensive "growth pole" development policy as the chief method to attain its ambitious goal of economic growth of 7.0 - 7.5% a year.

This report is based on the results of the prefeasibility study of the industrial estate planned for Ujung Pandang City, a growth pole of the industrialization of East Indonesia in PELITA II. In this introductry remark, we will briefly discuss the significance of this industrial estate project in the whole development picture of East Indonesia.

The framework and guideline of this industrial estate have been discussed and set up at several meetings of the Steering Committee specially organized for this study. Simply stated, this estate is projected to cover a single estate in the first stage of industrialization, which will precede the more sophisticated succeeding industrial estates. Designed to complete within the approximate time schedule covering the period up to the end of the 1980s, this estate is planned to be feasible within the framework of existing or potential industrial resources, including industrial technology, marketability, management resources, etc.

This will naturally characterize this estate as a single group of small-and medium-sized firms with more advanced industrial technology to be introduced in a total area of 150-200 hectares.

As will be stated in some chapters of this report, this industrial estate will have a population of about 230,000, both the employed and their dependants, including the population of the peripheral industries and account for 75% of added value to be

created annually in the manufacturing industry in order to raise the per capita GDP of south Sulawesi to the levels of other regions.

These direct effects will have further impact upon the region in such ways as putting an end to outflow of population from Ujung Pandang City, greatly reducing unemployment in the South Sulawesi area, and expanding the market and purchasing power of the area. Thus, the plan will greatly help Creating a city with a population of one million in Ujung Pandang.

As the growth pole for the development of the whole East Indonesia, Ujung Pandang City and South Sulawesi Province will play a role that may call for more advanced strategic development of an industrial estate in the future. In that event, an estate which would be feasible within the framework of the second or third stages of development (as against the first stage in which this particular estate is planned) would be planned, and such estate would change its character to attain more sophisticated and intensified industrialization. Then there may finally arise the need to construct a sophisticated industrial estate of high complexity.

We expect that this particular estate will greatly help to lay the base for development outlined above because it will provide the conditions for such evolvements as: 1) creation of a favorable self-generating cycle which starts with creation and expansion of new industries, followed by resultant increase in employment, higher income level in the area and expansion of purchasing power, which will lead to another starting point for creation and expansion of new industries: 2) initial accumulation of technological skills: and 3) self-generation and accumulation of knowhow for managing and operating industrial estates.

It is desirable to realize, as soon as possible, the first-stage industrial estate bearing such a strategic theme, for the sake of social and economic development of Ujung Pandang area, Sulawesi island and East Indonesia. We emphasize, here, the necessity of a feasibility study which contains to make a master plan of the Ujung Pandang Industrial Estate, and suggest to the organizations concerned early implementation of the feasibility study.

ii) **Summary**

1. Objectives of the Survey

(1) This survey has been conducted as pre-feasibility study of the Ujung Pandang Industrial Estate Project with the following objectives:

1) To analyze the present physical and socio-economic conditions of the Ujung Pandang region and to clarify its characteristics (Chapter I)

2) To identify the development objectives for the Ujung Pandang region, and to examine and estimate significance of the industrial estate vis-a-vis these objectives (Chapter II)

3) To examine possible alternatives for urban development contributing to the industrialization of Ujung Pandang City (Chapter III)

4) To clarify the industrial development strategies (Chapter IV)

5) To select and study proper combinations of promising industries for the industrial estate in Ujung Pandang area. (Chapters V and VI)

6) To select the possible sites and make their preliminary assessment for the industrial estate (Chapter VII)

7) To indicate the basic guideline for designing the industrial estate (Chapter VIII)

2. Future Prospects for the Ujung Pandang Region

(2) Indonesian population is expected to grow at an annual rate of more than 2.5% and reach approximately 200 million in 1991 and 250 million in 2001, regardless of expected success in family planning. Population of East Indonesia has retained 13% of the total population for the past ten years. This percentage will not change greatly in the future with the Government's efforts of developing Outer Java. Population outflow from South Sulawesi Province will decline in the future, and in 1990s it will be virtually offset by inflow. The rate of increase in population of Ujung Pandang City has been lower than that of South Sulawesi Province. During the latter half of 1970s, the City should catch up with the Province, and in 1980s the former's population will increase sharply with the introduction of the industrial estate and concomitant urban development (Table 1).

Table 1 Future Population in the Ujung Pandang Region

(in thousands)

	1971	1981	1991	2001
Indonesia	120,100	153,000	196,500	252,300
East Indonesia	15,040	19,890	25,500	32,800
South Sulawesi	5,300	6,150	7,490	9,590
Ujung Pandang	550	650	870	1,190

(3) According to Dr. Sumitro's forecast, Indonesian GDP will reach Rps. 42,000 billion (approx. $100 billion), or Rps. 170,000 ($420) per capita in the year of 2000. Per capita GDP Indexes for East Indonesia and South Sulawesi Province are currently 74 and 73, respectively, vis-a-vis the national average of 100. Economies of these regions must grow at an annual rate of 7.6~8.7%, in order to narrow and eventually eliminate the gap by 2000. Table 2 shows the targets for these areas.

Table 2 Targets for Economic Growth

Year	Annual Growth Rate of GDP (%)			Per Capita GDP ($)			
	1973/80	1980/90	1990/2000	1973	1980	1990	2000
Indonesia	7.35	7.00	7.00	130	180	275	420
East Indonesia	7.60	8.70	8.70	96	135	234	420
South Sulawesi	7.70	7.60	8.00	95	144	248	420

(4) To attain the targets, it is necessary to outgrow the monocultural rice production and improve and diversify the present industrial structure. If South Sulawesi Province is to catch up with the nation's average per capita GDP, the share of industry in the provincial GDP must be increased to 13% ($95.6 million) in 1990 and 19.3% ($180 million) in 2000, while the share of agriculture, now at more than 60%, will decline to 40 - 45%.

3. Significance of the Ujung Pandang Industrial Estate

(5) Major socio-economic problems in the Ujung Pandang Region are: 1) insufficient employment opportunities, increasing unemployment and continuing population outflow; 2) declining labor force participation rate and growing dependency ratio; 3) lagging industrialization; 4) limited market size; and 5) insufficiently developed infrastructure. The best strategy for industrialization in the region is to establish

first of all the industrial base in a relatively densely populated area favorable to industrialization by providing financial incentives, in this case, Ujung Pandang City.

(6) The Indonesian Government has adopted the growth pole strategy for inducing regional development. A total of 80-90 selected growth poles are further classified into categories by region and priority. The top-priority growth poles are Medan, Jakarta, Surabaya and Ujung Pandang - the central cities of the four major regional blocs. The Ujung Pandang pole covers East Indonesia, east of Lombok Island. This area accounts for 39% of Indonesia's total land area and 13% of the total population. The largest city in this bloc is Ujung Pandang City, and more than one-third of the bloc's population live in South Sulawesi.

(7) In an effort to expedite industrialization in the growth poles, the Indonesian Government is promoting plans for industrial estates in Jakarta, Surabaya, Medan, Cilacap, Ujung Pandang and Samarinda. Strategically, Ujung Pandang is considered to be of particular importance in view of the economic backwardness ofits hinter-land, and its need for expansion.

(8) Supposing that an industrial estate of 200 ha (net area: 120 - 130 ha) is constructed during 1980s as the first stage of the Ujung Pandang Industrial Estate and that the occupancy rate reaches approximately 100% by the end of 1980s, 25,000 each of direct and indirect employment opportunities will be created, with additional 44,000 jobs in the tertiary industry to accommodate the increased industrial workers. If their family members are included, approximately 230,000 people in all will be directly and indirectly supported by the industrial estate. This figure is about equal to the population increase of the City estimated for 1980s. However, since Ujung Pandang City presently has more than 10,000 unemployed, it will be difficult to expect full employment by 1991 unless the City achieves a considerable growth in areas other than the industrial estate.

(9) Supposing that productivity in the manufacturing industry grows at an annual rate of 3 - 4%, annual value added per worker reaches approximately Rps. 1 million ($2,400) by 1990, the said industrial estate will yield a total value added of Rps. 25 billion (approx. $60 million). If the manufacturing industry's share in the provincial GDP is to be raised to 13% in 1990, the GDP of the manufacturing sector must be increased by $80.6 million to $95.6 million. Of this target, the Ujung Pandang Industrial Estate will account for about 74%.

(10) In addition, the construction of an industrial estate will have the following regional effects as (1) providing a place for personnel trainning, (2) facilitating improvement of the distribution system, (3) promoting the transportation and construction industries, and (4) improving the infrastructure such as road, power and water. In a long run, it will also have such indirect effects as rise in local residents' income, market expansion, and accumulation of local capital.

(11) Ujung Pandang has several advantages for the construction of an industrial estate: (1) it is located in the center of the Indonesian territory facing Makassar Strait which is likely to assume importance in international maritime transportation in the future and advantageously adjacent to the relatively advanced Java Island; (2) Inexpensive labor is sufficiently available; (3) it has been the regional center for distribution of agricultural and marine products; (4) it has some provision of urban facilities; (5) it has good port and harbor facilities, and (6) a site for an industrial estate will be readily available in the suburbs of the City.

4. The Prevailing Conditions of Ujung Pandang City

(12) Located near the southern tip of Sulawesi Island, Ujung Pandang City has been the political and commercial hub of East Indonesia. Flanked by the Tallo and the Jenneberang rivers, the City is flat with hills of 200 - 300 meters high to the east and northeast. The City has a population of 570,000, of which 42% is younger than 14 years of age and 22% aged between 15 and 24. These two age groups accout for approximately two-thirds of the total population. The average population density of the City is 35 persons per ha, exceeding 300 persons in some districts. The City has few high-rise buildings as yet, and is generally covered by lush vegetation. Neatly arranged parks, plazas, tree-lined avenues, colleges, a port and mosques impress visitors as a city of time-honored tradition. With 9 persons (or 1.6 families) sharing house on an average, the City's housing situation is not necessarily good. The provincial government is presently promoting a housing development plan. Traffic within the City is mainly served by becats and helicas.

(13) Average household expenditure per month is Rps. 5,300 (approx. $10), and below-the-average families account for 55% of the total households. The Engel's coefficient is generally high: it is more than 60% for the low-income earners and 37% for over Rps. 30,000 a month. Average daily earnings are approximately Rps. 500 for merchants and lower government officials, and Rps. 150 for farmers,

fishermen, laborers and street vendors.

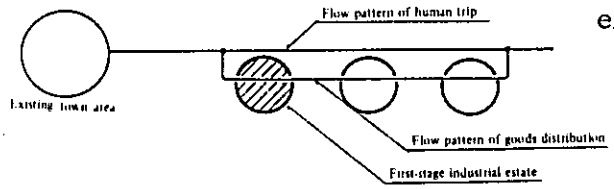
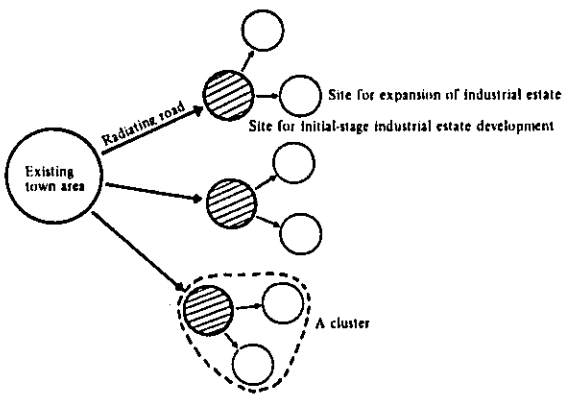
(14) The industrial structure of Ujung Pandang City shows the following characteristics. First, the percentage of economically active population in the primary industry is very low at about 8% compared with the provincial average of 66%. The considerable part of the City's total area is built up or otherwise covered by swamps, with less room available for agriculture and forestry. Fishery is largely of small-scale traditional type, and in need of modernization. Second, the percentage of economically active population in the secondary industry is equally low at 12%, the remaining 80% belongs to the tertiary industry. The City's construction and manufacturing industries are still at an early stage of development. Third, economically active population in the tertiary industry includes a considerable number of disguised or concealed unemployment. The large share of the tertiary industry is due to the City's regional pre-eminence as a shipping base for primary products in South Sulawesi Province from the time when the City was known as Makassar. It should also be noted that a significant number of people have been absorbed in the tertiary industry with insufficient job opportunities available in the primary and secondary industries. All considered, the share of the tertiary industry amounting to a little over 80% leaves much to be desired.

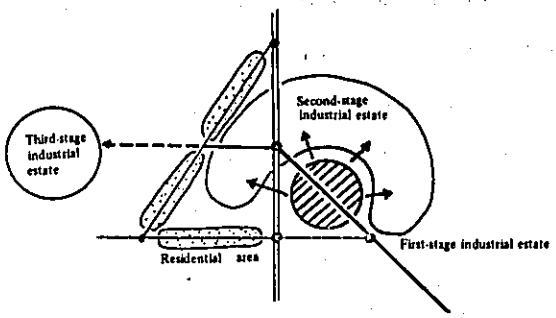
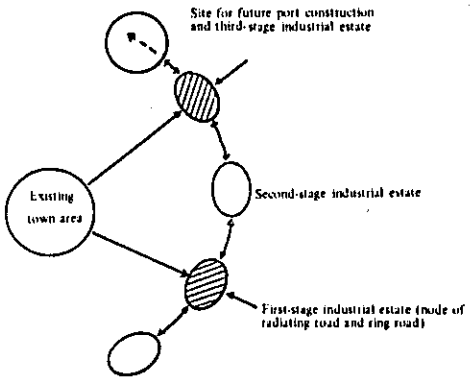
(15) About two-thirds of the City's area (16, 352 ha) is appropriated for paddy fields, 22% for swamps and 13% for business and residential areas. This has remained unchanged since 1950s. The City has two trunk roads, the Gowa-Jaya road extending to the north and the Gowa-Raya road to the south. Three parallel boulevards, with intersecting roads, run along the seacoast. Makassar Port is equipped with Soekarno Warf (1, 360 meters) and Hatta Warf (350 meters) and is capable of mooring a 10, 000-tonner. 25% of the City's population is served electricity. Although the City is equipped with a power generation capacity of about 40, 000 kW, the end-users annual consumption is no higher than 1% of the total electricity that could be generated mainly due to shortfalls in transmission and distribution lines. There is an airport about 25km to the north of the City with a 1, 745-meter runway accommodating a total of 100 Electora and DC-9 planes a week.

5. Urban Development

(16) Population in Ujung Pandang City in the year 2001 is estimated to be 1, 190,000. The residential area of approximately 3, 500 hectares will be needed to accommodate the increasing population. Industrial workers will number 85, 700 and the industrial area will expand to 650 hectares. A large-scale development project to be launched will be mainly in the City's eastern area where topographical and geographical conditions are favorable and closer contact will be assured with the existing built-up area. The urban problems in this city will worsen and get more complicated, if the built-up area is allowed to sprawl. Therefore, from the view point of city planning, it will be advisable to construct a new industrial area outside the existing built-up area.

(17) There are the following four alternative patterns of effecting urban development with a central focus on the industrial area. Given the existing infrastructure and on-going development projects, the alternatives suppose different alignments in land use, and have respective merits and shortfalls in securing zonal integration of the urban economic functions.

Development Pattern	Merit	Problem
1. Linear Development Pattern 	Capable of making maximum use of the existing infrastructure.	Sprawling may accelerate.
2. Cluster-type Development Pattern 	Existing built-up area and roads can be effectively utilized.	Difficult to maintain contact among clusters.

Development Pattern	Merit	Problem
3. Large-scale Concentration Pattern 	Easy to expand the industrial estate. unorderly land use can be avoided.	In expectation of future expansion of the industrial area, land for other uses must be secured in advance.
4. Loop-type Development Pattern 	The flows of goods and human trips can be clearly segregated, thus securing their smooth movement	Necessary to plan routing of the outer loop highway in close linkage with possible development sites

(18) The following points are advisable in considering the land use for industrial development in Ujung Pandang City:

i) The site where Hasanuddin University is to be relocated and its surroundings could be considered as an area for various research establishments and public trainining institutions which are being planned in line with industrial development.

ii) Desa Barembong, the sole open space near the built-up area, will serve as a recreation center for city residents.

iii) The present site of Hasanuddin University, after relocation, will provide needed extra space for the already densely populated area. The future ulitization of this site, however, merits from thorough examination: for instance, to be turned into a park or a play ground.

iv) The western coastal area of Desa Bira and Desa Bulurokeng north of the Tallo River could be a possible site for a new port when future industrial development justifies its construction.

6. Future Industrialization in the Ujung Pandang Area

(19) The industrial structure of this area which has been dominated by traditional manufacturing industries is now undergoing changes with the introduction of modern industries. It is still in the early stage of structural transformation, however, lagging far behind the industrial development attained on the national level. Per capita industrial production in 1973 recorded Rps. 2,191, or only 26% of the national average, and per capita value added was Rps. 1,005, or 32% of the national average.

(20) Ujung Pandang City is the center of industrial development in this province, producing more than 70% of all five out of nine industries in ISIC's general classification (metal products, chemical products, food and tobacco, lumber and the related products, and machinery). As for the remaining four industries (textiles, paper, pulp and the related products, ceramics and other industries), Ujung Pandang produces less than 30% of the total, but still occupies an important position in the production of these goods, 89% of the provincial industrial production is concentrated in Ujung Pandang City and the surrounding six Kabupatens (Maros, Pankep, Baru, Gowa, Takalar and Jenepont).

(21) Ujung Pandang City is undoubtedly most suited in leading industrialization of East Indonesia due to its favorable location, existing urban agglomeration and higher potentiality for industrialization. Regardless of these definite advantages, the City is not free of several bottlenecks. The market is still insufficiently developed and the available industrial infrastructure is inadequate. Solution to these problems requires long-term efforts to induce establishment of manufacturing industries and thereby stimulate development of agriculture and infrastructure. With concomitant promotion of distribution industries, this will lead to market expansion. Development of an industrial estate or estates will no doubt serve to improve inadequate provision of infrastructural facilities.

(22) Based on the current level of industrialization and its economic effects expected therefrom in the future, following strategies will be suggested for industrial development of the Ujung Pandang area. Industrialization in the future must be so designed to absorb directly as many people as possible, and at the same time to stimulate indirectly the expansion of the non-manufacturing sectors of the local economy.
In the first stage of industrialization, it is strategic to establish an agglomeration of medium-sized industries that are relatively easy to promote. In the next stage,

steps need be taken on the basis of the established agglomeration to diversify industrial combination, to expand the scale of respective industries, and to foster manufacturing industries of secondary products. Concurrently, it will be necessary to expedite industrialization in the secondary growth poles nearly such as Parepare, Watampone and Palopo, and thereby to curtail the possible excessive concentration of industries in Ujung Pandang City and channel the impetus of industrialization to the entire Province. The important strategy for the third stage will be to promote an organic linkage with similar industrial agglomerations expected to develop elsewheae in East Indonesia and to secure a mechanism capable of self-generating dynamic industrial growth.

7. Selection of Industries

(23) Industries to be considered in relation to the Ujung Pandang Industrial Estate are first selected out of 100 ISIC categories of major industries which have been already introduced into Indonesia, for which statistics of the past performance are available. Criteria of selection are the relative significance of the industries in meeting the objectives of the proposed industrial estate, and their viability in the industrial infrastructure to be provided in the estate and its outlying region. Selected industries will be further examined in Chapter VI from a different perspective.

(24) The objectives of the industrial estate project in the Ujung Pandang area are (i) creation of employment opportunities, (ii) increase in income, (iii) foreign exchange saving or earning, (iv) promotion of regional industrialization, and (v) identification of a plan for land use. Limiting factors to be taken into account are the insufficiently developed regional market and the inadequate provision of several infrastructural facilities. Given these objectives and obstacles and availability of data, five criteria of selection are thus laid down as employment effect, income effect, possibility of foreign exchange saving, market accessibility, and viability in the existing infrastructure. The actual selection was conducted by objective and quantitative rating according to eighteen selected indexes that correspond to the said five criteria.

(25) The afore-mentioned 100 industries were then ranked severally vis-a-vis each index, and those that ranked below 80th in all of eight or more indexes are excluded from consideration. Also excluded were some industries that have already established large-scale factories in the Ujung Pandang area, and are capable of meeting the local demand in the foreseeable future and thus less likely to join the proposed estate. Selection was by no means strict, because this will allow more flexibility in the subsequent step to identify alternatives of industrial combination.

(26) Table 3 shows 59 selected industries.

Table 3 List of Appropriate Industries

Rank	ISIC Code No.	industries
1	31110	Slaughtering, preparing and preserving of meat
2	31130	Canning and preserving of fruits and vegetables
3	31140	Processing and preserving of fish & other sea products
4	31151	Coconut oil
5	31159	Other vegetable and animal oil and fat
6	31161	Rice milling
7	31162	Cleaning and polishing of rice
8	31163	Peeling and cleaning of coffee
9	31171	Macaroni, spaghetti, and other kind of noodle
10	31179	Bakery products
11	31230	Ice cubes
12	31260	Coffee roasting and grinding
13	31280	Cattle fodder
14	31330	Malt liqueurs & malt (beer, porter, stout)
15	31340	Soft drink and carbonated waters
16	31420	Clove cigarettes
17	31430	Cigarettes manufacturing
18	31490	Other tobacco products
19	32111	Yarn threads
20	32112	Weaving mills, including plastic bag except jute weaving
21	32113	Bleaching and dyeing, printing and finishing fabrics
22	32130	Knitting mills
23	32210	Wearing apparels
24	32290	Wearing apparels not elsewhere classified
25	32330	Products of leather and substitutes
26	32400	Footwear
27	33111	Saw mills and other wood mills
28	33112	Wooden building materials
29	33120	Wooden boxes and containers
30	33210	Furniture and fixtures primarily of wood
31	34120	Containers and boxes of paper and paperboard
32	34200	Printing, publishing & allied industries
33	35210	Paints, varnishes, lacquers
34	35221	Drugs & medicine except native medicines
35	35232	Matches
36	35233	Cosmetics, tooth paste & other toilet articles
37	35600	Plastic wares
38	36110	Ceramic and porcelain
39	36320	Goods made from cement
40	36330	Lime
41	36410	Bricks
42	36420	Roofing tiles
43	36900	Other non-metallic mineral products
44	38111	Agricultural and hand tool
45	38112	Cutlery, nail, bolts and similar products
46	38130	Structural metal products
47	38140	All kinds of container made of metal
48	38190	Metal products not elsewhere classified
49	38200	Machinery & repair (including machinery and sewing machine assembling)
50	38311	Storage batteries
51	38312	Dry cell batteries
52	38320	Radio, T. V., Casette-type tape recorder and other communication equipment and apparatus
53	38330	Electric apparatus and supplies
54	38340	Repair of electric appliances
55	38411	Ship building & canoe
56	38412	Repair and painting of ships
57	38440	Motor cycles and bicycles assembling and manufacture
58	38490	Manufacture and assembling of transport equipment not elsewhere classified
59	39060	Stationeries

(Source) Prepared by the mission

8. Alternatives of Industrial Combination

(27) Identification of feasible industrial combination must be done by reference to the characteristics that respectively pertain to the 59 industries selected in Chapter V. Sufficient attention should be paid, in addition, to the prevailing local conditions. Those industries that fit the descriptions below will have to be assigned higher priority.

(i) Industries that are earmarked as promising by the Government of South Sulawesi Province.

(ii) Industries in which new foreign investment is prohibited in Java, but permitted in all the other regions.

(iii) Industries of which products are locally in demand but are not manufactured in the Ujung Pandang area.

(28) The identified alternatives which will be presented below must be considered as proposals for further assessment to decide on a final list of the industries recommendable for the estate. At this stage it is not fully warranted to finalize the industrial combination for the estate; because (i) trade-off relationships that pertain to a set of objectives stated in Paragraph (24) require policy decisions over relative priorities of the objectives, and (ii) available data on the selected industries are short of needed details. It will be necessary to confer with the Indonesian authorities and to conduct a feasibility study before the final identification of the promising industries.

(29) The Alternative I aims at attracting industries which have closer links with the local market. The industries to be included are agro-allied industries, construction and civil engineering industries, and manufacturing industries of personal consumption items. They are highly likely to contribute to the development of agriculture, forestry and fishery which are by far the main stream of the regional economy. They will also be able to accommodate the increased local demands for better housing and living standards, which are expected to manifest with a growth of population. Table 4 shows an estimated constitution of the industrial estate in the Alternative I.

Table 4

Estimated Area and Number of Employees Required for the Industrial Estate in the Alternative I

	Number of enterprises to be introduced	Area required (ha)	Number of employees required
Agro-allied industries	11	15	1,550
Construction and civil engineering industries	17	35	4,100
Manufacturing industries of personal consumption item	20	25	5,800
Total	48	75	11,450

(30) The Alternative II is to establish a specialized industrial estate wherein enterprises produce similar products or represent successively integrated stages of production dependent upon each other. This is typically exemplified in petrochemical complexes where proximate location generates economies of scale and other merits. Food and lumber processing complexes appear feasible in the Ujung Pandang area, and perhaps so does the textile industry. Specialized grouping of industries can attain greater external economies derived from a common supply of resources and a sharing of infrastructure and thereby strengthen their price competitiveness in the market.

(31) The Alternative III is to foster an agglomeration of those industries wherein standardization of the production system are well-established. Suitable industries for the Ujung Pandang area are, for instance, processing and fabrication of metal or plastic. The experience to be gained at the Ujung Pandang industrial estate will be useful when needs arise to promote similar industrial agglomerations elsewhere in East Indonesia. Further more, the agglomeration developed in the Ujung Pandang area can be considered as a strategic step toward eventual establishment of steel or petrochemical industrial complexes.

(32) The Alternative IV is to expedite the machinery industry in the estate to forerun the nation's future course of industrialization. Steps to be taken are to

start knock-down production of agricultural machines, motorcycles and the likes, and to promote local supplies industries with a view to gradually realizing complete domestic production of these items. Diversification will be subsequently needed to produce machineries for textile manufacture, plastic processing and fabrication, and manufacture of general machinery and heavy electrical equipment. The Ujung Pandang area will eventually emerge in a long run as one of the nation's leading centers of machinery production.

(33) The Alternative V is of supplementary nature, to be introduced in conjunction with any one or more of the alternatives already stated. Its primary aim is in modernization of traditional small-scale industries that can be agglomerated in sizeable groups.

(34) Given the varied objectives the industrial estate is expected to attain, the most advisable and realistic choice would be a combination of the Alternatives I, II and V. The Alternatives III and IV will have to be integrated into a long-term development strategy to warrant their viability.

9. Location of the Industrial Estate

(35) In accordance with the three-staged strategies already indicated (Para. 22), location of the industrial estate was examined to identify proposals for each stage.

1) In the first stage of development, the industrial occupants of the estate would be medium-sized food and metal processing industries, and the relocated light and household industries. Because enterprises and employees are expected to rely still heavily on the facilities and services provided at the existing built-up area, a site for the estate need to be so located to assure good access to the built-up area.

2) In the second stage, the in-coming industries would be chemicals, electrical machinery, transportation equipment and general machinery, with a rising need to strengthen the estate's linkage with the industrial establishments at Gowa, Maros, and Takalar. A site for the estate will have to be found someplace along the trunk roads where close linkage could be secured with other cities and among the development sites.

3) In the third stage, a need will manifest to plan estate expansion vis-a-vis the similar industrial agglomerations and, for that matter, large-scale processing industries are expected to develop in East Indonesia. It is advisable to locate a new site for the estate somewhere with good access to the airport, the

CBD, and a new port.

(36) If industrial establishments should be allowed to disperse freely, the Ujung Pandang City, which is projected to have a population of more than a million by the end of the century, would turn into an almost unlivable motley of irregular land use. Advantages that accrue to enterprises from the establishment of an industrial estate are considerable and varied:

(i) less costly to provide measures for environmental protection.

(ii) free from time-consuming negotiations concerning land aquisition and preparation, government approval, etc.

(iii) less costly to secure basic infrastructure such as access roads and sewage disposal

(iv) less time needed for construction because detailed geographical and soil conditions are known in advance.

(v) easier to secure a stable supply of industrial water

(vi) possible to arrange joint purchases of raw materials and fuels and joint supply of steam to attain cost reduction.

(vii) possible to reduce transportation cost by establishing distribution facilities in common.

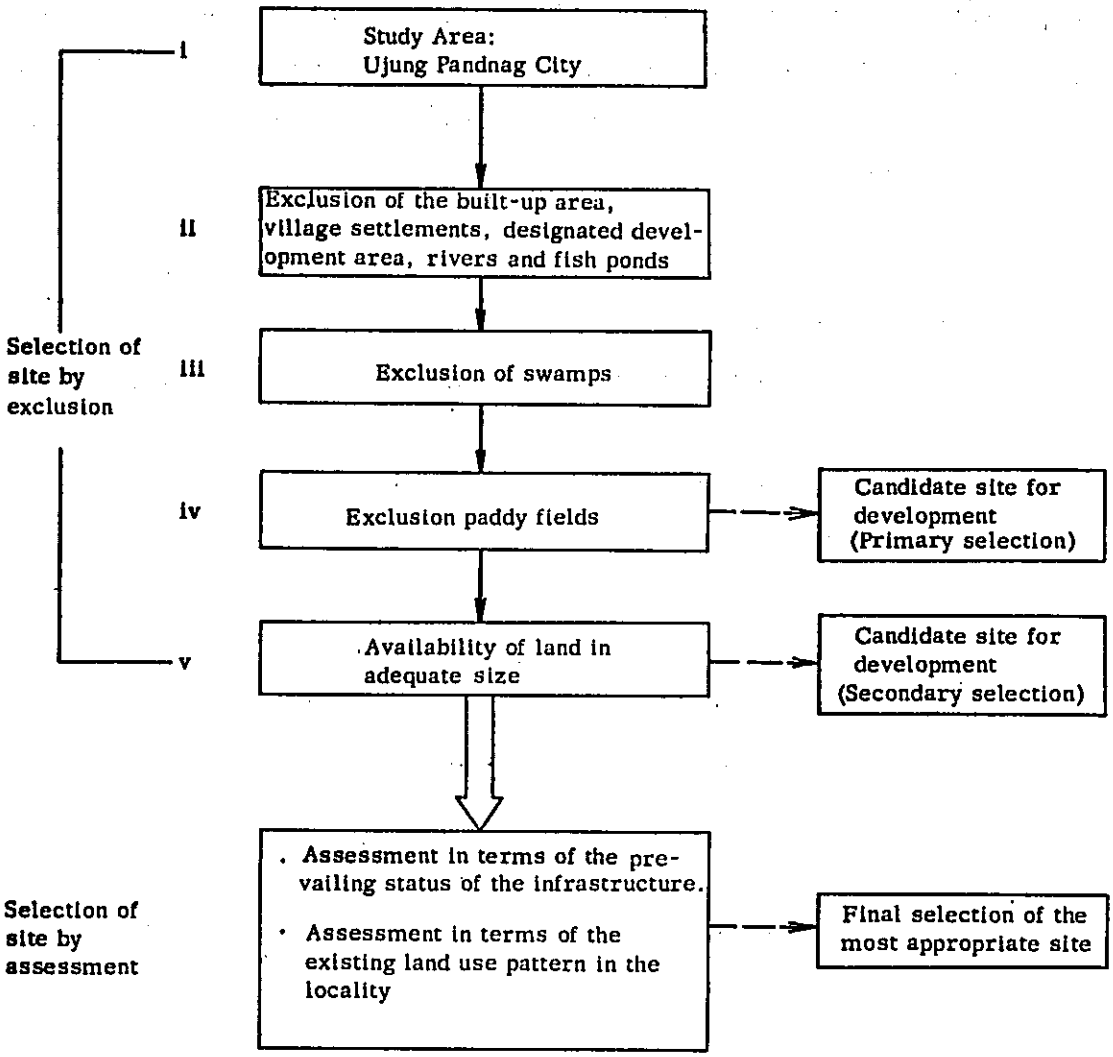
(viii) assured of close linkage with allied industries.

(ix) possible to provide employees with adequate working conditions at a reduced cost.

(x) possible to secure pollution control measures efficiently by means of grouping enterprises by type of pollution.

10. Selection of Candidate Sites

(37) Selection of possible sites was made following the procedures indicated in the flow chart, under the assumption that traffic conditions are uniform throughout the entire area of the City. The bearing strength of land and relative difficulty in land acquisition had to be excluded from examination due to the paucity of detailed data. Nine candidate sites for the industrial estate were identified as shown in Fig. 1.


Study Area:
Ujung Pandnag City
i
ii
Exclusion of the built-up area, village settlements, designated development area, rivers and fish ponds
Selection of site by exclusion
iii
Exclusion of swamps
iv
Exclusion paddy fields
Candidate site for development (Primary selection)
v
Availability of land in adequate size
Candidate site for development (Secondary selection)
. Assessment in terms of the prevailing status of the infrastructure.
· Assessment in terms of the existing land use pattern in the locality
Selection of site by assessment
Final selection of the most appropriate site

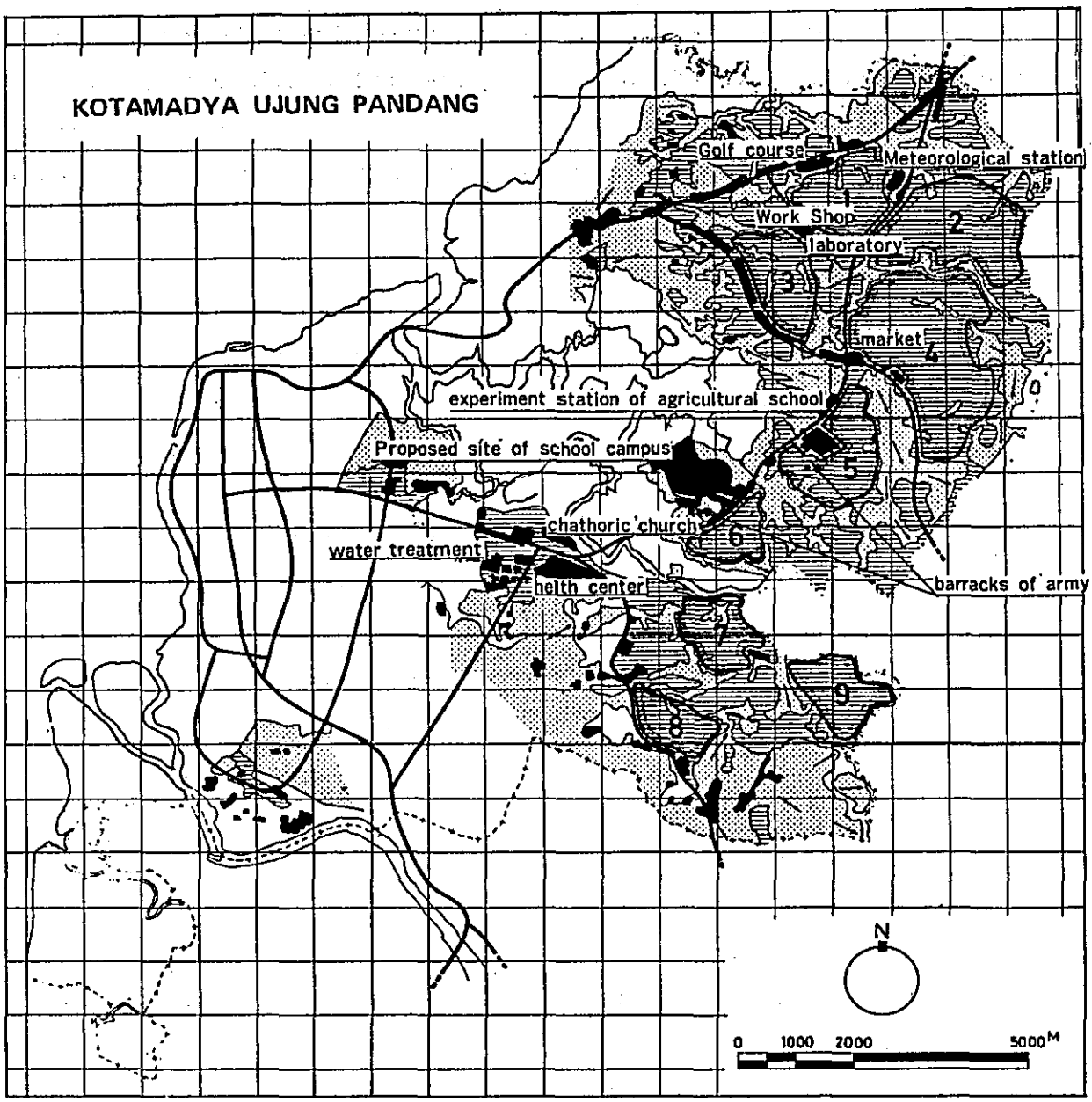


Fig.I Candidate Sites for Industrial Development

(secondary selection)

LEGEND

	Villages and planned development area
	Paddy fields
	Candidate sites (primary selection)
	Candidate sites (secondary selection)
	Drainage channels of paddy fields

11. Basic Guideline for Construction of the Industrial Estate

(38) Examination was made of the estate layout and the provision of basic facilities vis-a-vis the candidate sites and selected industries. The guideline presented below will serve as a basis for the subsequent feasibility study to identify a master plan.

(39) The basic framework and requirements of the proposed industrial estate are defined as follows:

(i) Construction Schedule

Estate construction is to commence sometime during the period from 1978 to 1979, and enterprises are expected to start moving in in early 1980s, unless otherwise concluded by the feasibility study. It is necessary to draw up a phased construction plan for estate land formation.

(ii) Size of the estate

The total area required for the estate is estimated to be around 200 hectares, subject to gradual expansion with an increase in settling enterprises.

(iii) Employment

A number of employees per hectare is estimated to be 125, and a total of approximately 25,000 workers will be employed in the estate.

(iv) Production

Annual production per industrial worker in value added is estimated to reach approximately Rps. one million ($2,400) by 1990.

(v) Factory sites

The estimated area to be occupied by factories is 60 ~65% of the estate area, the rest being used for streets and access roads, parks, greenbelts, etc.

(vi) Site selection

Dry land with good drainage and adequate bearing strength must be selected to keep the cost within a reasonable limit for land formation.

(vii) Infrastructure

As to the provision of infrastructure such as power, industrial water, roads and housing, the existing facilities should be put into effective utilization.

(40) Attempts were made to suggest (i) standard lots and block sub-divisions, and (ii) estate layout, in accordance with the respective requirements of prospective industries.

1) Standard lot and block sub-division

Minimum space requirements of the selected industries are estimated to range between 0.5 and 3 hectares. Sub-division of blocks and dimensions of lots must be so designed to allow optimum flexibility for diverse needs and sizes of prospective industries, and at the same time to secure an adequate working environment and space for landscaping. It is also advisable to cluster enterprises with similar space requirements in a block. Table 3 shows respective standard lots and block sub-divisions corresponding to five different space requirements.

2) Estate layout

Layout of the entire estate can be determined by grouping prospective enterprises in proximity according to their common characteristics shown below.

i) Grouping by raw materials commonly used . . . . .
Users of lumber, users of steel

ii) Grouping by infrastructural requirements . . . . .
Users of water in large quantities

iii) Grouping by the size of working force . . . . .
Labor-intensive industries

iv) Grouping by the open storage requirements
Users of large open sheds

v) Grouping by the shape of raw materials and products . . . . .
Users of bulky materials or manufacturers of bulky products

vi) Grouping by the type of pollution . . . . .
Noise and vibration, dust, air pollution, and water pollution

(41) Land use, transportation, facilities etc.

i) Study of land utilization (refer to Annex A)

ii) Transportation network

(a) Plan for flow pattern: within the framework defined by the three axes of information, human trips and freight movement, flows of goods and people inside the estate must be clearly segregated.

(b) Traffic generation and attraction: the volume of traffic inside the estate is estimated to be 10,000 vehicles per day.

(c) Standard section of trunk roads: construction of four-lane trunk roads and two-lane secondary trunk roads are envisaged.

iii) Location of facilities

(a) Administration, communication and public health facilities: the administration office, a telephone & telegram station, a post-office and a clinic are placed in the estate center.

(b) Commercial facilities: banks, shops and restaurants are provided at the estate center and the sub-center.

(c) Recreation facilities: parks and athletic facilities such as soccer grounds, badminton and tennis courts are conveniently scattered in the estate.

(d) Education facilities: study and meeting rooms are provided at the estate center and the sub-center.

(e) Religious facilities: to be provided in accordance with denominations.

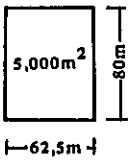
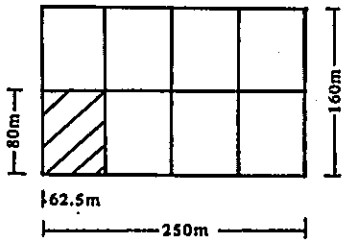
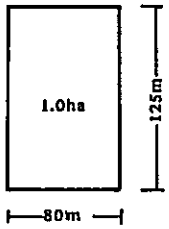
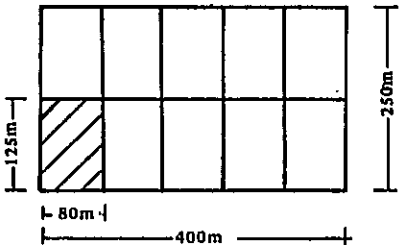
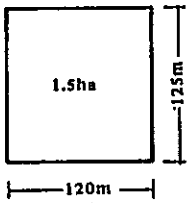
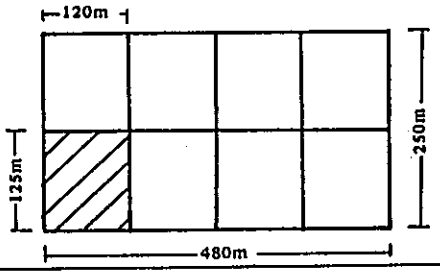
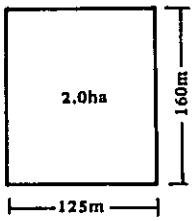
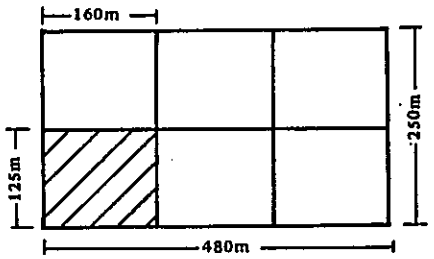
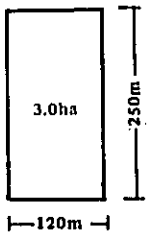
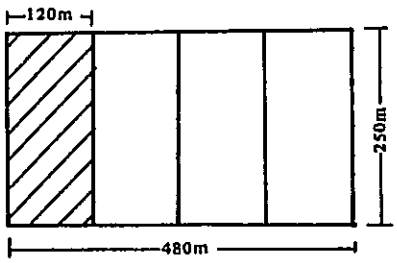
(f) Public utilities: to be placed in the low land on the southern edge of the estate.

iv) Study of water supply and seqage disposal

(a) Water supply: a conduit is constructed to draw water from the Maros River

(b) Sewage disposal: treated sewage is to be discharged into the Tallo River.

Table 5 Standard Lot and Block Subdivision

	Standard lot	Block subdivision	Remarks
Factories requiring an area of 0.5 ha.			• Single-item and small-lot production • Production with a short line
Factories requiring an area of 1.0 ha.			• Production with a line of a medium length • Possessing specific equipment
Factories requiring an area of 1.5 ha.			• Lot production for the most part • Possessing specific equipment
Factories requiring an area of 2.0 ha.			• Lot production for the most part • Possessing of heavy and long materials
Factories requiring an area of 3.0 ha.			• Lot production with specific, large-scale equipment • Production with a long line

I THE PRESENT SITUATION OF THE UJUNG PANDANG REGION

I. THE PRESENT SITUATION OF THE UJUNG PANDANG REGION

In discussing the basic policy and feasibility of the Ujung Pandang Industrial Estate project, the following points are very important for the success of the project:

(1) To know about the social and economic features of the Ujung pandang region such as population, resources, social overhead capital and economic activities

(2) To clarify the advantages and problems of this region through comparison with the geographic features of other regions of Indonesia

(3) To summarize and review the existing development plans in this region

(4) To clarify the future image of this region through the forecasts of basic regional indicators such as population, labor force and industrial structure

(5) To analyze the demand structure of the manufacturing industry and grasp the trend and strategy of its development and thus evaluate potential of this region.

In chapters I and IV, we will attempt to elucidate these problems. However, because of the limited availability of materials and information at this stage, some of the problems will be discussed in the feasibility survey to be conducted in the following phase.

The Ujung Pandang region covers any of the following four varying areas; (1) K. M. Ujung Pandang (the neighboring four kabupatens may be included), (2) South Sulawesi Province, (3) Sulawesi Island and (4) East Indonesia east of the straits of Makassar and Lombok. This report will center on South Sulawesi Province and refer to Sulawesi Island and East Indonesia when we make comparison with other regions.

1. The present Social-Economic Situation and Trend

1) Outline of South Sulawesi Province

(1) Location, area, nature

Sulawesi Island (formerly Celebes) is located approximately in the center of Indonesia which spans a distance of about 5,000 km from east to west. The island is divided into four provinces. According to the 1971 Census, South Sulawesi Province has an area of 82,768 km^2 (62,810 km^2 according to the "Report on Feasibility Study of the Ujung Pandang Industrial Estate" and 72,781 km^2 according to 1972/73 Statistik Indonesia), which is as large as Hokkaido, one of Japan's four main islands, and accounts for 36% of total area of Indonesia. The province is separated by the Verbeek mountains from Central Sulawesi to the north and faces the straits of Makassar, Flores Sea and Gulf of Bone. The equator crosses the narrowest part of Central Sulawesi and South Sulawesi Province extends from lat. 0.35°S to lat. 7°S. The 120th parallel of east longitude passes through the center of the province.

The northern part of South Sulawesi Province embraces many 2,000-3,000 meter high mountains topped by Mt. Rantekombola (3,455 meters). In the southern part run the Bone ridge and the Maros ridge (both being 800-1,000 meters high), but the rest of the southern part composes a fertile alluvial plain. The vast Tempe lowland in the central part which embraces Lake Tempe is ont of Indonesia's biggest rice producing areas.

With high temperature and frequent rainfalls, the province belongs to the tropical zone, and is sustainable to monsoons. Temperatures and the amount of rainfall differ from region to region, but generally the dry season lasts from June to October. The rainy season from December to March accounts for more than 70% of annual rainfalls. The rainfall in Ujung Pandang is compared with those in Jakarta and Surabaja in Table I-1.

Table I-1 Rainfall in Ujung Pandang (1961-1971)

	Ujung Pandang		Jakarta		Surabaja	
	A	B	A	B	A	B
Jan.	732	109	411	68	256	66
Feb.	534	97	341	70	302	67
Mar.	457	86	230	64	233	61
April	142	44	128	39	186	68
May	64	28	109	40	114	36
June	130	20	88	45	33	17
July	21	10	37	18	24	8
Aug.	116	11	49	20	11	3
Sept.	16	38	47	21	15	12
Oct.	143	12	68	26	31	17
Nov.	140	160	143	41	130	63
Dec.	760	116	168	46	200	47

A: Average monthly rainfall

B: Maximum 24-hour rainfall

(Source) Indonesia Handbook, 1974

Temperatures are high throughout the year at 26.4°C on an average, 31.8°C at the highest (August through October) and 21.7°C at the lowest.

Humidity is also high. The humidity of Ujung Pandang City is 79% on an average, more than 90% in December through February and about 50% in August through October.

Ujung Pandang is visited alternately by the 6-month easterly monsoon season and the 6-month westerly monsoon season. The two season correspond to the dry and rainy seasons. During the dry season, easterly and southeasterly winds blowing from Australia are dominant, while during therainy season, westerly and northwesterly winds blowing from the Asian continent are dominant. As a consequence, the dry and rainy seasons are reversed in the eastern and western parts of South Sulawesi Province. The time lag in rice planting and harvesting in both parts of the province facilitates seasonal movement of farm hands.

Although largely volcanic, the province suffers few natural calamities such as earthquakes, tidal waves or storms. During the rainy season, however, there are occasional damages from intensive heavy rains in some areas.

Table I-2 Annual Rainfall (1968 - 1973 Average)

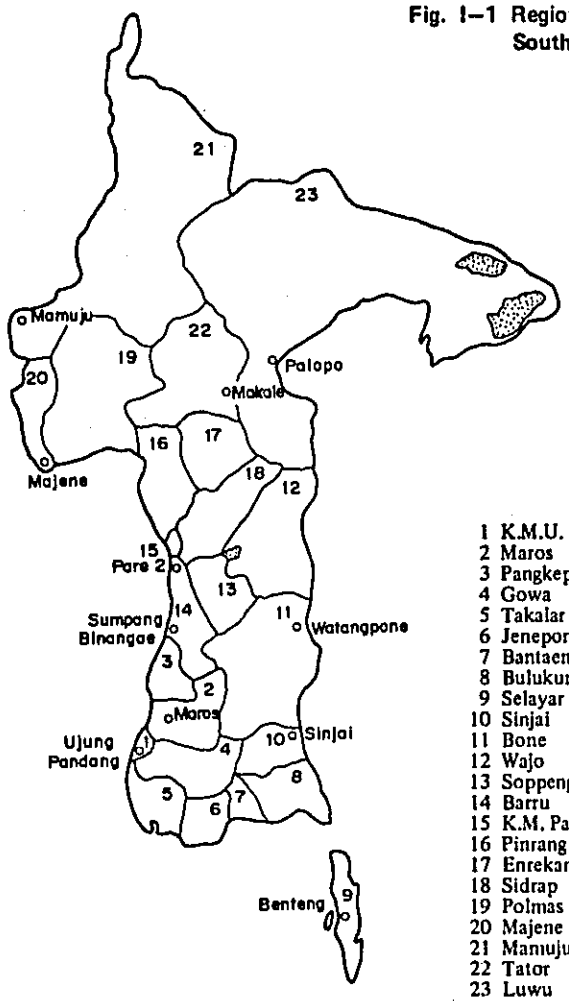
	Kabupaten	(mm.)
1	K.M.U. Pandang	2,940
2	Maros	3,246
3	Pangkep	3,970
4	Gowa	3,165
5	Takalar	2,386
6	Jeneponto	746
7	Bantaeng	2,345
8	Bulukumba	1,261
9	Selayar	1,161
10	Sinjai	2,405
11	Bone	1,931
12	Wajo	1,700
13	Soppeng	1,274
14	Barru	2,402
15	K.M. Pare Z	1,854
16	Pinrang	2,127
17	Enrekang	1,954
18	Sidrap	1,455
19	Polmas	2,995
20	Majene	1,313
21	Mamuju	4,321
22	Tator	3,438
23	Luwu	2,517

(Source) Pre-Feasibility Study for the Ujung Pandang Industrial Estate, 1975

(2) Population

Indonesia is composed of 26 provinces. South Sulawesi Province has two cities (kote madya) and 21 kabupatens, the largest number among outer provinces. The fact that South Sulawesi Province has so many kabupatens shows how its population is large and how it is distributed over a wide area.

Fig. I–1 Regions and Main Cities of South Sulawesi Province



		Area (Km²)
1	K.M.U. Pandang	100
2	Maros	60
3	Pangkep	1,700
4	Gowa	450
5	Takalar	880
6	Jeneponto	400
7	Bantaeng	940
8	Bulukumba	1,160
9	Selayar	4,190
10	Sinjai	2,460
11	Bone	1,520
12	Wajo	2,350
13	Soppeng	1,330
14	Barru	880
15	K.M. Pare 2	930
16	Pinrang	2,010
17	Enrekang	4,280
18	Sidrap	870
19	Polmas	11,430
20	Majene	3,610
21	Mamuju	1,720
22	Tator	18,300
23	Luwu	1,240

A kabupaten is composed of kecamatans (a kecamatan is as large as a few cities and villages put together). A rural kecamatan is composed of six to seven desas. At present South Sulawesi Province has 169 kecamatans and 1,165 desas.

According to 1971 Census, South Sulawesi Province has a population of 5.19 million, or 4.4% of Indonesia's total population. Since the province accounts for 4.2% of the country's total area, its population density of 62 persons/km^2 is

slightly above the national average. The province's population is characterized by the following three points:

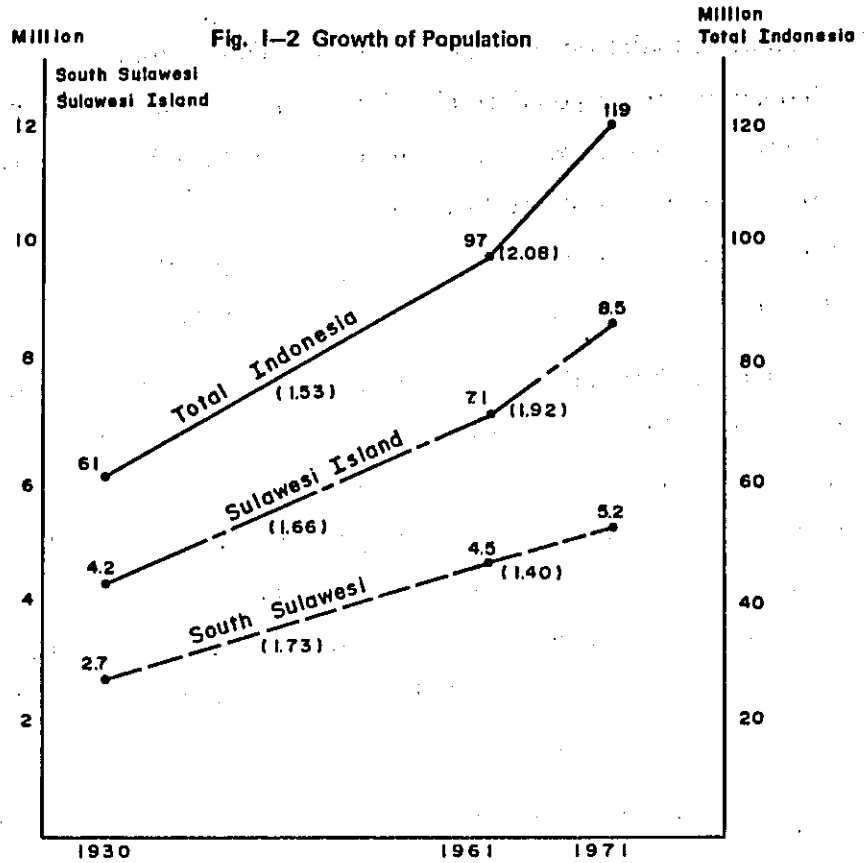
(1) Increase rate is low.

Fig. I-2 shows the change in South Sulawesi Province's population, based on censuses conducted in 1930, 1961 and 1971, in comparison with those of national total and of Sulawesi Island. During the 10 years from 1961 to 1971, South Sulawesi's population increased at an annual rate of 1.4% compared with the national average of more than 2%.

(2) Dependent burden is high.

Fig. I-3 shows the population compositions of the national total and South Sulawesi Province by age group. Higher percentages of children under 9 indicate the rapid growth of population in recent years. Children's percentages in South Sulawesi Province are higher than the national averge. The dependent burden co-efficient (ratio of population of working ages --- 10-64 in Indonesia --- to that of non-working ages) is 52.9 on an average and 55.7 in South Sulawesi. This means that in order to raise per capita income, South Sulawesi must bear a dependent burden 5.3% higher than the national average. (Japanese dependent burden co-efficient comes below 50 based on working ages of 15-60. By this Japanese standard, Indonesian co-efficient comes to 94.2 on an average and South Sulawesi co-efficient to 93.9.)

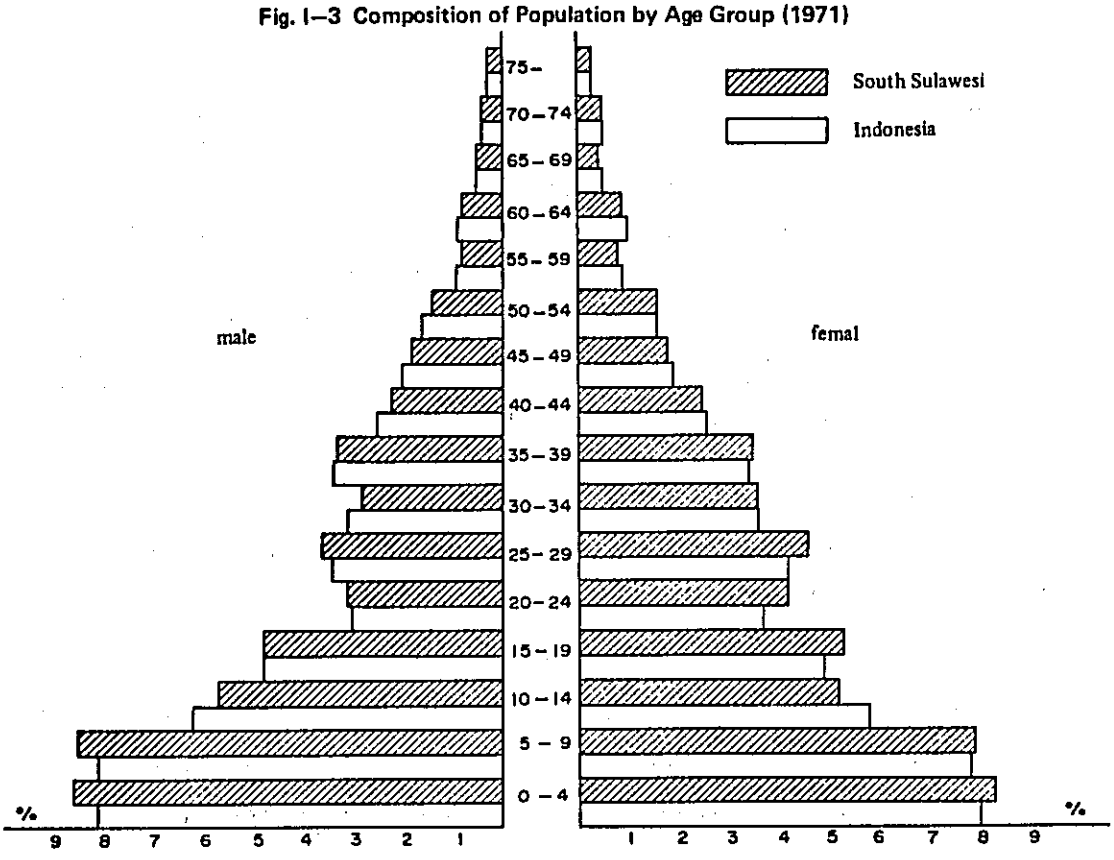
Fig. I–2 Growth of Population



(Note) Figures in parentheses show average annual growth rates

(Source) Prepared from Census

Fig. I–3 Composition of Population by Age Group (1971)



(Source) Prepared from 1971 Census

(3) Female population is larger than male population.

Indonesian male population is 4.9% smaller than female population. In South sulawesi Province, the gap expands to 6.5% on an average and to 16.5% in the 15-44 age bracket.

These three facts come from the exodus of population that took place in 1961-71. Generally, a change in population is determined by natural increase (births minus deaths) and social increase (inflow minus outflow). However, there is no reason to believe that the natural increase rate of South Sulawesi population was higher than those of other provinces. In Table I-3 which compares some indexes regarding natural increases of population, the rate of infant population is the highest in Sulawesi Island and averages in South Sulawesi Province, and the rate of female reproductive age (15-44) to total population is the highest in South Sulawesi. These facts provide no reason to believe that the natural increase rate of South Sulawesi population was lower.

Table I-3 Population Increase Rate and Infant Population Rate by Region

	(1) Total population	(2)1961/71 Annual Increase	(3)0-4 age	(4)15-44 Female	(5) Infant	(6)	(7)
	(1,000)	(%)	(1,000)	(1,000)	(3)/(4)	(4)/(1)	(3)/(4)
Total	119232	2.08	20018	26126	0.168	0.219	0.766
Java, Madure	76103	1.91	12271	17496	0.161	0.230	0.701
Sumatra	20813	2.83	3745	4148	0.181	0.199	0.903
Kalimantan	5152	2.31	845	1091	0.164	0.212	0.775
Sulawesi	8535	1.92	1564	1866	0.183	0.219	0.838
South Sulawesi	5180	1.40	873	1222	0.169	0.236	0.714

(Source) Prepared from 1971 Census

Supposing the annual natural increase rate of population of South Sulawesi in 1961-1971 was equal to the national average of 2.08% (disregarding migration with foreign countries), the province's population in 1971 would be:

$$(1961 \text{ population}) \times (1+0.0208)^{10} = 5,550,000$$

However, since the actual population in 1971 was 5,190,000, there must have been an outflow of 360,000. At the same time, according to the 1971 Census, about 130,000 people came from other provinces to live in South Sulawesi Province

during the ten years to 1971. When this figure is taken into account, the outflow reaches neary 500,000.

As is shown in Fig. 4, the population of South Sulawesi is almost evenly distributed across the province except the mountaneuous area in the north. This characteristic explains the fact that the main industry of the province is agriculture and that almost all arable land is in use.

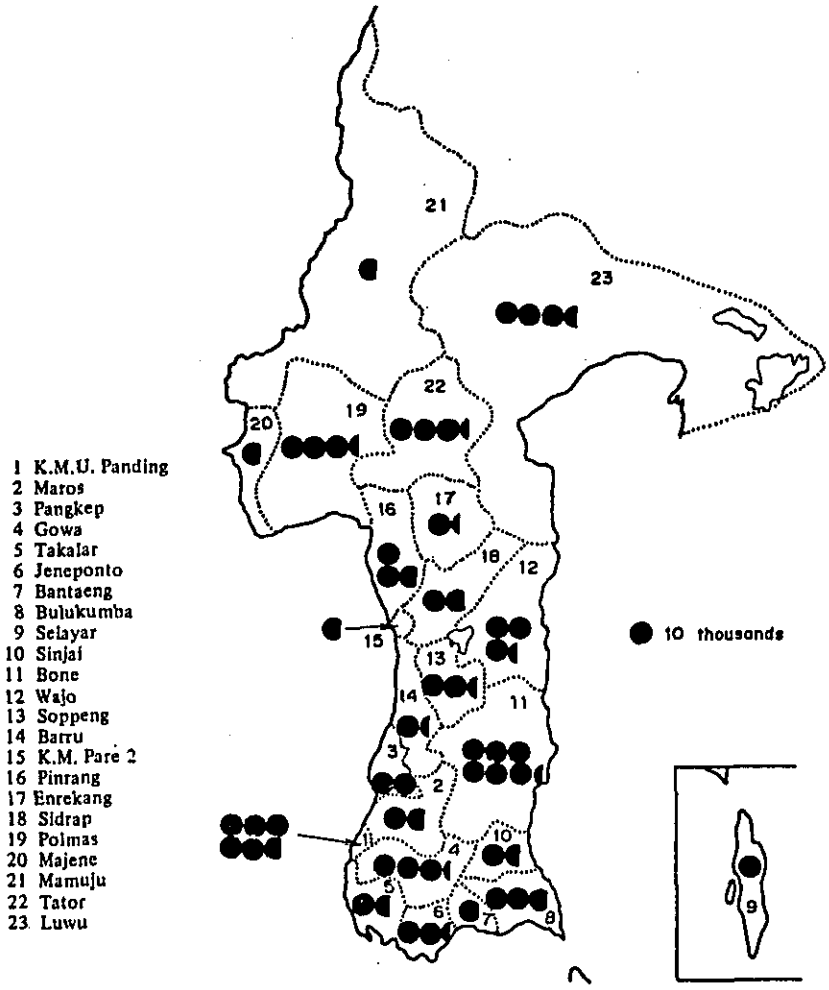
A total of 940,000 people, or 18% of the population of the province live in urban areas. Ujung Pandang, capital and the biggest city of the province, has a population of 560,000 or about 60% of all city dwellers. In terms of population, Ujung Pandang is the nation's 7th largest city after Palembang, and is a distribution base for agricultural products of the province and a base for fishing in Banda Sea and Arafra Sea. However, because of insufficient opportunities of employment, the city cannot afford to embrace all inflow of population, and thus faces such problems as unemployment and population outflow.

Ujung Pandang's population increased at an annual rate of 1.7% from 380,000 in 1961 to 430,000 in 1971. With the increase rate lower than the natural increase rate, Ujung Pandang is a city of population outflow. About 300 km to the north of Ujung Pandang is the province's second largest city, Pare Pare, which is on Tempe lowland and faces Makassar Straits. The city's population is 72,000.

The average number of family menbers across the province is 5.4 which is higher than in other provinces; 5.3 in rural areas and 5.35 in urban areas. Interestingly, urban families are larger than rural families.

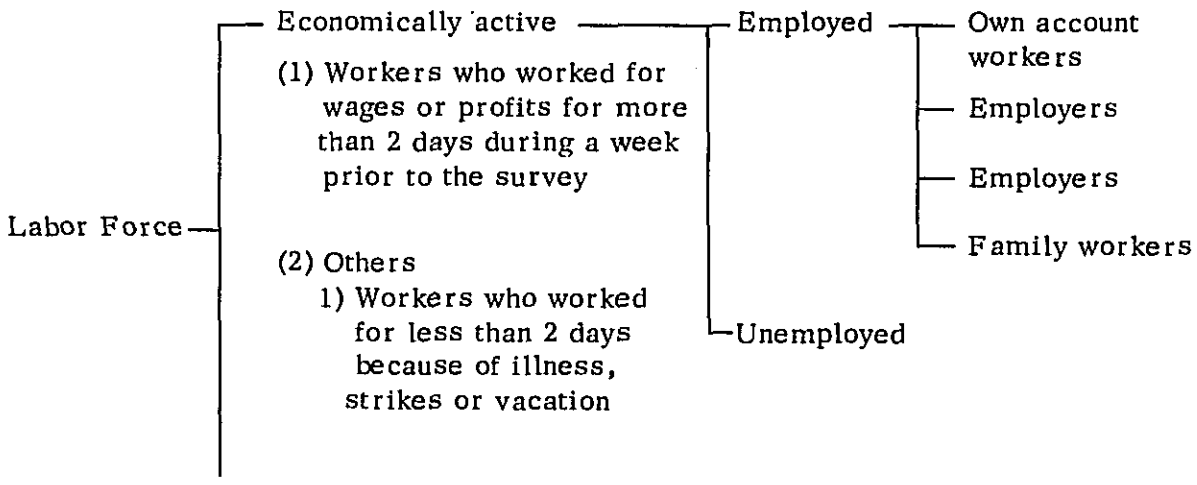
In 1974, alliens registered at the Ujung Pandang Immigration Bureau totalled 41,084 including 39,682 Chinese, 342 Indians, 217 Japanese, 126 Americans, 121 Italians and 105 Philippinos.

Fig. I–4 Distribution of Population by Kabupaten (1973)



(3) Labor force and employment structure

Indonesian Labor Statistics classifies labor force as people older than 10 years, and the labor force is grouped as follows:

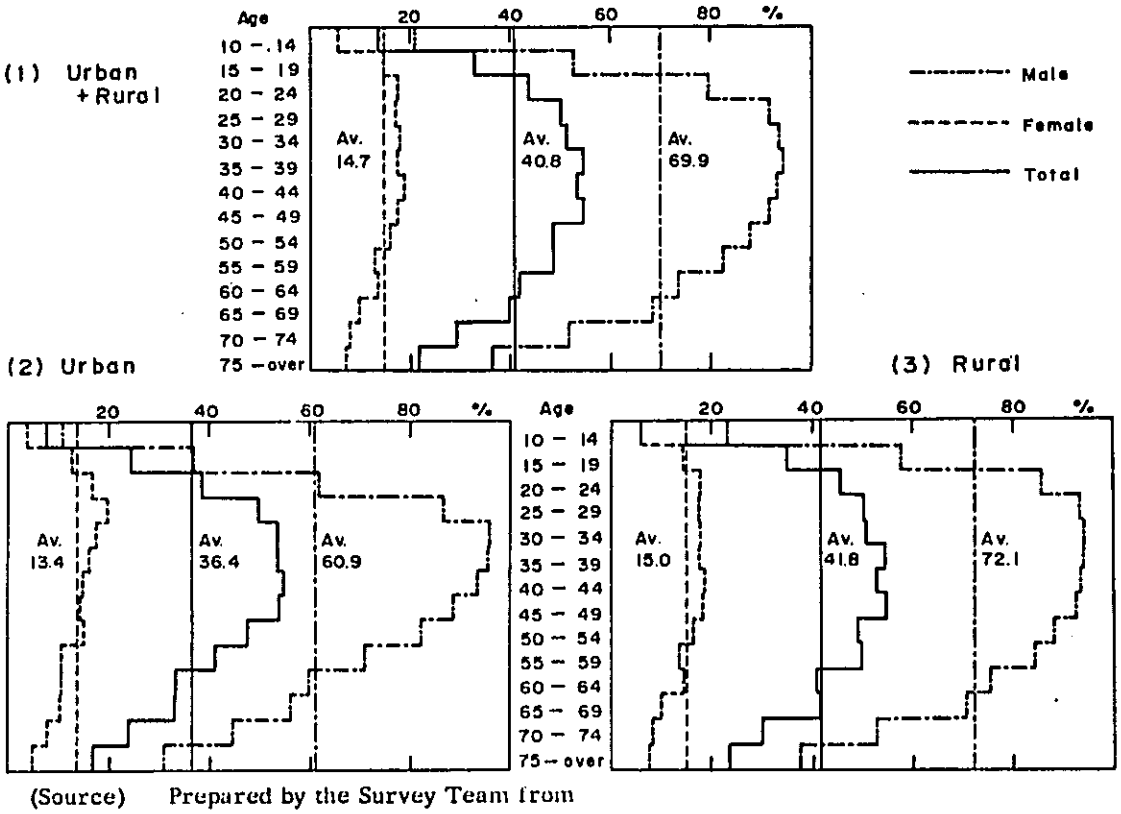


2) Farmers who worked for less than 2 days because of bad weather or slack season

3) Professionals such as doctors and bargers

└ Not economically active -- (Students, home makers, income recipients, others)

Fig. I–5 Percentage of People engaged in Economic Activities by Age Group (South Sulawesi, 1971)



(Source) Prepared by the Survey Team from

According to the 1971 census, the population older than 10 years old in South Sulawesi Province in 1971 stood at 3,460,000, or two-thirds of the total population of the province. The economically active population was 1,410,000, or 27% of the total population and 41% of the population of working ages in the province. Since more old people work in Indonesia, the rate of economically active population to the population of working ages is higher than in other Southeast Asian countries. The rate is 51% in Japan (1970), 34% in West Malaysia (1957), 31% in the Philippines (1960), 43% in India (1963) and 33% in Singapore (1957).

As is clear from Table I-4, the rate of labor force to the total population is 41.8% in rural areas, 36.4% in urban areas and 35.2% in Ujung Pandang City, and thus the rate is lower in more urbanized areas. As is indicated in Fig. I-5, the reasons are; (1) more women work in rural areas; (2) more old people work in rural areas; and (3) school enrollment in urban areas is nearly double that in rural areas. The rate of working people to total population has been declining worldwide.

Table I-4 Economically Active Population in South Sulawesi Province and Ujung Pandang

	Economically active population			Non-economically active population					Unknown	Total
	Employed	Unemployed	Total	Students	Home-makers	Income recipients	Others	Total		
Labor force (1,000)										
South Sulawesi	1,309	102	1,411	486	1,173	53	305	2,017	29	3,457
Urban areas	211	26	237	141	203	10	55	409	5	651
Rural areas	1,098	77	1,175	345	970	42	250	1,607	24	2,806
Ujung Pandang	97	11	108	72	91	5	28	196	2	306
Composition (%)										
South Sulawesi	37.8	3.0	40.8	14.1	33.9	1.5	8.8	58.3	0.8	100
Urban areas	32.4	4.0	36.4	21.6	31.2	1.6	8.4	62.8	0.8	100
Rural areas	39.1	2.7	41.8	12.3	34.6	1.5	8.9	57.3	0.9	100
Ujung Pandang	31.8	3.4	35.2	23.6	29.8	1.6	9.0	64.0	0.8	100

(Source) 1971 Census

Tables I-5 and I-6 show the economically active population and unemployment by industry. In South Sulawesi Province, workers in Indonesian's basic industry, agriculture, account for two-thirds of the total working population, followed by government offices and services which account for nearly 10% and commerce and manufacturing which account for 7-8%, respectively. In Ujung Pandang City, services account for one-third of the total working population, followed by commerce, transportation and communications. In terms of Colin Clark's industrial classification, the percentages of the primary, secondary and tertiary industries come to 66:8:26 in South Sulawesi Province and to 8:12:80 in Ujung Pandang City. Since the city embraces only a small agricultural area, the percentage of the primary industry is naturally low. However, the very high percentage of the tertiary industry is the result not so much of high level of industrialization as of the retarded development of the secondary industry. It is expected that as industrialization progresses in the future, the relative weight of the secondary industry will expand and that of the tertiary industry will decline.

One of the major labor problems in South Sulawesi is unemployment, and insufficient employment opportunities have led to an outflow of population. According to the 1973 data, 100,000 people, or 7.3% of the economically active population of the province were seeking jobs. The unemployment rate is 6.5% in rural areas, whereas it is 10.9% in urban areas, and thus poses a more serious problems. The educational level of these unemployed people is very low: most of them do not receive school education or they have left primary or middle schools halfway and some of them, having failed to find jobs even after graduation from professional schools or colleges, go to Jawa or other parts of the country.

The figures in Table I-6 show actual unemployment only, and concealed unemployment and disguised unemployment in the agricultural and services industries are believed to reach a sizable figure. In fact, according to the report on the pre-feasibility study of the industrial estate conducted by the South Sulawesi Province Government, the unemployment rate in a wide sense is 30% in urban areas and 60-70% in rural areas.

Home-makers account for majority of all non-economically active population, and approximately amount to the same number as households in South Sulawesi Province. The rate of students to total residents in urban areas is nearly double

that of rural areas partly because higher education facilities center on cities and school enrollment in rural areas is low. "Others" in Table I-4 mean the sick or older people under the care of government or private institutions.

Table I-5 Economically Active Population by Industry (1971)

	South Sulawesi						Ujung Pandang	
	Urban Area		Rural Area		Total			
	1,000	%	1,000	%	1,000	%	1,000	%
Agriculture, forestry & fishery	49,172	20.7	886,945	75.5	936,117	66.3	10,701	7.7
Mining	466	0.2	524	0.1	990	0.1	385	0.3
Manufacturing	18,167	7.7	86,142	7.3	104,309	7.3	10,610	7.6
Power, gas, water service	523	0.2	515	0.1	1,038	0.1	437	0.3
Construction	7,463	3.2	6,308	0.5	13,771	1.0	5,724	4.1
Commerce, hotel	52,165	22.0	58,721	5.0	110,886	7.9	38,041	7.4
Transport, communication	20,900	8.8	22,205	1.9	43,105	3.1	16,062	11.6
Banking, insurance	1,680	0.7	669	0.1	2,349	0.2	1,378	1.0
Services	67,109	28.3	69,799	5.9	136,908	9.7	45,399	32.7
Unclassifiable	19,414	8.2	42,440	3.6	61,854	4.3	10,239	7.4
Total	237,059	100.0	1,174,268	100.0	1,411,327	100.0	138,976	100.0

(Source) 1971 Census

Table I-6 Unemployment by Industry (1971)

	South Sulawesi						Ujung Pandang	
	Urban Area		Rural Area		Total			
		%		%		%		%
Agriculture, forestry & fishery	2,877	5.9	32,945	3.7	35,822	3.8	230	6.7
Mining	41	8.8	19	3.6	60	6.1	21	6.7
Manufacturing	833	4.6	2,309	2.7	3,142	3.0	458	5.3
Power, gas, water service	70	13.4	0	0.0	70	6.7	63	17.8
Construction	325	4.4	88	1.4	413	3.0	108	2.3
Commerce, hotel	1,427	2.7	1,766	3.0	3,193	2.9	602	2.0
Transport, communication	642	3.1	1,088	4.9	1,730	4.0	314	2.4
Banking, insurance	21	1.3	0	0.0	21	0.9	21	1.9
Services	2,712	4.0	3,414	4.9	6,126	4.5	1,255	3.4
Unclassifiable	5,656	29.1	14,345	33.8	20,001	32.3	2,041	24.5
New labor force	11,118	-	20,766	-	31,884	-	5,222	-
Total	25,722	10.9	76,740	6.5	102,462	7.3	10,395	9.7

(Source) 1971 Census

(4) The Economy and Industry

Since comprehensive statistics of the economy of South Sulawesi Province are not available, we have estimated gross regional product and its composition by industry from piecemeal information. (Table I-7)

Table I-7 Gross Regional Product by Industry in South Sulawesi Province (1971)

	Gross Regional Product (Rps Billion)	Composition (%)	Employed Composition (%)
Agriculture, forestry & fishery	74.9	59.8	66.3
Mining	1.9	1.5	0.1
Manufacturing	6.1	4.9	7.3
Construction	2.0	1.6	1.0
Transportation & communications	4.8	3.8	3.1
Commerce	17.3	13.8	7.9
Others	18.3	14.6	14.3
Total	125.3	100.0	100.0

(Source) Estimated by the Survey Team from many source

The province's gross regional product accounts for 3.1% (excluding the petroleum industry) of gross national product. Although the figure is lower than the country's average (3.9% for 26 provinces), it is the highest in East Indonesia. The composition of gross regional product by industry presents a pattern similar to that across the country. Two characteristics of the province's industry are:
(1) productivity in agriculture is about 20% above the national average; and
(2) productivity in manufacturing is almost one half the national average.

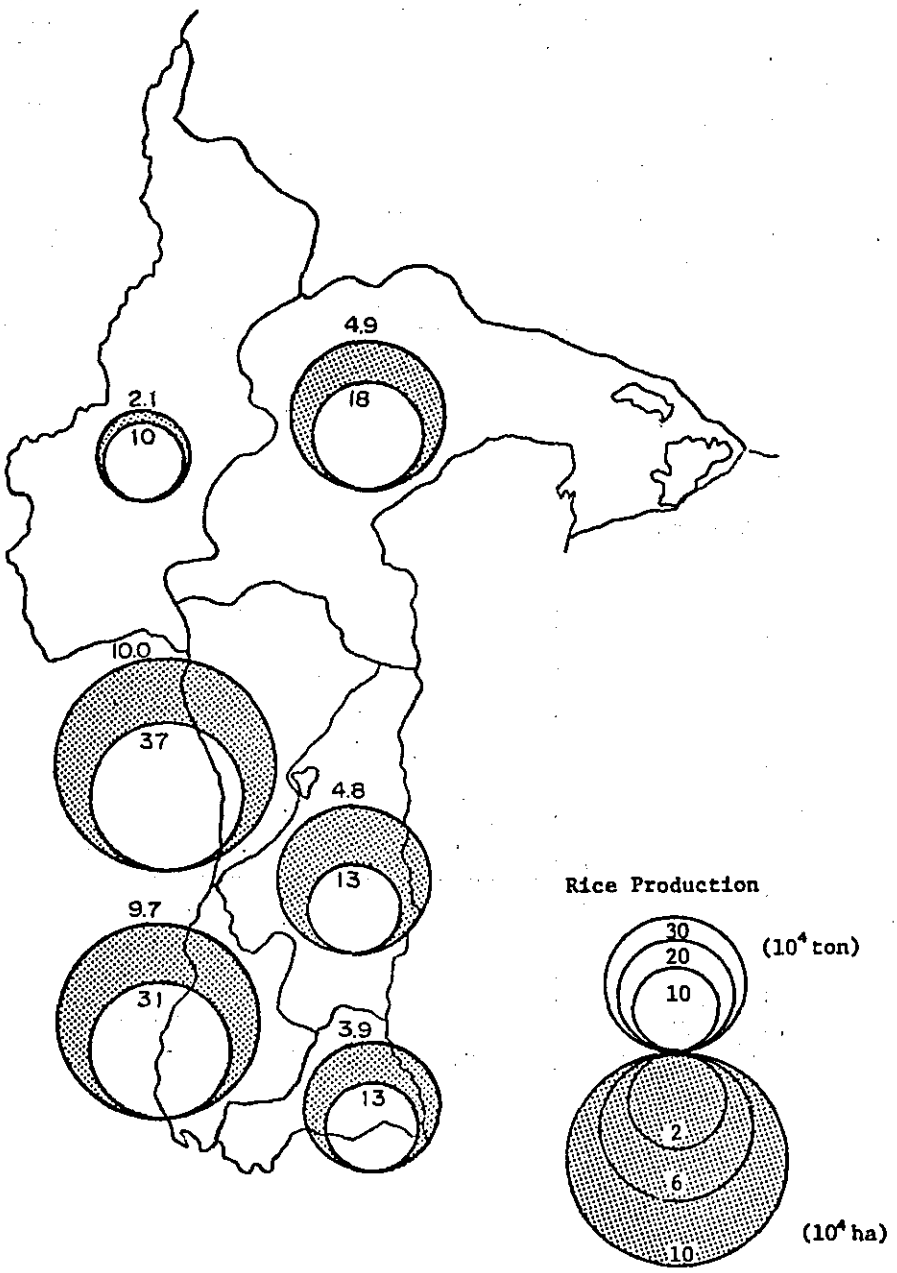
a) Agrucilture, forestry and fishery

South Sulawesi Province is one of Indonesia's greatest agricultural and rice-producing areas. Almost 82% of the province's population live in farming villages and 66% of total workers are engaged in the primary industry. Paddy fields amount to 515,000 ha and plowed fields 21,000 ha: the rest are uncultivated land, wood, wasteland, lakes and swamps.

Of all food crops, rice accounts for by far the largest percentage in terms of value, followed by maize, tapioca, peanut, sweet potato and mung beans. Fruits include banana, papaya, pineapple and durian. Representative plantation crops are copra, tobacco, kemiri, kapok, peper, clove, nutmeg and flax.

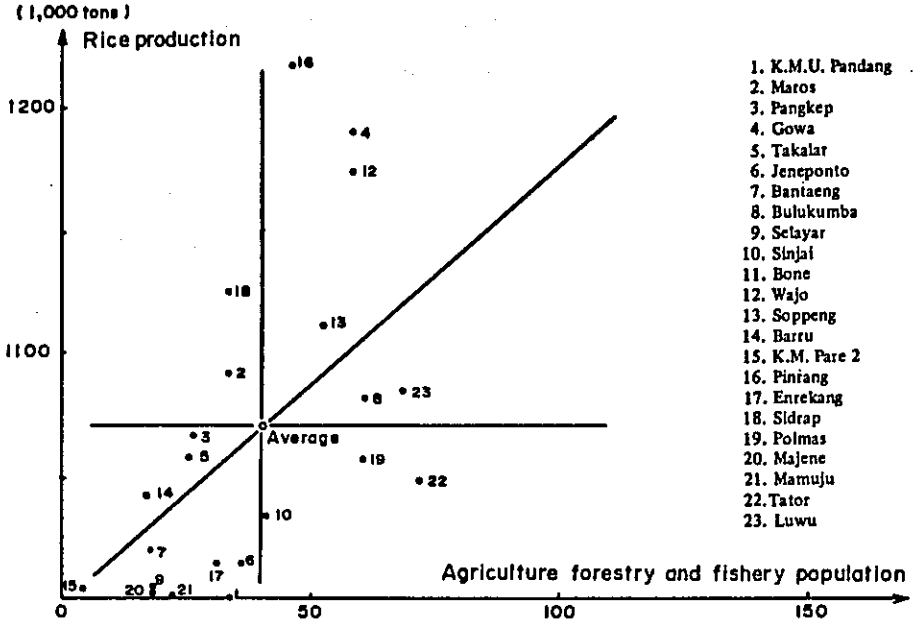
In terms of dry rice, rice production in 1973 amounted to 790,000 tons, which accounted for about 70% of all food production. Fig. I-6 shows the distribution of paddy field areas and rice production by province.

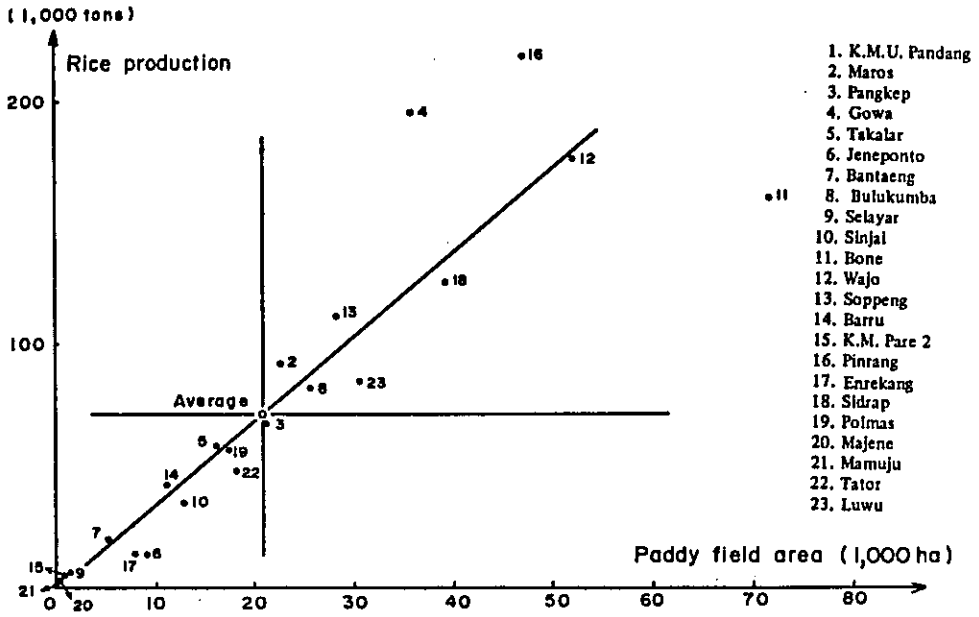
Fig. I-6 Geographic Distribution of Paddy Fields and Rice Production (1972)



(Source) Prepared by the Survey Team from

Fig. 1–7 Rice Productivity by Region





The area centering on Ujung Pandang and the Tempe lowland centering on Pare Pare are the main rice-producing areas. The outer circle represents the area of paddy field and the inner circle rice production. In the northern regions, the shaded part is relatively small and thus productivity of land is high, whereas in the eastern regions, the shaded part is relatively large, which means low productivity of land. Rice production in terms of land and labor is shown in Fig. I-7. The average rice yield across the country is 3.36 tons per ha (one half of Japan's average) and per capita yeild is 1.73 tons. The rice yield is much higher than the average in such provinces as Gowa, Pinrang and Maros and it is much lower in such provinces as Luwa, Enrekang, Bone and Tator.

It should be noted that the cultivated area has been on the decrease in the past years, whereas farming population has been on the increase. As a result, the cultivated area per farming family has become smaller through division among father and son, brothers and other family members. And more and more farmers cannot afford cultivated land. These farmers either go to cities to find jobs as seasonal laborers or go to Jawa Island or other parts of the country. If agricultural production is to expand in line with the growth in other industries, it is important to cultivate the unused land and to increase production of cash crops such as coffee, tobacco and spices. Production of major food crops is shown in Table I-8.

Table I-8 Agricultural Production in South Sulawesi

	Production (tons)					Production(tons)	Value (Rsp.1,000)
	1968	1969	1970	1971	1972	1973	
Paddy field(ha)	459282	466869	480280	481944	359170	--	--
Plowed field(ha)	50414	50610	49840	41754	20493	--	--
Rice(unhulled)	1279484	1201489	1625927	1621412	1205860	1592471	56930
Maize	287451	316061	212767	144449	117842	336980	10915
Tapioca	398380	341217	267073	265597	315744	295484	6536
Peanut	14959	18438	21041	14206	8697	22704	2687
Beans	4295	5928	4628	2817	1950	4199	462

(Source) Pre-Feasibility Survey for UPIE, 1975

According to Table I-9 which shows production of major cash crops, copra accounts for about 60% of total production. Formerly copra was distributed through Ujung Pandang, but today it is produced mainly in North Sulawesi Province. Palms are produced in such kabupatens as Mamuju, Majene and Selayar. The next largest product in value in flax, followed by kemiri and coffee. Arabika coffee produced in Toraja is well known for high quality.

Table I-9 Production of Major Cash Crops in South Sulawesi (1973)

	Production Unit		Unit Price Rps/kg	Value (Million Rps)
Copra	1,000 tons	115.5	155	17902
Tobacco	1,000 tons	3.8	210	790
Coffee	1,000 tons	7.8	380	1442
Kemiri	1,000 tons	10.1	206	2087
Dapok	1,000 tons	2.2	293	630
Pepper	tons	105	850	89
Clove	tons	7	950	7
Nutmeg	tons	5	438	2
Flax	1,000 tons	0.5	11,100	5336
Total		---	---	28288

(Source) Pre-Feasibility Study for UPIE, 1975

Cattle raising is the mainstay of the livestock industry in South Sulawesi Province. In 1973, production amounted to about Rps. 31.5 billion, including 400,000 cows, 360,000 buffalos, 150,000 horses, 220,000 sheep, 220,000 pigs, 500,000 domestic fowls and certain amounts of milk, eggs and leather. A private pasture in Enrekang is run with the loan from the World Bank.

Table I-10 shows fishery production in South Sulawesi Province. In the past ten years, fish catch has increased only slightly. However, since the price of fish has risen rapidly since the beginning of the 1970s, the total value has grown sharply. Fish cultivation in Lake Tempe was extensive before, but constant inflow of sand has reduced the depth of the lake by 10 - 20 cm a year and fish cultivation is becomming difficult. Switch to shrimp cultivation is now under study. South Sulawesi's largest breeding pond is in Budidaya: of the total area of 150,000 ha, 103,000 ha is for freshwater fish.

Table I-10 Fishery in South Sulawesi Province (1968-1973)

	Sea Fish			Freshwater Fish	
	Production 1,000 tons	Unit price Rps./ton	Value Million Rps.	Fish tons	Shrimps tons
1968	86	19,626	1,688	23,808	80
1969	85	25,000	2,125	24,108	162
1970	92	29,945	2,755	24,500	160
1971	97	49,829	4,833	27,320	207
1972	90	55,000	4,950	21,994	531
1973	94	90,000	4,860	26,536	1,142

(Source) Pre-F/S for UPIE, 1975

Wood production amounted to about 4.5 million m^3, worth Rps. 8.3 billion. (Table I-11). South Sulawesi Province makes efforts to help raise the cane processing, lumbering and furniture industries.

Table I-11 Forestry Production in South Sulawesi Province (1973)

	Production (m^3)	Unit Price Rps.	Value Million Rps.
Kayu Sipate	40,645	4,988	202
Kayu Agathis	11,265	11,542	132
Kayu Mixed	86,702	4,776	414
Kayu Bakan	4,751	3,812	18
Rotan	3,512	152,719	536
Copal/Damar	4,34 715	415	297
Lain 2 penghasilan	4.343,694	1,547	6,717
Total	4,491,285	-	8,337

(Source) Pre-F/S for UPIE, 1975

b) Mining

As its name indicates, Sulawesi (island of metals) embraces a variety of mineral resources. However, most of them, except nickel and laterite, are not developed because investigations of quantity and quality of deposits have been slow and the infrastructure for mining and transportation has remained undeveloped.

Nickel mines were investigated by Japan during World War II. Under the

list development project (PELITA I, 1969-1974), ANEKA TAMBANG run by the Indonesian Government and INCO of Canada jointly developed mineral resources in South Sulawesi and Southeast Sulawesi Provinces, and this project is now the island's most promising mining venture.

Presently, about 100 km south of Pare-Pare, a chrome mine is being developed by a Japanese concern. Other mining projects under way are listed in Table I-12.

Table I-12 Mineral Resources in South Sulawesi Province (under development or exploration in 1972)

Resources	Location	Remarks
1. Antimony	Sasak (Tana Toraja)	
2. Coal	Batuku (Bone), Barru, Malawa (Bone/Moros)	under exploration
3. Iron sand	Bone Pitih, Lowne, Walannae	approx. 370 million tons grade: average 49%
4. Nickel	Sorcako (Luwu), Bulu Balang, Saroakan	under exploration (INCO)
5. Copper	Tator, Cindokke (Maros), Enrekang	under exploration (Perto)
6. Lead, zinc	Baturappe (Gowa), Barakan (Mamuju), Masupu (Tator), Sasak (Tator)	under exploration (Pertiba)
7. Cobalt	Barru, Latan (Luwu), Batubassi (Maros)	under exploration
8. Gold, silver	Babakan (Mamuju), Leboni, Luwu, Sasak	
9. Gypsum	Bone, G. Tamangura (Maros), Polewali Mamasa, Soppeng, Wotu (Luwu)	under development by South Sulawesi Co.
10. Magnesite	Solo Talimbangan (Tator)	
11. Oil	Belum diketahui	
12. Chromium	Barru	under exploration (Gulf)
13. Kaolin	G. Kopar Bantimurung	

(Source) Pre-F/S for UPIE, 1975

c) Manufacturing

A more detailed account of the manufacturing industry will be given later, and its gist is summarized into the following eight points:

(1) The relative weight of the manufacturing industry in the South sulawesi economy is estimated at about 5%, and it remains to be developed. However, under the first 5-year development plan (PELITA I), the industry has grown rapidly. The industry's production increased at an annual rate of 25.4% from Rps. 7.6 billion in 1968 to Rps. 29.6 billion in 1974.

(2) Traditional labor-intensive industries with low capital equipment ratio (amount of capital investment per employee) such as home industry, light industry and textile industry (mostly local silk fabrics) account for nearly 80% of the total production. A fullscale modern industry runs with certain amounts of capital and technology is limited to a few companies including a flour mill and a galvanized iron factory in Ujung Pandang. Recently, the share of modern factories for cement, secondary steel products and ship repairing is expanding.

(3) The average value added in the manufacturing industry during the first 5-year development plan (1968-1974) was Rps. 5.4 billion, of which light industry accounted for 47.2%, home industry 4.8%, textile industry 2.1%, chemical industry 37.3%, basic industry 7.3% and maritime industry 1.3%.

(4) The number of employees per company, according to the survey of companies with more than ten employees, was 17 on an average. The average number of employees in the chemical industry was 267, exceptionally high compared with light and home industries' 15.

(5) Investment per employee was Rps. 860,000 on an average: the figure was Rps. 4,670,000 in basic industry and Rps. 130,000 in home industry. Value added per person was Rps. 210,000 on an average: it was Rps. 1,070,000 in the chemical industry and Rps. 40,000 in the textile industry. (These figures are the result of a survey of companies with more than ten employees.)

(6) Manufacturing companies in 1973 totalled 1,495, of which foods, drinks and tobacco accounted for 444 (29.7%), iron and metal and machines including automobile repair 274 (18.3%), non-metal mining such as bricks, slates, ceramics and coal 247 (16.5%) and textile 218 (14.6%) including 129 handweavers.

(7) These companies are distributed as shown in Table I-13. About 40% companies in terms of the number and employees and nearly 80% in terms of investment and production operate in Ujung Pandang and its neighboring kabupatens such as Gowa, Maros and Takalar. Pare Pare in the northern area also attracts many companies.

(8) Modern industries with more than Rps. I billion are all run by the state, or joint venture operations with non-puribumi or foreign capital. They include flour milling, cement, paper making, textile, sugar, and galvanized sheet iron.

Table I-13 Geographic Distribution of Manufacturing Companies in South Sulawesi Province (1973)

Kabupaten	Investment Rsp. Billion	(%)	Major Industries and No. of companies
1. Ujung Pandang	10.80	(59)	food, drinks, tobacco (149); metal, wood (126); others (100)
2. Gowa, Takalar, Jeneponto	2.26	(13)	brick, slate (82); others (10)
3. Maros, Barru	1.22	(7)	tobacco (32); cutlery (23); others (10)
4. Pare Pare, Pinrang	3.30	(18)	food, drinks, tobacco (27); metal products (20); others (10)
5. Sidrap, Enrekang	0.02	(0)	non-metal mining (19); agriculture (11); textiles (12); others (11)
6. Polmas, Majene, Mamuju,	0.17	(1)	food, drinks, tobacco (23); textiles, sewing, carpeting, leather, ship fittings (15); non-metal mining (12); others (12)
7. Tana Toraja	0.07	(0)	textiles, sewing, carpeting, leather (32); wood, carvings (13); non-metal mining (25); non-metal products (14); others (14)
8. Luwu	0.05	(0)	wood, furniture (22); food, drinks, tobacco (15); others (10)
9. Wajo	0.11	(1)	textiles (108); metal products (22); others (15)
10. Soppeng	0.07	(0)	tobacco (147); fabrics (12); non-metal mining (11)
11. Bone	0.09	(0)	bricks (30); tobacco (16); others (15)
12. Bulukumba, Sinjai Selayar,	0.17	(1)	silverware (16); fabrics (14); furniture (14); metal products (12); others (10)

(Source) Pre Feasibility Study

d) Trade and distribution

Foreign trade in South Sulawesi Province is outlined in Table I-14 and and I-15. (Since there are some discrepancies among trade statistics of the Central Bureau of Statistics, Statistical Handbook and the report on Pre-Feasibility Study for Ujung Pandang Industrial Estate, we have used the last-named report.)

In the early 1970s, imports continued to amount to $10 million, of which raw materials and intermediate goods accounted for about one half, capital goods for 30-40% and consumer goods for the rest.

In 1973, however, imports rose to more than five times due to rapid increase of foods and other consumer goods stemming from a slump in agricultural production. And imports of consumer goods including food aid from abroad in 1973 accounted for 52% of the total imports. (Food aid in 1972-1973 accounted for 21% of all consumer goods imports.)

Main imports are corns from Canada, the U.S. and Australia, rice from Hong Kong, Burma and South Korea, machine parts from the U.S., Japan and Australia, cement from the Philippines, Japan and South Korea, zinc from Taiwan and Japan, steel products from Japan and automobiles from Japan.

South Sulawesi's main export products which amounted to more than $200,000 in 1974 include blackwood ($400,000), frozen shrimps ($4,174,000), coffee ($2,200,000), wheat brans ($1,629), roes of flying-fish ($920,000), rubber ($802,000), canes ($760,000), baffalos ($293,000), copras ($260,000) and nutmegs ($241,000). These products account for 87% of the total exports. The sharp increase in exports in 1971-1973 was largely the result of increased exports of wood, leather, shrimps and coffee. A decline of about 12% in exports in 1974 was caused by the worldwide economic slump and by the fact that the relative weight of Ujung Pandang as the distribution center for commodities declined because of the improved port and harbor facilities in Surabaja, Bitung, Anbon and Sorong, according to the analysis of the report on the Pre-Feasibility Study for Industrial Estate. Exports of nickel increased very repidly from $2 million in the late 1960s to $6 million in 1970.

Interinsular trade of South Sulawesi Province heavily depends on agricultural production because agricultural products such as rice and sugar are main

items of trade. The interinsular trade fluctuates from millions of rupiahs to hundreds millions of rupiahs from year to year, and the trade balance is always in favor of South Sulawesi Province. The province has the strongest trade relations with West Java and East Java, followed by those with North Sulawesi and North Sumatra.

Commodity distribution in South Sulawesi Province takes the following three forms. The first is barter through small-scale village traders and processors of agricultural products (flouting, sugar-making, tobacco and handicraft). This form of distribution is practised in the area where the self-supporting economy is predominant. Since it is not so much the trade of surplus products as the exchange of daily necessities, it does not have a great impact on the province's external trade.

The second form of distribution is designed as a profit-pursuing commercial dealing and is conducted by local truckers, merchants, brokers, and money lenders. This form of distribution is larger both in size and coverage than the previous one. In many cases, these distributions have a great impact on traditional producers and thus control both production and distribution.

The third form of distribution is through government organizations, e.g. rice by BULOG and oil by Pertamina. This form has the greatest impact on the overall distribution set-up.

Generally speaking, the distribution system in South Sulawesi Province still remains to be developed, and thus hampers the development of production activities. For instance, the producer's prices of rice, copra and sugar are held very low, discouraging producers and hampering the expansion of production. The producer's price of rice is Rps. 45-55/kg (¥36-40) and that of a cow is Rps. 100-110 (¥70-80). As the copra price is also low, there will be no rapid increase in its production. Farmers have not sufficient funds of their own and are forced to sell their products at low prices, often immaturely.

In urban areas, the distribution system is being modernized constantly, but it will take long before the wave of modernization reaches rural areas.

Table I-14 Imports of Goods by South Sulawesi Province

	Consumer Goods		Raw Materials & Intermediate Goods		Capital Goods		Total	
	Imports	Composition	Value	Composition	Imports	Composition	Imports	Composition
1969	489	15.8	1,826	59.0	379	12.1	3,097	100.0
1970	1,828	21.9	4,495	53.9	2,020	24.2	8,343	100.0
1971	1,801	17.5	4,973	48.4	3,495	34.0	10,269	100.0
1972	1,198	11.6	4,993	48.1	4,179	40.3	10,370	100.0
1973	29,278	51.5	13,285	23.4	14,258	25.1	56,821	100.0
1974*	4,676	79.6	561	9.5	638	10.9	5,877	100.0
69-73 Total	34,999	39.4	29,573	33.3	24,328	27.4	88,901	100.0

* Imports for Jan.-March at Ujung Pandang port

(Source) Pre-F/S for UPIE, 1975

Table I-15 Exports by South Sulawesi Province

	Exports		Including	
	US$1,000	1970=100	Agricultural Good	Industrial Goods
1965	5,187	75		
1966	8,817	126		
1967	6,069	88		
1968	6,949	101	(N.A.)	
1969	7,067	102		
1970	6,910	100		
1971	7,666	111		
1972	10,627	154	2,870	850
1973	20,028	303	4,852	3,057
1974	17,489	253	3,623	2,046

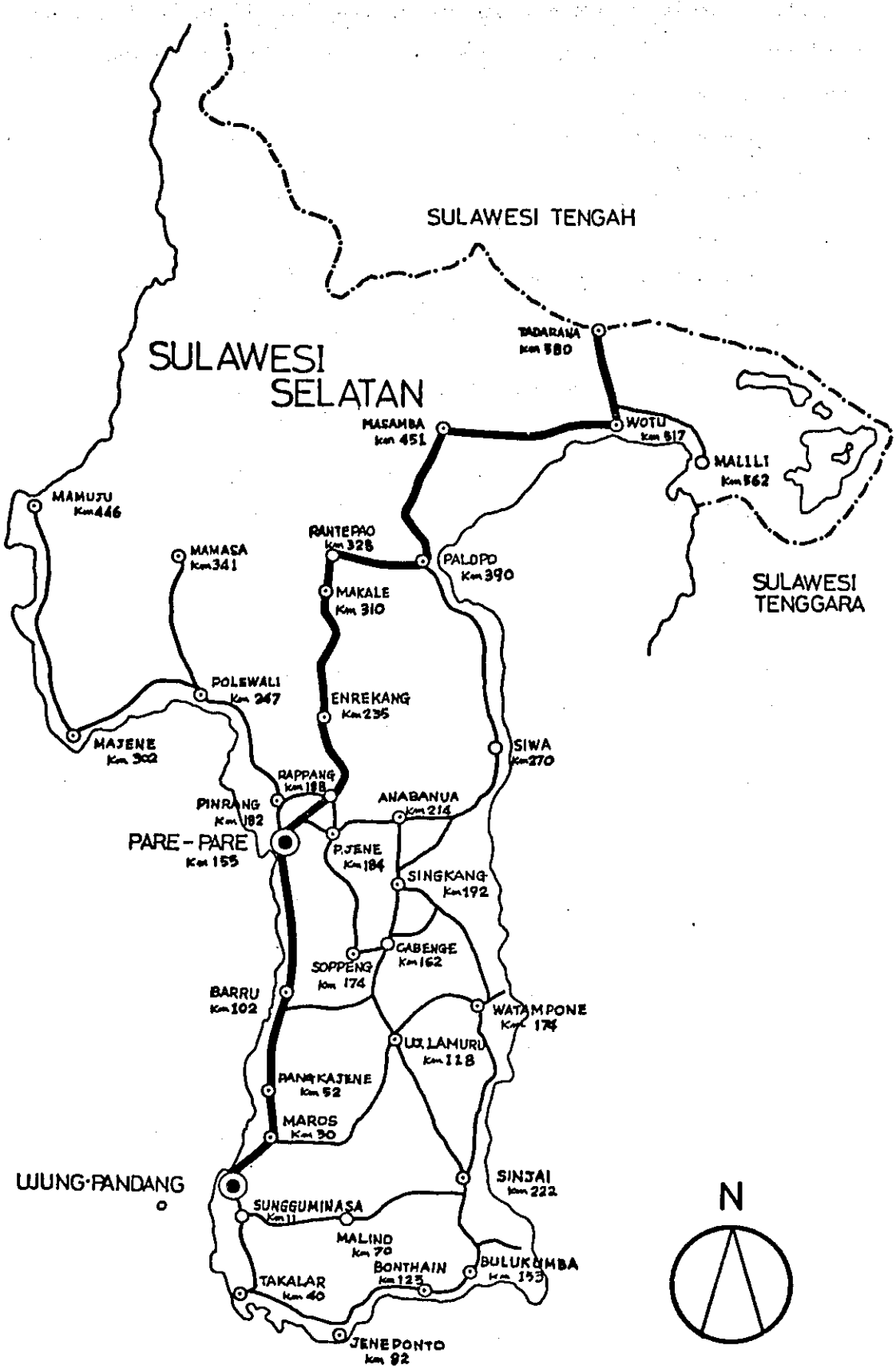
(Source) Pre-F/S for UPIE

(5) Infrastructure

a) Highway and Road

The trunk road in South Sulawesi Province totals 2,163 kilometers in length: 583 kilometers for the national highway and 1,580 kilometers for the provincial highway. (see Table I-16 for details) The highways and roads are maintatined relatively well as compared with other provinces on Sulawesi Island, because this province has more open fields. However, the current situation and quality of the highway network have not yet reached a level capable of supporting and developing the local industries.

Fig. I-8 Highway Network in South Sulawesi Province



There is only one route of national highway from Ujung Pandang running north into Central Sulawesi Province, which can be divided into the following three portions:

1) Ujung Pandang - Pare Pare ; 152 km
2) Pare Pare - Palopo ; 235 km
3) Palopo - Wotu - Tadatanau ; 196 km

Major provincial highways are the following 12 routes:

1) Ujung Pandang - Sinjai - Watanpone ; 296 km
2) Sungai Minasa - Marino - Sindjai ; 138 km
3) Maros - Watanpone - Bodjoe ; 150 km
4) Ujung Lamure - Tjabenge - Soppen ; 56 km
5) Soppen - Pangkajene - Rappang ; 71 km
6) Watanpone - Pompanua - Ulugung ; 62 km
7) Impaimpa - Anabanua ; 16 km
8) Sallonyo - Impaimpa - Siwa - Palopo ; 201 km
9) Impaimpa - Pompanua ; 27 km
10) Bankae - Anabnua - Tarumpakai ; 60 km
11) Pinrang - Rappang ; 22 km
12) Pare pare - Palewali - Majene ; 147 km

Table I-16 Road Length in South Sulawesi Province (1972)

	Total Length	Paved	not paved	good	ordinary	bad	extremely bad
National Highway	583	248	335	85	326	97	75
Provincial Highway	1580	479	1101	445	337	325	443
Local Road	26000	200	2322	200	800	1522	-
Village Road	35000	-	-	-	-	-	-

(Source) Pre - F/S for UPIE

The Ujung Pandang - Pare Pare portion of the national highway is best maintained and is paved completely with asphalt, which permits automobiles to run at an average speed of 50 km ph. The traffic volume is also relatively high; 300-500 cars a day. Good road surface conditions are expected to be maintained in the future as the Indonesian Government places top priority on the maintenance of this portion.

The Pare Pare-Palopo portion is constructed at a steep mountainous area, thus containing many steep slopes and complicated lines. This portion tends to be damaged heavily as it is often hit by rainfalls and landslides, which makes it difficult for automobiles to pass there during the rainy season. Although the Government has been stepping up efforts for the improvement, a 16 kilometer portion south of Enrekang and the portion from Rantepao to Palopo have not yet been paved with asphalt and are still gravel road. The traffic volume in these portions in less than 100 cars daily. A fairly long portion north of Palopo is open field, mostly with poorly maintained dirt road.

Therefore, it becomes muddy on rainy days,
making the passage of vehicles impossible. This national highway constitutes a part of the Trans Sulawesi Highway planned between Ujung Pandang and Manado. As provincial highways, the south-western coastal route from Ujung Pandang to Jeneponto has generally moderate slopes and favorable lines, and are also paved with asphalt, thus making it possible for automobiles to run at a 50 km ph speed.

The first problem concerning road maintenance at this area is that the design standard is at a very low level. The national highways are mainly of grade III to grade IV on the basis of Indonesia's five-grade classification. The design load is 5 tons. In order to construct and improve as many roads as possible with limited funds, it is inevitable to adopt a low standard. However, low standards of roadbeds and road surfaces and inadequate draining facilities lead to shorter life of roads. Extension of vulnerable roads also leads to an increase in maintenance and repairing expenses. In a long-range viewpoint, such measures are generally not economical. In this connection, the quality of the road structure should be improved in view of future prospect that the demand for materials transportation between various regions will grow and vehicles will become larger-sized.

The second problem is extremely bad conditions of bridges. Out of 322 bridges built along the national highway, 40-50% have been destroyed or damaged due to the passage of heavily loaded trucks, time-wearing, natural disaster such as floodsand landslides, theft and destruction activities by the anti-Government army during the civil war. Many of them are temporarily repaired by building

wood bridges, temporary bridges or Bailey bridges. However, the reconstruction is urgently needed as the temporary bridges load-enduring capacity is small. The existing steel bridges were mostly built in the 1930s. Many of them need to be re-constructed as they have become weak and dangerous due to erosion caused by bad maintenance. As for 155 kilometers of the Ujung Pandang-Pare Pare portion, a 5-ton weight limit is set for bridges built in the 120 kilometer portion and a 3.5 ton weight limit for the remaining 35-kilometer portion. The Government plans, under economic cooperation by the Canadian Government, to raise the weight limit to five tons for all of the Ujung Pandang-Pare Pare portion from 1978 to 1979. The step has already been taken for the roads to be used for nickel development in Luwu.

Road improvement works are expected to bring about great development effects in a long-range viewpoint, but on a short-range basis, are generally difficult to show profitability because of extremely small current traffic volume. Daily traffic volume is 300-500 vehicles for the national highway near Ujung Pandang, 100-200 for the remaining portion of the national highway, and only less than 100 for other highways. Table I-17 shows the number of automobiles by Kabupaten in South Sulawesi Province. Four-wheelers in this province totaled 12,502 units in 1974, 75% of which concentrated in Ujung Pandang City. They are 100-300 units for about half of Kabupatens and less than 100 units for the remaining Kabupatens. By type of automobile, passenger cars represent 42%, trucks 50% and buses 8%. Passenger cars are mostly run, jeeps and pick-ups and all trucks are smaller than the 5-ton type. Fig. I-9 shows the charge in automobile ownership in this province.

Table I-17 Number of Automobiles and Motorcycles by Kabupaten (1974)

	Four-wheeler	Two-wheeler	Total
1. K. M. U Pandang	9,424	27,872	37,296
2. Maros	152	198	350
3. Pangkep	173	462	635
4. Gowa	184	285	469
5. Takalar	21	182	203
6. Jeneponto	36	161	197
7. Bantaeng	13	157	170
8. Bulukumba	22	380	402
9. Selayar	18	303	321
10. Sinjai	139	160	299
11. Bone	134	665	799
12. Wajo	84	837	921
13. Soppeng	121	756	877
14. Barru	36	279	315
15. K. M. Pare 2	301	521	822
16. Pinrang	268	917	1,185
17. Enrekang	32	178	210
18. Sidrap	32	566	598
19. Polmas	16	293	309
20. Majene	19	87	106
21. Mamuju	7	77	84
22. Tator	128	148	276
23. Luwu	149	312	461
Total	12,502	35,796	48,298

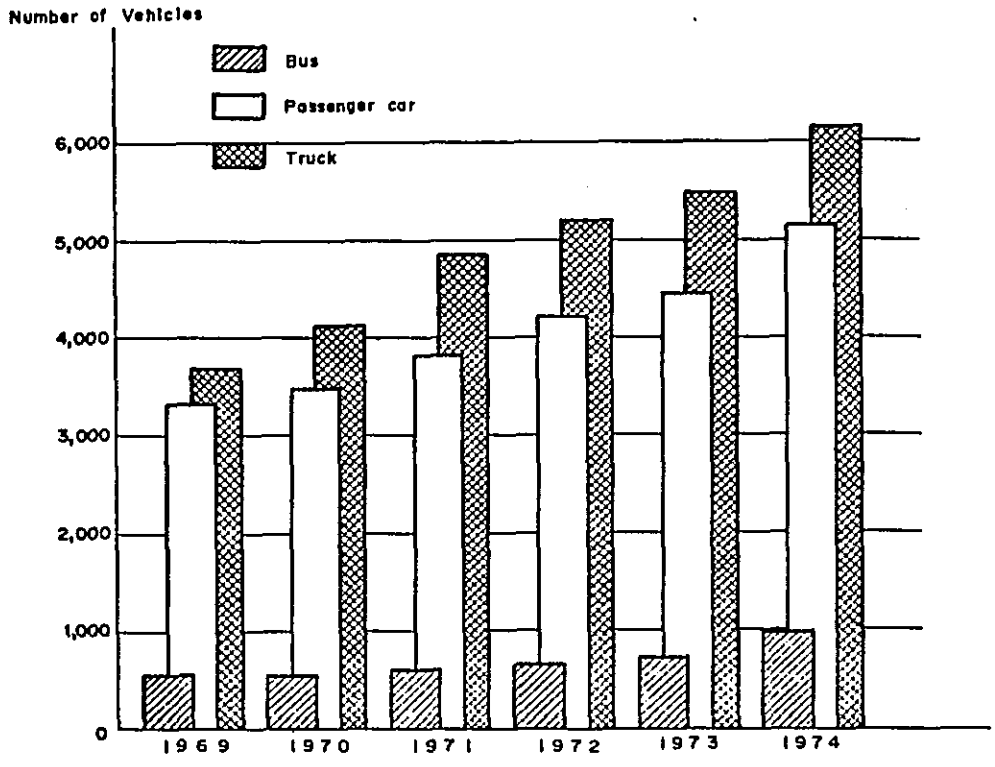
(Source) Transportational Traffic Dept.
Province of South Sulawesi (IIAJR)

Common vehicles are bicycles, in addition to two-wheel cars. The becat, a combined vehicle of bicycle and jinrikisha, is also common in urban areas. In Ujung Pandang City, 14,846 becat and 75,083 bicycles were registered in 1975. There is currently seen no traffic congestion in urban areas, but automobiles are foreed to go slow on some streets as automobiles, bicycles and becat run on same roads.

Road construction cost differs area by area. For example, at the area surrounding Ujung Pandang, about 5 million rupiahs (¥3.7 million) are required per kilometer to improve unpaved road into gravel road and about 7 million rupiahs (¥5.2 million) from gravel road to asphalt road. (The road, in this case, is 7 meters wide and the road surface 6 meters wide.) As for construction materials, sand is 1,000 rupiahs/m^3 and gravel 1,250 rupiahs/m^3.

Transportation cost of these materials is about 40 rupiahs/t.km. Construction cost for a 10-meter-long, 7-meter-wide, 4-meter-high bridge is about 22 million rupiahs (¥16 million).

Fig. I–9 Change in Automobile Ownership in South Sulawesi Province



(note) Prepared on the basis of South Sulawesi Provincial Government Statistics

b) Pare-Pare Port

All ports in Indonesia are national ports, which total 251 in number. Ujung Pandang port (port of Makassar) is one of Indonesia's four biggest ports together with Tandjun Priok in Jakarta, Surabaya and Belawan in Medan. In South Sulawesi Province, there are also Pare Pare port as an export port and Palopo port as a local port. In addition, export-import ports are constructed at Manado and Bitung in North Sulawesi Province, Kendari in Southeast Sulawesi Province, while export ports are built at Donggala and Gorontalo.

1) Ujung Pandang Port (Port of Makassar)

Until Bitung port was constructed, Ujung Pandang port had been quite prosperous as the sole external trade port on Sulawesi Island. However, the cargo volume handled there has decreased gradually as several ports were constructed at other areas.

This port has 1,770-meter-long berthing facilities: 1,360-meter-long Soekarno wharf, 350-meter-long Hatta wharf and a 69-meter-long wharf for sailing vessel. Soekarno wharf, 6.1-8.3 meters deep, and Hatta wharf, 7.0-8.8 meters deep, are capable of accepting 10,000-ton class vessels.

As for warehouses, there are 18 houses with total floor space of 50,286 m^2 along the front line of the port and 18 more houses with total floor space of 18,196 m^2 behind Soekarno wharf. They are mostly empty now with about 15-20% occupancy ratio. The loading facilities are capable of handling 2,600 tons of cargo a day with a 3-ton class crane and a 2-ton class forklift. The utilization ratio is estimated to be only about 5.8% currently. A total of 3,000 harbor workers are registered and 1,000 out of them are available at any time. Cargo volume handled at this port is shown in Table I-18. For details of Ujung Pandang Port, see sections 1 of Chapter III.

Table I-18 Change in Cargo Volume Handled at Ujung Pandang Port

(ton)

	External Trade		Domestic Trade		
	Export	Import	Export	Import	Sailing vessel
1939	280,300	45,300	-	-	-
1942	214,500	63,700	-	-	-
1955	122,500	63,700	-	-	-
1960	25,702	42,625	67,845	233,231	-
1965	56,235	21,525	-	192,885	-
1966	65,792	26,336	-	184,825	-
1967	58,239	41,701	44,405	80,115	-
1968	52,265	48,008	63,338	226,024	60,788
1969	124,190	69,058	67,268	68,406	61,406
1970	80,926	97,723	98,081	109,992	59,126
1971	58,979	113,339	111,916	121,153	65,884
1972	74,385	181,234	140,390	121,520	51,388

(Source) Port of Makassar, handbook - 1973

2) Pare Pare Port

Pare Pare Port is a calm natural port even when strong west seasonal wind blows, because this port is in an inlet and the Lero peninsula becomes shelter against strong wind. There are two piers as mooring facilities: one is 35 meters long with the apron 8 meters wide and front water 6 meters deep forming a 3,000-ton berth, which is connected to the land through two 7-meter-wide, 12-meter-long bridges, and another is a 19-meter-long, 5-meter-wide temporary pier with front water 2.5 meters deep. As wharf wavehouses, there are the first warehouse (456 m^2, 1,000 tons), the second warehouse (640 m^2, 800 tons) and a 1,000-square meter open-air storage, whose capacity totals 1,800 tons. In addition, there are two more warehouses with capacity totaling 6,300 tons.

The daily loading capacity is 500 tons. This port handled cargo totaling 410,000 tons from 1961 to 1971 when 1,802 ships and 3,230 sailing vessels entered this port. Major cargos handled there are rice, maize and livestock.

3) Majene Port

This is a local port located 166 kilometers north of Pare Pare, with a 40-meter-long pier as mooring facilities. However, this port is unable to accept large ships because front water is only 4 meters deep. This port handles mainly copra to be shipped to Surabaya.

4) Palopo Port

This port is constructed at the inner end of the Bone Bay, playing a role of the distributing center for farm products in Luwu Kabupaten. Because of shallow water at the bay, a one-kilometer road was constructed from the port to ward the sea with a 15-meter-long, 10-meter-wide wharf. This port is planned to be dredged 7.5 meters deep at high tide and 4 meters at low tide.

5) Bajoe Port, Bone

This port provides sea routes to and from Kolaka in South Sulawesi Province and Kendali in Southeast Sulawesi Province, both of which are port cities divided by the Bone Bay. A ferry boat route is planned between Bajoe and Kolaka.

c) Airport

In South Sulawesi Province, there is only one airport at Hasanuddin on the outskirts of Ujung Pandang. During World War II, The Japanese Imperial Army constructed airports at Masamba and Rantepao in Tana Toraja. They have, however, been abandoned after the war.

Hasanuddin airport is located 25 kilometers east of the center of Ujung Pandang. The runway is 1,745 meters long and 45 meters wide, capable of bearing load of up to 30,000 pounds. The 45-ton aircraft such as Electra and DC-9 can use this runway.

International routes have not yet been inaugurated at Hasanuddin airport. Aviation network centering on this airport is shown in Fig. I-10.

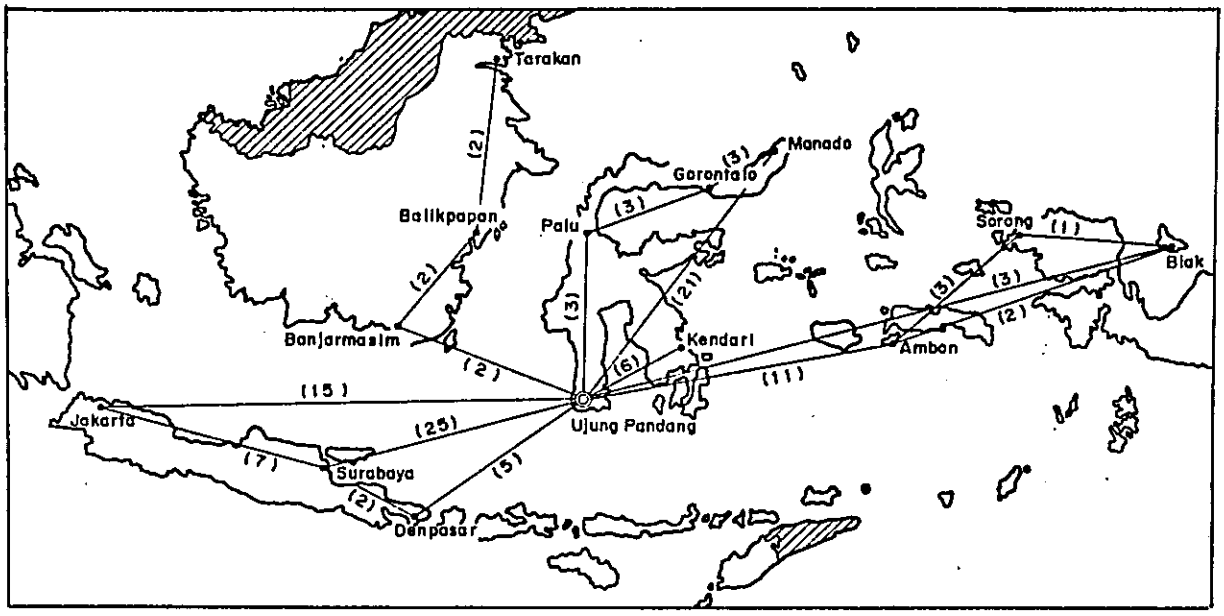
As is shown in Table I-19, passengers at this airport have been growing in number and totaled about 215,000 in 1975. Thirty-eight percent of these passengers travelled between Ujung Pandang and Jakarta and 26% used the Ujung Pandang-Surabaya route, who represented about two-thirds of total passengers. Airlines using this airport are Garuda, Merpati, Mandala and Bouraq. This airport is planned to be expanded in order to accept DC-8 plane by 1980.

Table I-19 Number of Passengers at Hasanuddin Airport

F.Y.	Departure	Arrival	Total
1973	64,389	65,917	130,306
1974	95,416	101,168	196,584
1975	96,169	119,151	215,320

(Source) South Sulawesi Provincial Government

Fig. I–10 Air Routes from and to Ujung Pandang



(note) 1. Figures in parentheses devote the weekly number of Flights from Ujung Pandang.
Figures for routes excluding Ujung Pandang devote the weekly number of Flights from or to Ujung Pandang
2. Prepared by the survey team on the basis of airlines' time tables

c) Electric Power

Generating capacity in South Sulawesi Province totaled 36,386 KVA in 1974, nearly 70% of which came from Tallo steam-power plant in Ujung Pandang. The project for construction of this power plant was worked out in 1961 under economic copperation of Yugoslavia. This power plant with two 12,500 KW steam-turbine generators and a 30,000-volt trans- former substation was designed to supply electric power for household as well as industrial use, such as for oil refineries, the water supply bureau, shipyards, paper manufacturing plants, cement factories and the airport, in Ujung Pandang and the surrounding area. The construction started in 1963 with initial fund of 3,440,000. Its generating capacity totaled 18,200 KW at the end of 1974, 5,700 KW of which was produced by diesel generation. Wigh diesel generaton at Bontoala included, the capacity increased to 27,300 KW. Generating facilities at other areas are shown in Table I-20. Excluding Tallo steam-power plant, all electric power is produced by diesel generation.

Table I-20 Generating Capacity in South Sulawesi

1	Tallo steam-power plant (U.P)	2	25,000	KVA
2	Ujung Pandang	7	9,520	"
3	Seng Kang	2	456	"
4	Soppeng	2	220	"
5	Bone	2	435	"
6	Palopo	1	275	"
7	Bantaeng	1	160	"
8	Bulukumba	1	160	"
9	Majene	1	160	"
	Total		36,386	KVA

(Source) Pre-F/S for UPIE; 1975

Meanwhile, power consumption in 1974 registered 36,080,000 kWh, which accounted for only 14% of total supply capacity. Per capita power consumption in this province stood at 6.7 kWh a year. This low level of power consumption is attributed partly to the fact that most enterprises using electric power have their own private generation facilities as the power supply by Power Supply

Public Corporation (PLN) is often suspended by lightning and other accidents. Power rate aiffers greatly according to the purpose of use, ranging from 5 rupiahs/kWh to 460 rupiahs/ kWh: for example, the basic rate for industrial use is 320 urpiahs/kWh and 6-10 rupiahs are added to the additional use.

Future electric power development programs are:

1) Water power generation program in the Saddan River (300,000-500,000 kW).
2) Water power generation program in the Kamara River (35,000 kW to be supplied to an area within 100 km^2).
3) Steam Power Generation program in Ujung Pandang (25,000 kW).

e) Irrigation

The area of rice field increased at an annual rate of 1,6% from 447,000 hectares in 1962 to 515,000 hectares in 1971. Out of it, irrigated field totaled 277,000 hectares, representing 54% of total rice field. The breakdown of irrigated field: 155,000 hectares for fully irrigated field, 44,000 hectares for semi-irrigated field and 78,000 hectares for field under village-irrigation system. Meanwhile, the area of unirrigated field decreased slightly from 216,000 hectares in 1962 to 210,000 hectares in 1971.

Promising in future expansion of rice field are Luwu Kabupaten which is expected to have farm land of about 110,000 hectares upon completion of irrigation facilities, Mamuju Kabupaten to have farm land of 50,000 hectares and Bone Kabupaten to have farm land of 50,000 hectares. Currently, farm land of 188,000 hectares is planned to be irrigated, 139,000 hectares of which are expected to become rice field.

Major irrigation projects are as follows:

1) Irrigation project in Saddan;

Pending since 1936, Indonesia's largest irrigation project, coupled with the aforementioned electric power development project, designed to irrigate field of 70,000 hectares by constructing a multi-purpose dam. Since the turn of the 1970's, survey have been conducted under technical cooperation of Japan and Britain.

2) Irrigation project in Luwu;

To cover Kalaena (24,000 hectares), Lamasi (10,000 hectares),

Kanjiro (7,000 hectares) and Bone-Bone (4,000 hectares) in order to develop rice field totaling 28,000 hectares.

3) Irrigation project in Kelara, Jeneponto Kabupaten;
Launched in 1963 to irrigate a 6,000-hectare area.

4) Irrigation project in Tabo-Tabo, Pengkajene Kabupaten;
Launched in 1973 to irrigate rice field totaling 14,000 hectares.

2. Regional Characteristics in Indonesia

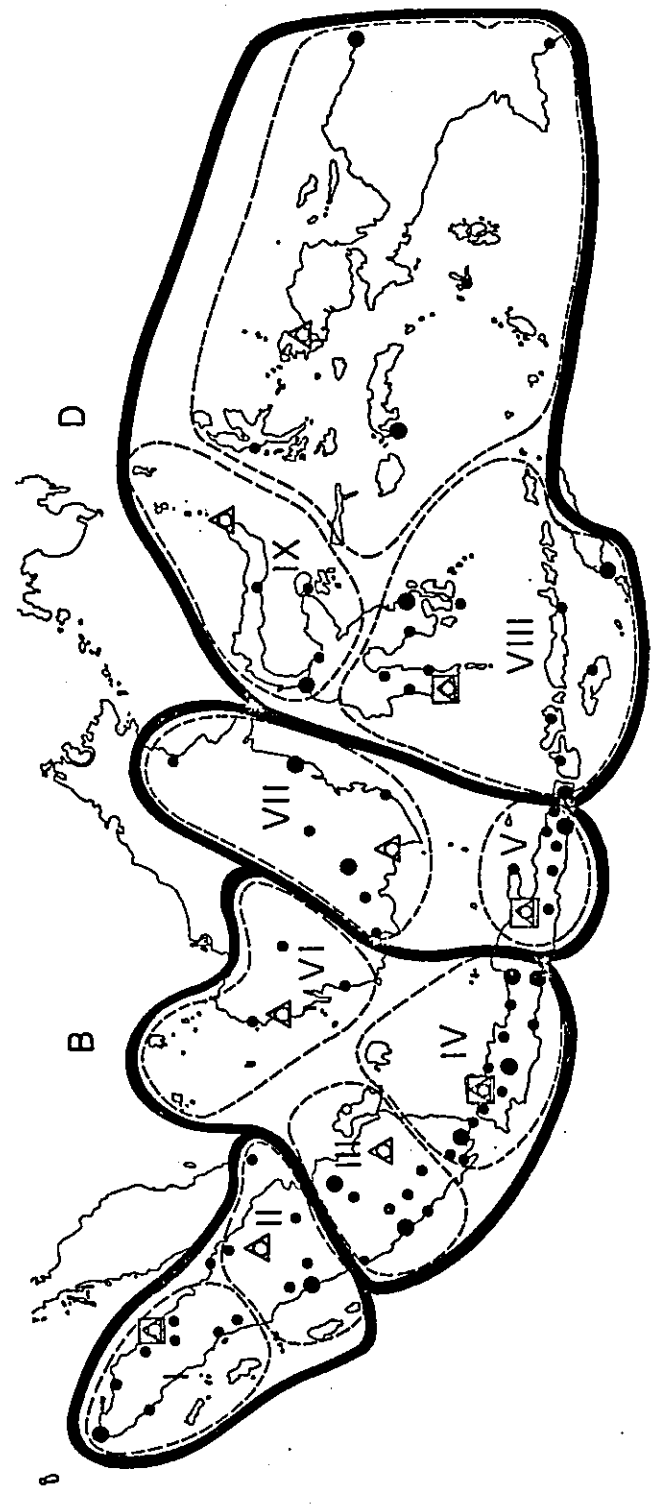
The regional characteristics in Indonesia which is a 5,000-kilometer-long archipelago, extending from east to west and consisting of more than 3,000 islands, can be summarized as the concentration of population and economy on the Jawa Island and the regarded development in Outer Java. Within Outer Jawa, socio-economic situations are different between Sumatra, Kalimantan, Sulawesi and West Isian. In this section, the characteristics in the region centering on Ujung Pandang will be analyzed in comparing its various aspects with those in other regions.

Geographically, Indonesia is divided basically into 26 provinces. If the zoning to divide further these provinces is made, it will be extremely difficult to set up socio-economic indicators for the analyses. It is also somewhat troublesome to make comparison among 26 provinces at the same time. Such comparison will also lead to difficulty in obtaining an overall image. Therefore, the analyses here are made for the "regional bloc" which groups several provinces. The most clear-cut analyses can be made in making comparison among such main islands as Jawa and Sumatra.

Meanwhile, the Indonesian Government has worked out the following plan: divide the country into several blocs, set up the regional center in each bloc, concentrate development investments in the regional Center as "growth pole", and then improve economic and cultural standards in the surrounding area through the development at the growth pole. The zoning in this case is based on economic as well as cultural influences of the individual growth pole. Fig. I-11 shows one example. In this figure, the country is divided roughly into four blocs, which are further divided into 10 sub-blocs. The growth poles are classified into four grades based on the influencing area, which forms a pyramidal hierarchy. Growth pole in the four blocs are from west Medan, Jakarta, Surabaya and Ujung Pandang. It is practical to make analyses of regional characteristics concerning these four regional blocs.

The analyses here are made centering on the comparison of characteristics among main islands. Analyses are also made for the above-mentioned four regional blocs, when the necessity arises.

Fig. I-11 Growth Poles and Geographical Division in Indonesia



A	I	D.I. Aceh North West Sumatera Riau Jambi South Sumatera Bengkulu Lampung D.K.I. Jakarta	C	V	East Jawa Bali
	II			VII	Central Kalimantan South Kalimantan East Kalimantan
	III			VIII	West Nusa Tenggara East Nusa Tenggara South Sulawesi South East Sulawesi
C	IV	West Jawa Central Jawa D.K.I. Yogyakarta	D	IX	North Sulawesi Central Sulawesi
	VI	West Kalimantan		X	Maluku Irian Jaya

1) Population and Population Density

Sixty-five percent of the nation's total population concentrates on the Jawa Island which represents less than 10% of the total land area. The population density there is 401 persons per square kilometer, seven times the national average and and 10 times that in Sumatra and Sulawesi. This shows clearly that Jawa is over populated, while Outer Jawa is dispersedly populated to a great extent. Population on the Sulawesi Island accounts for 7% of the national total, being the second largest in Outer Jawa after the Sumatra Island. As for the four regional blocs, population in Bloc D (East Indonesia region) is the second lowest after Bloc A, although the land area of this region is the largest among the four, and consequently the population density is the lowest.

Annual rate of population increase between 1961 and 1971 was the highest in Sumatra, registering 2.8%, which was followed by 2.3% for Kalimantan and 1.9% each for Jawa and Sulawesi. However, 1% of Jawa's population represent 760,000, while 1% of Kalimantan's population is only 50,000. It is noticeable that the annual rate of population increase in Bloc D was 2.0%, almost equivalent to the national average, and the inflow and out flow of population balanced.

Table I-21 Population by Region

	1961		1971		1961-71	Area	Population density (1971)
	Population (1,000)	Composition (%)	Population (1,000)	Composition (%)	Annual increase (%)	(1,000 km^2)	(Person/km^2)
1. Java	62,993	65	76,103	64	1.9	190	401
2. Sumatra	15,739	16	20,813	18	2.8	483	43
3. Kalimantan	4,102	4	5,153	4	2.3	543	9
4. Sulawesi	7,079	7	8,535	7	1.9	203	42
5. Others	7,106	8	8,629	7	2.0	569	15
Total	97,017	100	119,233	100	2.1	1,988	60
1. Bloc A	10,148	10	13,067	10	2.6	262	50
2. Bloc B	48,342	50	60,342	51	2.2	503	120
3. Bloc C	26,127	27	30,780	26	1.7	456	68
4. Bloc D	12,402	13	15,044	13	2.0	766	20

(Source) INDIKATOR EKONOMI, 1976

2) Economy

In Indonesia, it is extremely difficult to utilize macro economic indicators for each region. During the period of the Second Development Plan (REPELITA II), the Regional Income Research Group was organized. This group estimated the regional gross domestic product (RGDP) for each province in 1972, which is probably the sole economic indicator by region. Table I-22 shows results of the estimates classified by main is land and regional bloc. According to this table, RGDP in Jawa accounted for 59% of Indonesia's GNP, while that in Sulawesi represented only 5%. Fig. I-12 shows the map of Indonesia expressed in terms of economic magnitude (or RGDP), which clearly indicates the concentration of economic activities in Jawa.

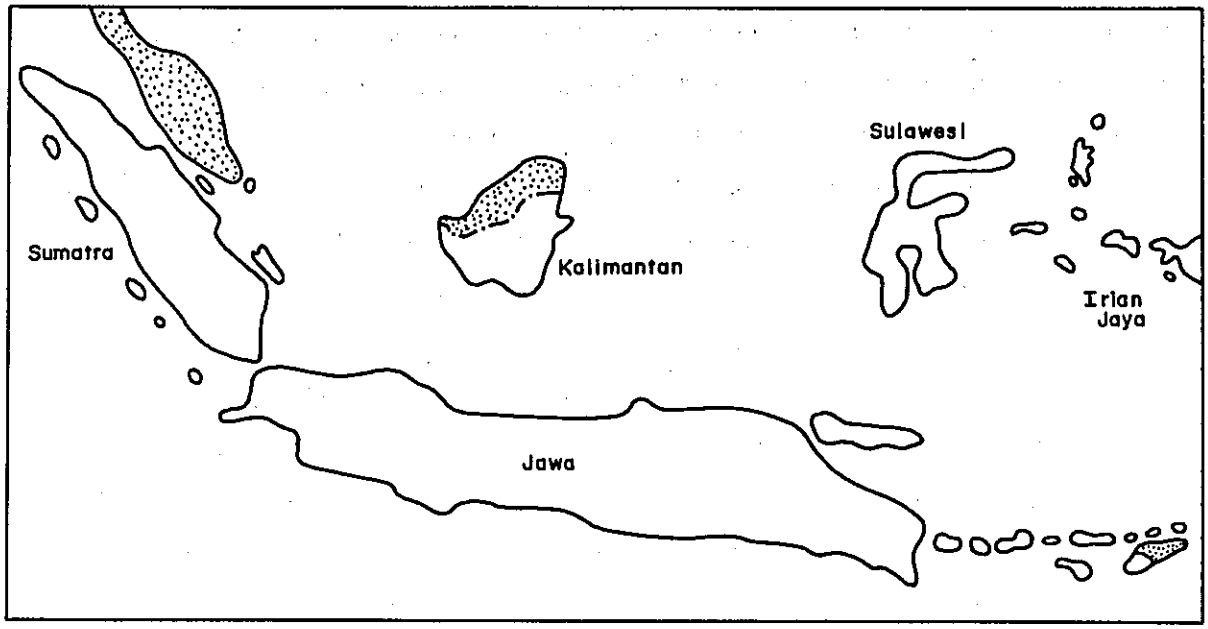
Table I-22 GDP by Region (1972)

	RGDP		Per Capita RGDP	
	Billion rupiahs	Composition (%)	Rupiah	National average=100
1. Java	2,417	59	31,760	92
2. Sumatra	913	22	43,870	128
3. Kalimantan	324	8	62,880	183
4. Sulawesi	213	5	24,960	73
5. Others	231	6	26,770	78
Total	4,097	100	34,360	100
1. Bloc A	604	15	46,220	135
2. Bloc B	1,829	45	30,310	88
3. Bloc C	1,284	31	41,720	121
4. Bloc D	380	9	25,260	74

(Note) Oil sector excluded.

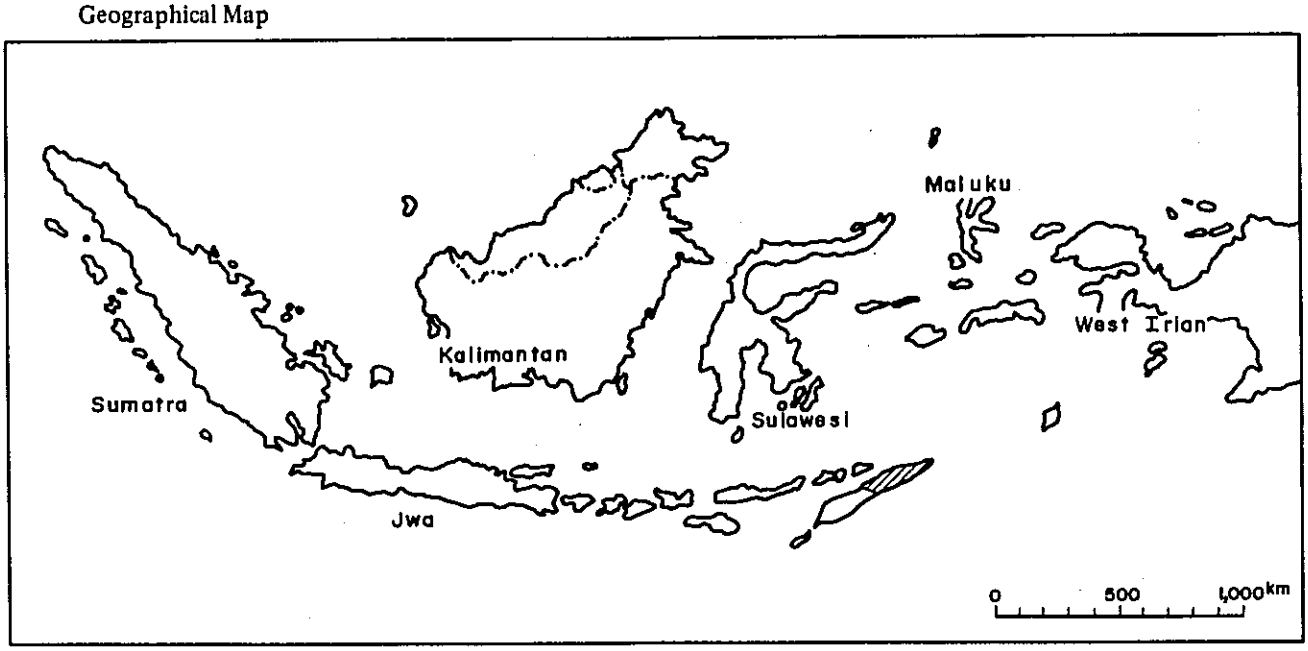
(Source) Bulletin of Indonesian Economic Survey, vol. XI, No. 1, 1975-3

Fig. I–12 Map of Indonesia Expressed in terms of Economic Magnitude, 1972



(note) 1. The Area of each island represents its Regional Gross Domestic Product in 1972, excluding oil sector.
2. Prepared by the survey team on the basis of Table I–22,

Geographical Map



As the population of the Jawa Island is huge, per capita RGDP is not so high with the index standing at 92 (national average = 100). Per capita RGDP is the highest in Kalimantan with small population where the development of forestry resources has progressed steadily. It is 63,000 rupiahs ($150) in Kalimantan, followed by Sumatra, Jawa and Sulawesi in that order. Per capita RGDP in Sulawesi is the lowest, registering 25,000 rupiahs ($60). By regional bloc, RGDP in Bloc D is the lowest, representing only 9% of GNP. Per capita RGDP there is 25,000 rupiahs ($60). These facts show the regarded economy in this regional bloc.

The regional income research group also estimated the annual economic growth rate of each province for the 1968-1972 period. According to the estimate, the national average is 6.3% and the rate ranged from the highest 25.0% for East Kalimantan to the lowest minus 1.4% for North Sulawesi. The growth rates for provinces on the Sulawesi Island are below the national average, except for 8.4% for Southeast Sulawesi Province: 3.5% for South Sulawesi Province and 5.9% for Central Sulawesi Province. When 26 provinces in Indonesia are classified into four groups according to economic growth and scale, South, North and Central Sulawesi provinces belong to a group with small economic scale and low economic growth. Economic growth rate for all of the Sulawesi Island is 3% and that for Bloc D is 5.1%.

Table I-23 Distribution of Regions by Per Capita RGDP and Annual Growth Rates

	High Incomes	Low Incomes
High Growth	7 Regions: East Kalimantan, Riau, Jakarta, Irian Java, North Sumatra, Aceh, Maluku Share of Population: 15% Share of GDP: 25%	3 Regions: Bali, West Sumatra Southeast Sulawesi Share of Population: 5% Share of GDP: 4%
Low Growth	6 Regions: Central Kalimantan, Jambi, South Sumatra, South Kalimantan, Bengkulu, East Java Share of Population: 29% Share of GDP: 31%	10 Regions: Lampung, West Kalimantan, Central Sulawesi, North Sulawesi, South Sulawesi, West Java, Central Java, Yogyakarta, East and West Nusatenggara Share of Population: 51% Share of GDP: 40%

(Source) Bulletin of Indonesian Economic Survey, vol. XI, No. 1, 1975-3

3) Industry

Major industrial indicators are shown by main island and by regional bloc in Table I-24. The characteristics are pointed out as follows:

a) In 1972, 54% of Indonesia's rice production was made in Jawa. Sulawesi, which represents 7% of the national population, produced 7% of the country's total rice. Per capita rice production was 180 kg in Jawa, 278 kg in Sumatra, 246 kg in Kalimantan and 194 kg in Sulawesi. Therefore, that for Sulawesi is not so high.

b) Meanwhile, Sulawesi brought about relatively high production in stock-raising and fishery. Forestry is overwhelmingly prosperous in Kalimantan, while that in Jawa and Sulawesi is not active.

c) Seventy-three percent of newly established enterprises in 1971 and 85% of the total employees concentrated in Jawa. Sulawesi represented 5% for the number of new enterprises and 2% for the number of employees, which indicates that the scale of enterprises established there is extremely small generally as compared with that in Jawa. The number of employees per enterprise was 14 in Sulawesi against 51 in Jawa.

d) The number of enterprises established in 1973 totaled 2,432 in South Sulawesi province, accounting for 8.5% of the national total. The number of the employees in the province represented 2.3%, the gross output 2.1% and the added value 1.9%. These facts show the small scale of the enterprises in the province as a whole.

e) It is said that as much as 95% of total tonnage of Indonesia's coastal shipping service is used in Jawa and the western region. The volume of cargo traded in East Indonesia (Bloc D) represented only 3% for loading of the national total and 6% for unloading.

Table I-24 Major Industrial Indicators by Region

	Primary Industry						Newly Established Enterprises		Volume of Regional Trade		Foreign Capital Investments
	Indicator	Area of rice field	Rice production	Number of livestock	Fish catch	Lumber production	Number	Number of employees	Un-loading	Loading	
	Year	1972	1972	1972	1971	1971	1971	1971	1970	1970	1970-1974
	Unit	10^4 ha	10^4 t	10^4	10^4 t	$10^6 m^3$		10^3	10^4 t	10^4 t	$ million
1. Java		433	1,364	1,254	26	55	16,035	823	290	109	1,721
2. Sumatra		193	578	438	46	1,314	3,443	103	564	1,047	235
3. Kalimantan		68	127	70	25	2,491	762	16	70	61	409
4. Sulawesi		56	166	200	18	99	1,119	16	25	18	210
5. Others		48	134	346	9	1,077	527	14	36	9	545
Total		798	2,370	2,307	125	5,037	21,975	972	985	1,244	3,120
1. Bloc A		120	413	319	35	973	1,891	75	93	677	146
2. Bloc B		416	1,162	945	35	594	12,546	514	732	411	1,652
3. Bloc C		175	565	572	28	2,293	6,011	360	111	128	573
4. Bloc D		87	230	472	27	1,176	1,527	23	49	28	747

(Note) Prepared on the basis of various statistics.

4) Social Overhead Capital

The less advanced development in Outer Jawa has always been attributed to the delay in buildup of infrastructure. Two aspects can be pointed out in this problem. The first is the poor economic infrastructure. This leads to a situation that, although natural resources exist, they cannot be transported and that the difficulty in securing electric power and water supply causes a slower pace of establishing enterprises. The second is the low level of social infrastructure, including housing, hospitals and schools. As a result, there will be a situation that, even if an agricultural development project is launched, farmers tend not to settle down in the region, and that a project to set up new enterprises is cancelled due to severe living conditions.

Several indicators concerning infrastructure are shown in Table I-25. When the fact that the area of the Sulawesi Island represents 10% of total national land area is taken into consideration, the road extension in this region is relatively long. Road length per square kilometer is 150 meters in Jawa, 60 meters in Sumatra, 10 meters in Kalimantan and 70 meters in Sulawesi.

As for per capita comparison of other indicators, the number of hospitals in Sulawesi is above the national average, the number of university students and the number of libraries are equal to the national average respectively, and the power consumption and the number of doctors are below the national average. The number of telephones across the nation totaled 220,000 in 1971, about 70% of which were installed on the Jawa Island. The number of telephones in Sulawesi stood at 11,500, accounting for 5% of the national total.

Table I-25 Infrastructure-related Indicators by Region

	Road extension	Power consumption	Number of hospitals	Number of doctors	Number of University students	Number of libraries
	1971	1969	1970	1970	1972	1972
	10^3 km	10^4 MWH			10^3	
1. Java	29	153	505	3,730	98	7,578
2. Sumatra	30	24	265	901	20	1,552
3. Kalimantan	6	4	70	127	4	396
4. Sulawesi	14	5	199	227	9	902
5. Others	10	2	125	173	5	263
National	89	188	1,164	5,158	136	11,940
1. Bloc A	18	14	198	633	17	564
2. Bloc B	32	125	478	3,068	81	7,427
3. Bloc C	16	41	188	1,097	24	2,847
4. Bloc D	23	88	300	360	14	1,102

(Note) Prepared on the basis of various data.

5) General Comparison of Regional Characteristics

In this item, regional characteristics for each of 26 provinces in Indonesia are analyzed on the basis of various social and economic indicators and then the form of Indonesia's economic development is to be projected.

Regional characteristics are complicatedly composed of an extremely large number of elements. Therefore, if individual elements are discussed separately, it will be difficult to obtain the overall characteristics.

In our analysis, the factor analysis* of various social and economic indicators is conducted first, thus extracting a factor as an abstract concept. Based on the factor score of each region obtained by the factor analysis, regional characteristics are evaluated. The factor analysis covers 26 provinces and is conducted by selecting 22 indicaters shown in Table I-26 as the variables.

*(Footnote)

The factor analysis is a method of analyzing quantitatively, by taking many variables into account simultaneously, common factors to the region and the status of the individual region based on the factors. The basic formula is as follows:

$$Z_{ij} = \sum_{p=1}^{n} A_{jp} F_{pi}$$

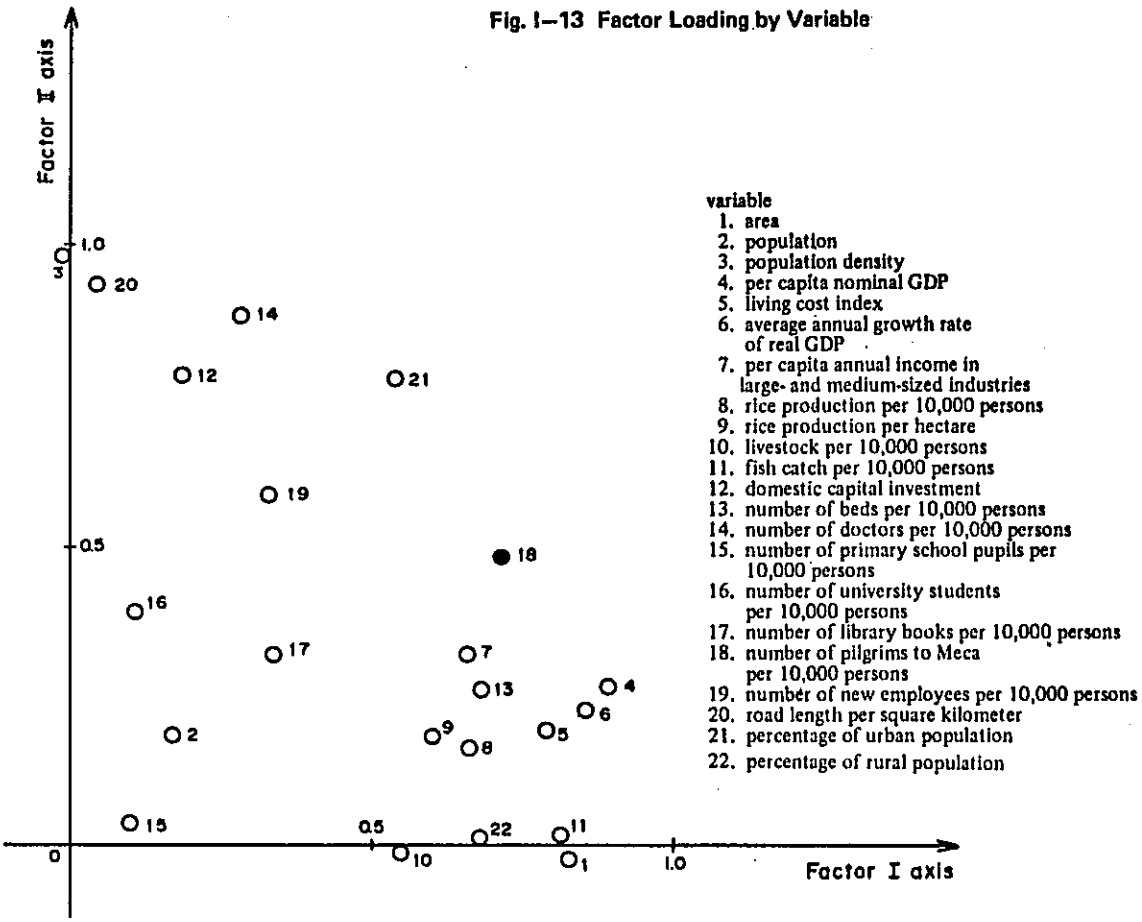
Zij ; The standard score in region "i" for variable "j".
Ajp; The factor loading of No."p" common factor for variable "j".
Fpi; The score of No."p" common factor in region "i".

Table I-26 Economic and Social Variables by Province

	Variable	Unit	Base year
1.	Area	km^2	
2.	Population	thousand	1972
3.	Population density	person/km^2	1972
4.	Per capita nominal GDP	rupiah	1972
5.	Living cost index		1972=100 (Jakarta)
6.	Average annual growth rate of real GDP	%	1968-1972
7.	Per capita annual income in large- and medium-sized industries	rupiah	
8.	Rice production per 10,000 persons	ton/10,000 persons	1972
9	Rice production per hectare	ton/h	1972
10.	Livestock per 10,000 persons	/10,000 persons	1972
11.	Fish catch per 10,000 persons	ton	1971
12.	Domestic capital investment	million rupiahs	Total as of March 31, 1974
13.	Number of hospital beds per 10,000 persons		1970
14.	Number of doctors per 10,000 persons		1970
15.	Number of primary school pupils per 10,000 persons		1971
16.	Number of university students per 10,000 persons		1972
17.	Number of library books per 10,000 persons		1972
18.	Number of pilgrims to Mecca		1971-1972
19.	Number of new employees per 10,000 persons		1971
20.	Road length per square kilometer	m/km^2	1971
21.	Percentage of urban population	%	1971
22.	Percentage of rural population	%	1971

The factor loading by variable obtained as a result of the factor analysis concerning 22 variables is shown in Fig. I-13. On the basis of results of this analysis, it can be interpreted that regional characteristics are classified roughly according to the factor indicating the degree of modernization of industrial structure (Factor I shown along the horizontal axis in Fig. I-13) and the factor indicating the degree of infrastructural development (Factor II shown along the vertical axis in Fig. I-13)**.

Fig. I-13 Factor Loading by Variable



**(Foot note)

The cumulative proportion by Factors I and II is 72.6%.

If the number along the Factor I axis (horizontal) increases, it will have stronger characteristics for the primary industry (excluding mining) and, if the number decreases, it will have stronger characteristics for the secondary industry. Meanwhile, the factor indicating the degree if infrastructural development shows quantitative characteristics of richness. Therefore, if the number along the Factor II axis (vertical) increases, it will indicate quantitative expansion and will

therefore have more richness.

Next, factor scores (individual values) for 26 provinces are calculated. Then, the form of economic development in each province can be projected based on the relative positions of 26 provinces analyzed for each factor.

The distribution of factor score of each of 26 provinces is shown in Fig. I-14. As is shown in this figure, the 26 provinces can be classified roughly into three groups. Characteristics of the three groups are summarized in Table I-27.

Fig. I-14 Factor Score of Each Province

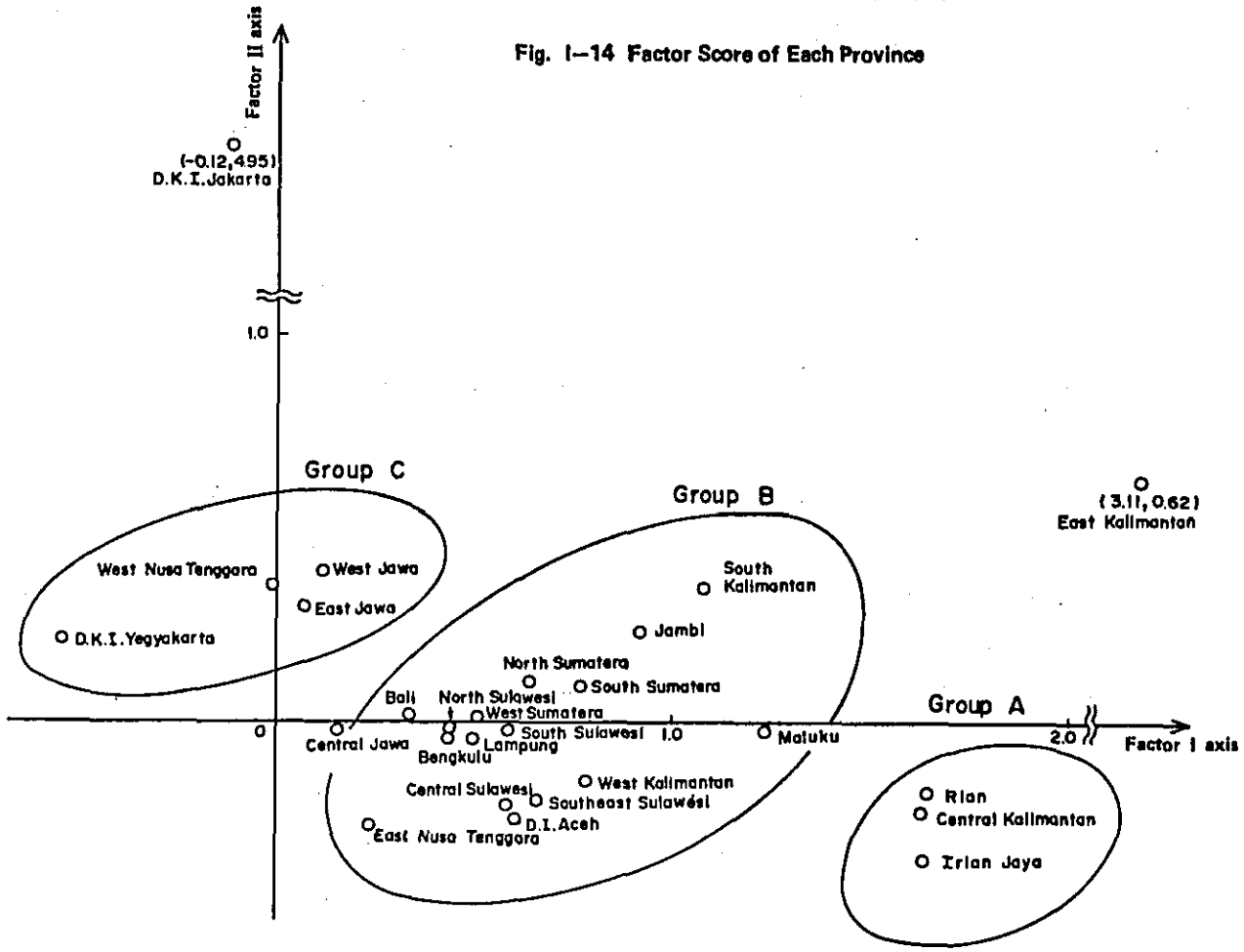


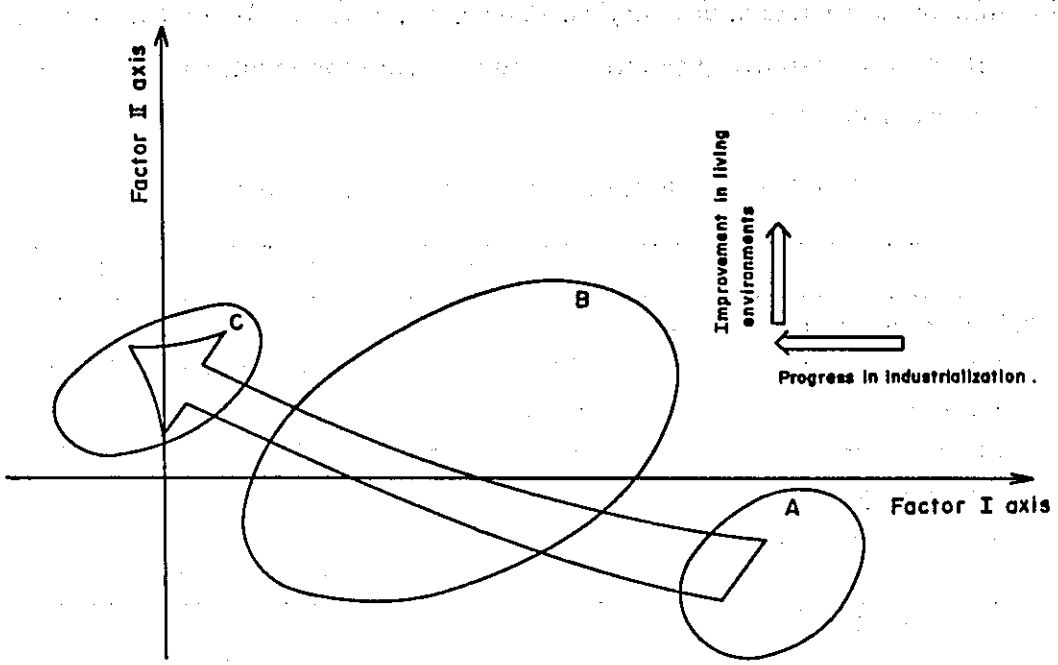
Table I-27 Regional Characteristics by Group

Group	Characteristics
A	Abundant in lumber and fishery resources. Per capita GDP is high in nominal terms. Low level of infrastructure, medical care and educational facilities which indicate the degree of richness in social life.
B	Not so abundant in natural resources. Active in agriculture, stock-raising and fishery. Industrial development is slow.
C	Poor natural resources. Not so active in agriculture, stock-raising and fishery. Progress in industrialization. Relatively abundant in social overhead capital.

Fig. I-14 can be interpreted as indicating the direction of Indonesia's economic development. As the economic development progresses steadily and population increases in a region, the economy depending on the development of natural resources (Group A) shifts to an economy in which agriculture, stock-raising and fishery progress (Group B). Then, industrialization occurs and accumulation of infrastructure and other facilities progresses in line with urbanization, thus developing into an economy which provides living richness (Group C). This direction of economic development is shown in Fig. I-15.

At present, South Sulawesi Province is approximately at a middle level in Group B. If the industrial development is stepped up and various facilities designed to improve social life, including hospitals, educational institutions and libraries, are strengthened together with infrastructure such as road, port and harbor, electric power and water supply, this province is expected to shift to an affluent society with higher economic development (into the direction of the arrow in Fig. I-15).

Fig. I–15 Direction of Indonesia's Economic Development



3. Prospects for the Ujung Pandang Region

1) Prospect of Population and Economy

(1) Population

Regarding the future population of Indonesia, there is a study report entitled "Indonesia towards the year 2000" made by Dr. Sumitro Djojohadikusumo (Minister for Research, Professor of Indonesian University). According to this report, as a case in which the present fertility rate will be reduced by 25% by the year of 2000 as a result of penetration of the policy of family planning, it is estimated that the population in the year of 2000 will be 250 million, more than twice the present population.

On the other hand, regarding the population of Ujung Pandang district, it is presumed as follows. The outflow of population of South Sulawesi will decrease gradually and in the 1990's social increase and social decrease will almost balance. Until that time, however, the share of population of South Sulawesi in national population will gradually decrease. The population of Ujung Pandang city has heretofore been below the rate of increase in population of South Sulawesi, but in the 1970's both will become almost equal, and in the 1980's a large increase in population will be realized as a result of an advanced urban development,

mainly, the development of the industrial estate. (Regarding future population and employment structure of Ujung Pandang City, refer to 3-1or Chapter III).

Calculation of future population on the assumption mentioned above is tabulated into Table I-28.

Table I-28 Estimation of Future Population

	1961	1971	1981	1991	2001
Population (unit: thousand people)					
Indonesia	97,000	120,100	153,000	196,500	252,300
South Sulawesi	4,500	5,300	6,150	7,490	9,590
Ujung Pandang	N. A.	550	650	870	1,190
Population Share (%)					
South Sulawesi/Whole Country	4.7	4.4	4.0	3.8	3.8
Ujung Pandang/South Sulawesi	-	10.4	10.5	11.6	12.2
Annual Rate of Increase (%)					
Indonesia		2.16	2.44	2.52	2.52
South Sulawesi		1.4	1.5	2.0	2.5
Ujung Pandang		-	1.5	3.0	3.5

(Source) Prepared by the mission

* Indicator Social, 1972, Biro Pusat Statistik

The population of D bloc (East Indonesia) holds a share relative to the whole country population of 13% throughout the 1970's and this share is unchanged according to the estimation* of population of 1981 made by the government in 1972. Assuming that this ratio is maintained for the future 20 years, the population of D block in 1991 will be 25.6 million and that in 2001 will be 32.8 million which is about the same as the population of C block.

* Indikator Sosial 1972, Biro Pusat Statistik.

(2) Gross Domestic Product (GDP)

In the foregoing Dr. Sumitro's paper, there are made GDP estimation on several cases. Among these estimations, the result of the estimation which estimated an intermediate growth rate is as shown in Table I- 29, in which GDP in the year of 2000 is 42 trillion Rps (on 1973 price basis) and GDP per person is 170,000 Rps (420 U.S. dollars). On the other hand, regarding the economic level in 1972 of South Sulawesi and that of D block (East Indonesia), Gross Regional Products per person of both areas are on the level of 73 and 74 respectively

if the national average is taken to be 100 (see Table I-22). Although this regional gap cannot be made disappeared in a day, it should gradually be made smaller and eventually disappeared in order to realize a balanced growth which is aimed at by the Indonesian economy. Assuming that the economy of South Sulawesi and that of D block could catch up with the level of national average in the year of 2000, the economical scale and the growth rate in such case are as set out in Table I-29. This growth rate means the goal to be aimed at by this region rather than meaning estimation. (It has been presumed that, rather than the entire D block, South Sulawesi including Ujung Pandang which is the first growth pole in this area will be a little earlier in catching up with the national level).

As shown in Table I-29, in order for the economy of this area to reach the national level by the year of 2000, a fairly high economic growth, that is, 7.6% to 8.7%, must be maintained. In the primary field (agriculture, forestry and fisheries) which is the major industry in this area, the rate of contribution to the economic growth has heretofore been low and also in future it is difficult to expect that such primary field will become a field of rapid growth which serves as a tractor of economic development of this area. (Dr. Sumitro also considers in his paper that the growth elasticity of the field of agriculture, forestry and fisheries will be less than 0.5). Consequently, in order to achieve the aforementioned economic growth, there would be no other means than to accomplish industrialization on a considerable scale of to expect discovery of petroleum and mineral resources and its development.

Table I-29 Growth Target of Regional Economy Viewed from the National Economical Growth (on 1973 price basis)

Year	Indonesia			D Bloc (East Indonesia)			South Sulawesi		
	GDP million $	Annual average growth rate %	GDP per person $	GDP million $	Annual average growth rate %	GDP per person $	GDP million $	Annual average growth rate %	GDP per person $
1973	16,110		130	1,555		96	520		95
		7.35			7.6			7.7	
1980	26,468		180	2,592		135	606		144
		7.00			8.7			7.6	
1990	52,068		275	5,980		234	734		248
		7.00			8.7			8.0	
2000	102,427		420	13,776		420	936		420

(Source) Prepared by the mission on the basis of Indonesia towards the year 2000, Sumitoro Djojohadikusumo, 1975

(3) Industry

Dr. Sumitro analyzes the conventional growth rate by industrial sector and extrapolates the result of such analysis into future, whereby he down the foregoing future GDP into various industrial sectors as indicated in Table I-30.

According to this table, the growth of the agricultural field will change little, that of the mining and the construction fields will slowly go down and the high growth rate of the manufacturing and the transportation & communication fields will be maintained. As a result, the share of the manufacturing field expands to 14.8% in 1990 and 19.3% in 2000.

In Fig. I-16, the level of economic development and the share of the manufacturingturing field are plotted with respect to various countries to show the correlation of the two. As is apparent from this figure, a positive correlation in recognized between the two, and Dr. Sumitro's estimation made in his paper mentioned above such that, in a GDP per person of 275 dollars, the GDP share of the industrial field will be 14.8% (in 1990) and, in a GDP per person of 420 dollars, such share will be 19.3% (in 2000), is virtually along the tendency referred to above.

If South Sulawesi wishes to follow such trend of the entire Indonesia, it is necessary that the gross regional product share of the industrial of the same province should be expanded to 13% (39.2 billion Rps = 95.6 million dollars) by 1990 and to 19.3% (74 billion Rps = 180.6 million dollars) by 2000. Also, if as the entire D block the field of the manufacturing industry is to be leveled up to such values, it becomes necessary that the industrial agglomeration in and around Ujung Pandang which is designated as the top ranking growth pole should largely exceed the average level. As a result, it also becomes necessary that the share of the manufacturing field of South Sulawesi should further exceed such level. On the other hand, however, the present share of the manufacturing field of South Sulawesi is about 6%, not reaching the national level, and the location of enterprises is biased to Jawa and Sumatra. In consideration of these facts, in order to attain the target, it will be necessary that an extremely strong policy as well as efforts for inducing location of enterprises should be adopted and made respectively.

At present, the field of mining industry is almost occupied by petroleum production. In East Indonesian area, however, petroleum has not yet been developed so much and therefore, when compared with the national level, the GDP share of the mining industry is extremely low. It is estimated that in future development of mineral resources including nickel will be made. However, as long as a good oil field is not discovered and developed, it will be impossible to expect a large expansion of the share of the mining industry in this region.

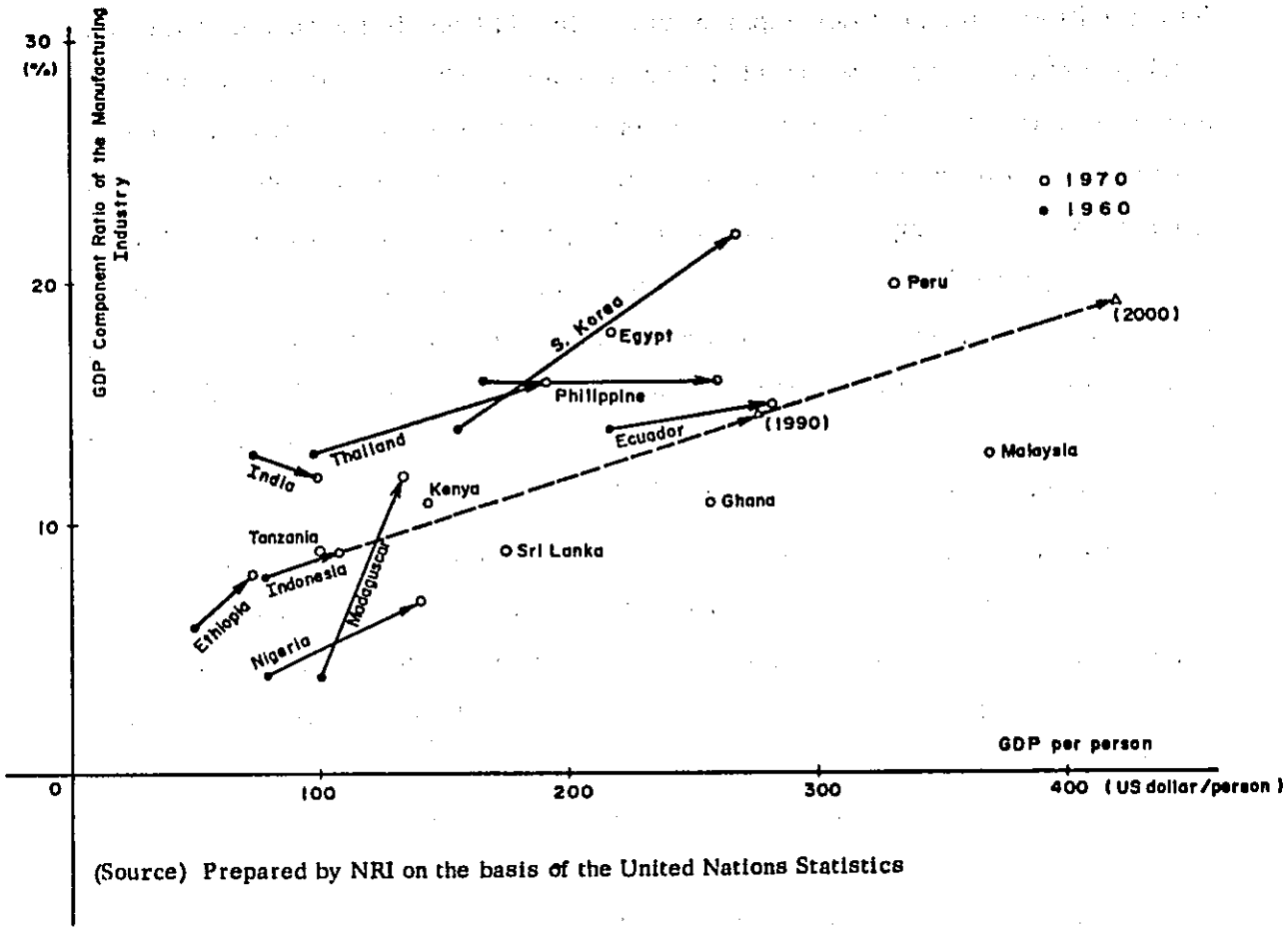
The share of the agricultural industry in South Sulawesi and D block is also greatly different from the national average, it exceeding 60% at present. It is not considered that this field will be reduced as far as a little higher than 20% by 2000, but it is considered that a share of 40% to 50% will be maintained. On the other hand, as a field which absorbs a doubly increasing population and labor force, promotion of agriculture is indispensable for Indonesian economy. In this sense, expansion of arable lands in undeveloped areas, settlement and improvement of productivity must be promoted strongly.

Table I-30 Growth Rate by Field of GDP and Component Ratio (%)

	Growth Rate			Component Ratio			
	1973-80	1980-90	1990-2000	1973	1980	1990	2000
1. Agriculture	4.78	4.65	4.65	39.8	33.6	26.9	21.6
2. Mining	9.14	7.62	4.89	9.3	10.5	11.1	9.1
3. Manufacturing	11.51	9.91	9.89	8.6	11.3	14.8	19.3
4. Transportation & Communication	10.31	9.23	9.21	4.0	4.8	5.9	7.2
5. Construction	9.79	7.57	7.55	4.0	4.6	4.9	5.2
6. Service	7.74	7.06	7.35	34.3	35.2	36.4	37.6
Total	7.35	7.00	7.00	100.0	100.0	100.0	100.0
GDP (million dollar)	-	-	-	16,110	26,468	52,068	102,427

(Source) Same as in Table I-29

Fig. I—16 Correlation between Economic Level and the Share of Manufacturing Industry



(Source) Prepared by NRI on the basis of the United Nations Statistics

2) Development Projects

The existing regime which was founded in 1966 has completed the first five-year development plan (1969 - 1974) and is now executing the second development plan (1974 - 1979).

The first development plan aimed at a 5% economic growth and put priority on agriculture, supporting industry for agriculture, textile industry and the rehabilitation and construction of infrastructure. As a result of the same plan, the economic growth rate was 7.0 to 7.1% in real terms and thus it exceeded the target, and the target of food and clothes supply has also been attained, and thus in general a favorable change has been followed. However, in the field of infrastructure and also in industries related to government owned enterprises such as papers, pulps and fertilizers, the target has not been reached.

The second development plan, which was enforced in April of 1974, aims at firstly improving the living standard of the whole nation and secondly establishing the foundation of the next development plan. In addition, in the target of the second development plan there are included those problems which could not be solved during the term of the first development plan, such as expansion of employment opportunity, a fair distribution of the fruits of the development, reformation of an unbalanced market structure, promotion of regional economic development and that of immigration, participation of the people in the development through cooperative associations, and the solution of educational and social problems. The target of economic growth of the second development plan is set to 7 to 8% and 7.5% on the average and it is planned that the government investment for the development is 5 trillion and 249.2 billion Rps (12.8 billion dollars).

An emphasized development target by province and its priority in the second development plan are as set out in Table I-31. In the provinces of D bloc (East Indonesia), in general, promotion of the primary industry and development of infrastructure are priority targets, while in South Sulawesi industrial development is included in the priority targets.

With respect to South Sulawesi, a summary is made below on the actual results of investment recorded during the term of the first development plan and also on the target and strategy of the second and the third development plan.

Table I-31 Development Field by Area and its Priority in the Second Development Plan

	Area		Development Priority 1	2	3	4	5
A	I	1 D. I. Aceh	Development of regional inland traffic	Development of inter-regional transportation facilities	Expansion of irrigation	Food production including livestock-farming and fishery	Plantation
		2 North Sumatra	Expansion of irrigation	Plantation	Development of the Medan Industrial Estate	Development of sightseeing	Development of river traffic
	II	3 West Sumatra	Expansion of irrigation	Food production	Road development	Plantation	Development of Mentawi islands
		4 Riau	Road development	Closer relationships with other regions	Expansion of irrigation	Development of river traffic	Food production
B	III	5 Jambi	Road development	Plantation including rubber	Development forestry, fishery, plantation and mining industry	Expansion of irrigation	Development of settlements
		6 South Sumatra	Road development	River improvement and flood protection	Development of river traffic	Closer relationships with other regions	Food production
		7 Bengkulu	Road development	Expansion of irrigation	Plantation	Development of settlements	Closer relationships with other regions
	IV	8 Lampung	Food production	Plantation	Expansion of irrigation	Industrial development	Road development
		9 D. K. I. Jakarta	Industrial development	Road development	Development of electric power	Development of residential area	Popularization of birth control
		10 West Java	Expansion of irrigation	Expansion of agriculture	Development of land and water supply	Development of lands for industrial use	Popularization of birth control
		11 Central Java	Expansion of irrigation	Expansion of food production	Plantation	Development of land and water supply	Development of lands for industrial use
		12 D. K. I. Yogyakarta	Expansion of irrigation	Development of electric power	Conservation of cultural inheritance and development of sightseeing	Development for poverty area	Development of urban facilities for water and electric power supply, etc.
	V	13 West Kalimantan	Development of river traffic	Closer relationships with other regions	Road development	Development of facilities for studying and training technical skill	Development of settlements
C	IV	14 West Java	Expansion of irrigation	Expansion of food production	Plantation	Development of land and water supply	Development of industrial area
		15 Bali	Expansion of food production	Expansion of irrigation	Development of land and water supply	Development of sightseeing	Development of light industry
	VII	16 Central Kalimantan	Development of river traffic	Development of air route	Expansion of agriculture including forests	Development of educational facilities	Expansion of hygienic facilities
		17 South Kalimantan	Expansion of food production	Plantation	Closer relationships with other regions and river traffic development	Development of food industry	Development of electric power
		18 East Kalimantan	Development of river traffic	Closer relationships with other regions	Expansion of study and training facilities	Development of settlements	
D	VIII	19 West Nusatenggara	Expansion of food production	Development of land and water supply	Development of fishery	Road development	Development of air route
		20 East Nusatenggara	Food production and foreign trade	Promotion of livestock-farming	Development of inland traffic	Development of regional inland traffic	Development of air route
		21 South Sulawesi	Development of irrigation	Expansion of agricultural production	Development of land and water supply	Industrial development	Connection between inland and seaside
		22 Southeast Sulawesi	Development of irrigation	Road development	Village reorganization	Development of settlements	Closer relationships with other regions
	IX	23 North Sulawesi	Development of irrigation	Expansion of food production	Plantation	Development of inland traffic	Closer relationships with other regions
		24 Central Surawesi	Development of irrigation	Expansion of food production	Development of settlements	Road development	Closer relationships with other regions
	X	25 Maluku	Promotion of closer relationships with other regions	Development of ferries	Development of air route	Road development	Production of foods for export
		26 Irian Jaya	Development of transportation and communication infrastructure	Security of labor force	Development of forestry, fishery, plantation and mining industry	Development of regional planning and administrating structure	Reorganization of villages and development of traffic and settlements

(Source) The Second Development Plan

(1) Actual Results of Investment in the First Development

The actual results of public investment recorded during the term of the first development plan (1969 - 1974) was 38,744 million Rps (93,4 million dollars) (though 31 billion Rps was planned), and its break-down is as shown in Table I-32.

The private investment made during the term of the first development plan was 129. 3 billion Rps, 70% of which was foreign investments.

Table I-32 Actual Results of Public Investment in the First Development Plan of South Sulawesi

	Investment (million Rps.)	Component Ratio (%)
1. Development budget of the central government	19,790	51. 1
2. Development budget of the South Sulawesi	2,476	6. 4
3. Development budget of the secondary self-governing body	3,657	9. 4
4. Development subsidy of the secondary self-governing body	2,038	5. 3
5. Village subsidy	788	2. 0
6. Elementary school construction subsidy	660	1. 7
7. Local export tax (Cess)	157	0. 4
8. U. S. Project aid	9,178	23. 7
Total	38,744	100. 0

(Source) Data of the provincial government.

(2) Target of the Second Development plan

As the target of the second development plan of South Sulawesi there are listed the following five items:

① Forestry and River Conservancy by Afforestation and Tree-Planting

Along the Rivers Bali, Walanae, Saddang, Jeneberang and Kelara there are bald hills extending over about 120 ha and a landslide is likely to occur. Therefore, afforestation and tree-planting in such area should be the most preferential undertaking of the second development plan.

② Increase of Food Production

To this end, much energy should be thrown into repair and maintenance of irrigation and at the same time penetration of BIMAS system (method of directing the masses) should be promoted.

③ Diversification of Agriculture, Forestry, Fishery and Stock-Breeding Industry, and Promotion of Supporting Industry for Agriculture

The position as a food supply base in East Indonesia should be established and also much energy should be thrown into the development of cash crops such as oil palm, coco, clove-tree, nutmeg, pepper, tobacco, cashew nut, cotton, kapok, and kemiri.

④ Upbringing of Manpowers required for the Development, in particular, Training of Technical Experts concerned in Supporting Industry for Agriculture

In the first development project, shortage of manpower and in particular shortage of skilled labor force of medium level was the neck of the development. To eliminate this obstacle, upbringing of manpowers should be made so as to give technical experts for taking charge of the development.

⑤ Expansion of Economic and Social Infrastructure

Regarding the construction and repair of roads and bridges, priority should be given to the following sections:

* Siwa - Wotu - Mangkutana - Border with Central Sulawesi
* Pinrang - Polewali - Majene - Mamuju
* Bulukumba - Sinjai - Bone
* Bone - Sengkang
* Malino - Sinjai
* Palakka - Buludua
* Sinjai - Lempangeng

Regarding irrigation, the project in Sumpang Karema (140,000 ha) should have the top priority and also new project in Kelara, Tabo-tabo and Kalaena should be accomplished. In addition, function of airports and harbors should be expanded and the field of electric power should be reinforced.

(3) Target of the Third Development Project

The targets of the third development plan (1979 - 1984) of South Sulawesi

now under consideration are as follows:

① Making South Sulawesi into the Top Granary in Indonesia

If the productivity of rice fields is raised to 2.5 tons per ha (on cleaned rice basis) and rice production of 1,250,000 tons is made, there occurs a surplus of about 500,000 to 600,000 tons, whereby 25 to 30% of the demand for rice in East Indonesia except South Sulawesi can be supplied. Moreover, if expansion of irrigation facilities is promoted, it will be possible to heighten such ratio to 50%.

② Making South Sulawesi into the Center of Sugar Production and its Trade in East Indonesia

At present, a sugar factory (annual production: 30,000 tons) is in operation in Bone. Other than this factory, it is considered possible to construct one factory each in Bone, Takalar and Pangkep. Once these factories are established, it becomes possible to expect a sugar production on an annual scale of 120,000 tons. On the other hand, the demand for sugar in East Indonesia at that time will become 80,000 to 90,000 tons.

③ Making South Sulawesi into the Center of Stock-Raising and Meat Export

By making the most of the advantage of South Sulawesi such that the maize planting area is as large as 350,000 ha and the production of soybean is 10,000 tons, feed factories should be established and cattle breeding promoted. It is estimated that the number of cattle in South Sulawesi will reach 1,140,000 in the year of 1978. Since the consumption of beef in the same area is only 4 to 6% of the estimated supply, is possible to use the rest as canned meat for export and also hide and bones for export.

④ Making Sulawesi into the Center of Agricultural Production, Trade and Export in East Indonesia (Palm, clove-tree, pepper, etc.)

⑤ Making South Sulawesi into the Center of Production and Trade of Construction Material

Development of various fields such as cement (expansion of Tonasa Factory), steel bar, tile, and sawing, should be made.

⑥ Making South Sulawesi into the Center of Industry and its Product Distribution in East Indonesia

By making the most of the geographical advantage such that South Sulawesi faces the Makassar strait which is an international route, introduction of

industries should be made in a positive manner and export to the international market should be promoted. Further, as the factor for promoting the realization of these plans, there are the following:

* Power generation project for the River Saddang (300,000 - 500,000kW) River Larona (110,000 - 160,000kW)
* There are good, natural harbors such as Majene, Mamuju and Pare-Pare, which minimizes investment in harbor construction
* Reserve of mineral resources in Polmas and Luwu areas

II NECESSITY AND SIGNIFICANCE OF UJUNG PANDANG INDUSTRIAL ESTATE

II. Necessity and Significance of Ujung Pandang Industrial Estate

The purpose of the industrialization of the Ujung Pandang region and the necessity and significance of promoting the industrial estate project will be examined in this chapter, on the basis of the present conditions and regional characteristics of the Ujung Pandang region as well as its future development prospects mentioned in the preceding chapter. Then the conditions of the region favorable for the industrial estate project and the difficulties expected in carrying out the project will be also examined.

1. Problems of Ujung Pandang Region and Necessity of Developing Industrial Estate

1) The problems of the Ujung Pandang region may be summarized as follows:

(1) Lack of Employment Opportunities

This problem is particularly outstarding in the City of Ujung Pandang. As a result, its population growth has been stagnant, and there is even an outflow of population from the city. There is a grave unemployment problem and part of the city has become slums. The stangnance of urban growth of Ujung Pandang is well symbolized by the fact that the geographical distribution of urban areas and surrounding villages has not changed at all since the 1950s.

It can not be said that the larger a city the better it is. But if the rate of population growth of a city is less than the natural rate of population increase of the city, it means that the city lacks economic and social vitalities and it hinders effective city planning and the accumulation of social overhead capital. The creation of employment opportunities is an important problem not only for the City of Ujung Pandang but also for the Province of South Sulawesi and the entire East Indonesia regions. The problem is particularly acute in the case of the City of Ujung Pandang and urgent measures are required to deal with it. This is because an outflow of skilled labor and well-trained workers from the city has already begun, as exemplified by an outflow of graduates of Hasanuddin University from the region. If such an outflow of labor continues, it would make the economic development of the Ujung Pandang region more difficult.

(2) Increase in Dependent Burden Co-efficient

This is a distortion of the region caused by an outflow of population mentioned above. Those people who seek jobs outside the region are mostly young people.

Therefore, as such outflow of population continues, the percentage of non-productive age group in the total population will increase, resulting in a rise in the dependent burden co-efficient. (The co-efficient is 52.9 for the whole of Indonesia and 55.7 for the Province of South Sulawesi.) As this trend continues, the burden each working person has to bear to raise the living standards will increase, and this will weaken the economy of the region and its economic gap with other regions of the country will widen.

(3) Lag in Industrialization

Most of the existing industries in the region are traditional or light industries such as tobacco, leather, food-processing and ceramic industries. The scale of these industries is small and the value added ratio is small. There are only a few modern process industries. The Ujung Pandang region (East Indonesia) is relatively slow in industrialization as compared with other regions out of Jawa. (See Chapter IV.)

(4) Limited Market

The Province of South Sulawesi has a polulation of 5.5 million. This population, ordinarily speaking, is large enough to provide a market for industrial products However, since the distribution system in the province is still underdeveloped and the people's income level is low, major enterprieses in the province are compeled to seek their markets out of the province, too. The population of East Jawa accounts for 13 % of the nation's total population. But in terms of the gross domestic product, the province remains still in the sphere of "ten percent economy." Moreover, since the province covers a vast archipelago, it is not well suited for market-oriented enterprises.

In order to promote the development of the region, it is necessary to break the vicious circle: -- (small population, low income)→ (small market)→ (difficulty in attracting enterprises)→(lack of employment opportunities)→ (outflow of population, low income). The industrial development of growth poles of the region is expected to play an important role in breaking this vicious circle.

(5) Less Developed Infrastructure

The insufficient development of such infrastructures as roads, bridges,. ports, communication facilities, water supply and sewerage have been a big bottleneck for the industrial development of the region. Infrastructure development requires a huge amount of investment, and individual enterprises can not

bear such a burden. This is a major factor discouraging enterprises' motivation for locationing facteries in the region. In addition to the "hard" infrastructures mentioned above, such "soft" infrastructures as distribution and financial systems are also underdevelopped in the region. This is another factor hindering the development of the region.

An over-all planning based on a long-range vision is needed in order to solve these problems of the Ujung Pandang region. In such a plan, priority should be given to the promotion of the manufacturing industry. Because the growth rate of the primary industry and the increase in its productivity are limited and because so long as the region remains in the stage of monoculture economy, it can not hope to narrow its gap with other regions of the country. On the other hand, the development of such industries as the farm product processing, fertilizer and other supporting industries for agriculture will also promote the development of the primary industry itself. And if the import substitution industries and interinsular substitution industries prosper, they will stimulate the development of such tertiary industries as the distribution and transportation sectors. Yet, the secondary and tertiary industries alone will not be able to employ the labor power which is expected to increase rapidly in the future. In this respect, the development of the primary industry itself is also essential.

The first step necessary to industrialize a region with such problems mentioned above is firstly, to concentrate the effort of development of infrastructures in an area with a relatively dense population and with other factors favorable for the establishment of enterprises, and secondly to give enterprises taxation and financial incentives so as to encourge locating their factories in the area. The major city having such conditions in the East Indonesia is of course the City of Ujung Pandang, which has been designated as growth pole in the region. The population of South Sulawesi Province accounts for one-third of the total population of the eight provinces in East Indonesia. The City of Ujung Pandang with the largest population in the province is the industrial and commercial center of the province. The city has good port facilities and serves as a base for fishing boats operating in the Banda and Arafura Seas.

In industrializing Ujung Pandang, the development of an industrial estate is the most effective method to build up both "hard" and "soft" infrastructuress in the

region and to invite enterprises to the region. (For the merits of the industrial estate, see Chap. VII.) The industrialization of the region is urgently needed to create employment opportunities and to prevent an outflow of population. And in the long run, it is important to develop the region into an advanced stage of industrialization by upbringing skilled workers and managerial personnel by establishing various systems and by acquiring and accumulating technical knowhow, thereby to propagate industrialization to other regions of Indonesia.

2. Industrial Estate Projects in Indonesia

The problems of the Ujung Pandang region stated above are more or less common to other regions out of Jawa. The Indonesian Government is pushing a number of industrial estate development projects in the main growth poles of the country as a policy to promote industrialization. Some of these projects which are well under way are shown in Table II-1. Besides these projects, the development of the Ujung Pandang industrial estate, the subject of this survey, the Kalimantan and Samarinda industrial estates are now under consideration. A summary of the progress and the present state of the industrial estate projects in Jakarta and Surabaya is given below:

1) Industrial Estates in Jakarta

Most of the industrial estate project in Jakarta started during the period of the first development plan (1969-1974). There are five industrial estates including those under planning. The locations and main features of these industrial estates are shown in Figure II-1 and Table II-2.

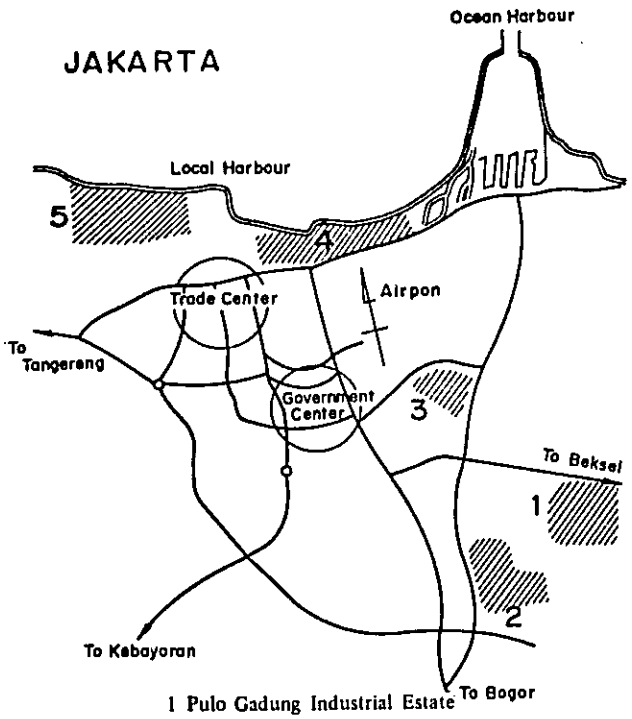
Such infrastructures as electric power, water supply and roads are still underdeveloped in these industrial estates, and enterprises in many cases have to develop these facilities on their own burden.

The Pulo Gadung industrial estate, the development of which is most advanced, was first planned in 1965 and its development started in 1971. The site was formally puddy fields. As of March 1976, there were 114 enterpriess operating in the estate, occupying 30 to 40% of the total area of the industrial estate. These enterprises directly employed 23,000 workers and about the same number of people was indirecly employed. The original plan anticipated the employment of 100 persons per one hectar but the actual number nearly doubled. Enterprises can lease land for 30 years (extension possible) and pay a rent of 4,000 to 30,000

Rupiahs (Rps)/m^2 per year depending upon the period of entry, site location and the area of the site. On the average, an enterprise pays a rent of 13,000 Rps/m^2 per year.

The organization which manages and operates the industrial estate is P.T. Pulo Gadung Estate (capital: $14 million, employees: 70). It was established with a joint investment by the central government and the City of Jakarta. Its main activities are (1) acquisition of land, (2) preparation and development of land, (3) leasing of land and (4) enterprise services (acquisition of licenses and marketing service etc.). A master plan for the industrial estate was worked out in 1973 and the total cost needed to complete the estate is estimated to reach $1,000 million. Sixty million dollars has so far been invested in the project.

Fig. II–1 Location of Industrial Estates in Jakarta



1 Pulo Gadung Industrial Estate
2 Pulo Mas Industrial Estate
3 Tjempaka Putih Industrial Estate
4 Ancor Industrial Estate
5 Pluit Industrial Estate

Table II-1 Industrial Estate Projects in Indonesia

	Surabaya	Jakarta	Cilacap	Medan
1. Area	245 ha	570 ha	118 ha	about 200 ha
2. Development organization	P. T. Surabaya I. E. Rungkut	P. T. Jakarta I. E. Pulogadung		
3. Feasibility study	FGV Kronberg (West Germany)	Westing house (U. S. A.)	Cilacap Industrial Development Survey Team Cajamada University Australian Consultant	New Zealand Team
4. Construction costs				
Central Government	750 million Rp.	1,095 million Rp.	546 million Rp.	320 million Rp.
State Government	750 " 375 million Rp. East Java 375 million Rp. Surabaya			
	Foreign aid 20 million Rp. (West Germany KFW)			
5. Construction period	1971	1971	1970	-
6. Percentage of completion	75%	100%	25%	-
7. Number of enterprises	150 (planned) 30, 000 (planned)	101 61 under operation 16 under construction 24 planned		

(Source) Data of Indonesian Central Government

Table II-2 Industrial Estates in Jakarta

Name of Industrial Estate	Area	Price of Land	Price of Factory	Price of House	Infrastractures	Remarks
1. PULO GADUNG	Total area 568.5 ha 85 ha Ready for use 200 ha under development 285 ha planned For lease 312.73 ha Existing industrial site 66.66 ha Residential area 99.65 ha	Sale with conditions 4,800 Rp./m^2 Cash 3,800 Rp./m^2 Lease $\frac{1}{2}$ of cash price 17%/year Raise of 17% every 5 years Lease to small enterprises $\frac{1}{2}$ of cash price 10%/year Raise of 10% every 10 years	Factory for lease to small enterprises	- - - - -	[Roads] 3.5 km Planned First-class roads 9.85 km Second-class roads 3.99 km [Service water] 1.5-2.0 l/sec. (100 l/sec. under construction) [Power] South area 8 MVA East area 70 KVA, 150 KVA (two power stations, 30kVA each, under construction)	[Method of sale] Of total area 40% sale with conditions 10% cash 30% lease 20% lease to small enterprises [Labor] Possible to recruit about 35,000 from outskirts. (350 factories, 100 works per factory) [Anti-pollution measures] 5 km sewer treatment system completed (28.2 km planned) Smoke filter
2. PULO MAS	Total area 375 ha Industrial site (Light industries) 56 ha Residential area 105 ha (Ready for use 55 ha) Public service area 25 ha Commercial area 10 ha	Industrial area 8,000 - 10,000 Rp./m^2	Factory building (Ferro-concrete) 26,000 - 31,000 Rp./m^2	Middle-class 30,000 - 35,000 Rp./m^2	- - - - -	[Method of sale] Cash (Permission of project Authority Chief Office needed)
3. TJEMPAKA	Total area 235 ha (All sold except 35 ha residential area) 10% - Light industry area 25% - Roads, recreation and public facility area	Industrial area 8,000 - 10,000 Rp./m^2	- - - - -	[House with land] High-class house - 25 million Rp. Land 700 m^2 House 300 m^2 Middle-class - 18.7 million Rp. Land 400 m^2 House 200 m^2 Ordinary - 15 million Rp. Land 260 m^2 House 140 m^2	- - - - -	[Methods of sale of houses] Cash 3 month installment 1.25%/month [Cost] Houses High-class 40,000 Rp./m^2 Middle-class 30,000 Rp./m^2 Ordinary 25,000 Rp./m^2 Factory Ferro-concrete 20,000 - 25,000 Rp./m^2

Name of Industrial Estate	Area	Price of Land	Price of Factory	Price of House	Infrastructures	Remarks
4. ANTJOL	Total area 560 ha. Industrial area 142 ha. 74.4 ha already sold (40 enterprises) half of them under operation 23.9 ha already developed. (For light industries) 43.6 ha not yet developed. (For light industries) High and middle-class residential area 14.7 ha. Bonded warehouse 80 ha.	Factory sites 4,000 Rp./m^2 Residential sites 8,500 Rp./m^2	- - - - -	Middle-class 35,000 - 40,000 Rp./m^2 High-class 40,000 - 45,000 Rp./m^2	- - - -	[Regislation] Prescribed procedures necessary. Cost 50,000 Rp. (Refunded if rejected) Period: more than 2 weeks [Methods of sale] Cash 5 year installment (25% advance payment, 12%/year)
5. PLUIT	Total area 810 ha. Factory site 285 ha. 185 ha New factories 100 ha Expansion Residential site 135 ha. 50% Ready for sale 2,500 - 6,000 m^2 already lotted.	Industrial area 3,500-4,000 Rp./m^2 (including development costs, roads, water and sewer services, power, telephone)	2,500 houses planned For factories 20,000-25,000 Rp./m^2	For houses 40,000-50,000 Rp./m^2 Villa-type 20 - 30 million Rp. (more than 500 m^2) Middle-class 6 - 7 million Rp. (300 - 500 m^2) Ordinary 4.5-5.5 million Rp. (150 - 300 m^2)	[Road] 70 km under construction (including 6 bridges) [Power] 200 MVA [Water] Supply available [Fuel] Readily available [Social facilities] Government agencies, churches, schools, shopping centers [Telephone] To be expended by need	254 enterprises under operation. (metal, lumber, textile, food, drinks)

(Note) Prices and construction costs are of 1973.

(Source) Prepared by NRI from Data of First National City Bank.

2) Industrial Estates in Surabaya

In Surabaya, three industrial estates are being planned as shown in Table II-3 and Figure II-2. Of the three, the Rungkut industrial estate is already under construction and a few enterprises have started their operations in the estate. The background of the industrial estate projects is given below:

(1) The mayor of Surabaya in 1968 requested the city's master plan team to prepare a report on industrial estate projects. As a result, two reports - "Prospects of Industrial Estates in Surabaya" and "Prospects of Rungkut and Tandes Industrial Estates" - were prepared.

(2) The City of Surabaya entrusted an Australian consultant, W.D. Scott & Co., Ltd., to make a preliminary study on industrial estates in Surabaya and in October, 1969 the company submitted a report on a preliminary survey on the possibility of developing industrial estates in the City of Surabaya and the Province of East Jawa.

(3) On the basis of the recommendations made in the afore mentioned report, the City of Surabaya proposed to the Governor of East Jawa and BAPPENAS the development of industrial estates and the matter was referred to the central government. This preliminary survey report recommended that a feasibility survey should be conducted on the projects.

(4) BAPPENAS in 1971 requested West Germany to make a feasibility survey and a consultant, F.G.V. Krouberg, conducted a survey on geology, economy, transportation and land ownership at 14 places and came up with a conclusion that four places were feasible for the development of an industrial estate. Of the four places, the Rungkut area was chosen because the ground is firm although the area requires reclamation.

(5) The development of the industrial estate was carried out from the end of 1972 to 1974 at a total cost of 6,771 million Rps. About 40% (2 million marks) of the funds was covered by a loan from West Germany and the remaining amount by the Indonesian government and the Province of East Jawa.

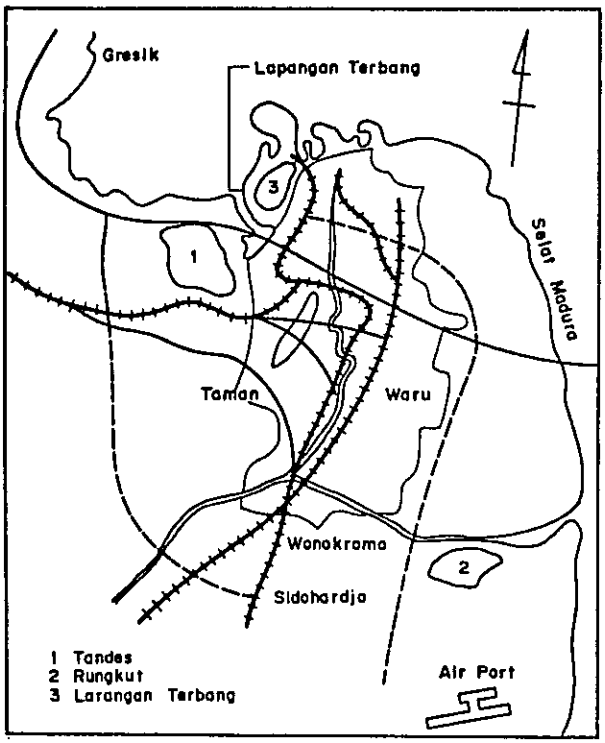
(6) P.T. Surabaya Industrial Estate Rungkut was established in February 1974. Of the total capital of 1,500 million Rps, the central government shared 50%, the Province of East Jawa 25% and the City of Surabaya 25%.

Table II-3 Industrial Estates in Surabaya

Name of Industrial Estate	Area	Environments	Others
1. TANDES	Factory sites Target: 300 ha	Located in the middle of existing industrial area where Gresik and Barata Iron Factory are located good transportation facilities.	Many ponds and swamps. Preparation of land necessary
2. RUNGKUT	Factory sites Target: 200 ha (Partly completed)	Flatland 8 km south-east of Surabaya (Paddy fields and uncultivated land)	Ten makers (plastic, wire rod, cosmetics, footware) under operation
3. LAPANGAN TARBANG	Factory sites Target: 100 ha	Facing Port, good transportation facilities	Underplanning

Source; Central Government

Fig. II–2 Industrial Estates in Surabaya



3. Significance of Developing Ujung Pandang Industrial Estate

What impacts the development of the Ujung Pandang industrial estate will have on the Ujung Pandang region is examined here mainly with regard to the effect on employment opportunity creation and industrial output. Here the effects of the industrial estate are examined under the assumptions that the area of the estate will be about 200 hectares, that the estate will be completed around 1980 and that 100% of the factory sites will be used by the end of the 1980s.

1) Employment Creating Effect

The necessity of increasing employment opportunities through industrialization so as to stop an outflow of population at Ujung Pandang from the Province of South Sulawesi was mentioned before. To what extent will employment opportunities and population increase when an industrial estate of a size supposed above is completed in Ujung Pandang ?

Industrial estate projects in Indonesia usually envisage the employment of 125 persons per one hectare of the estate area (gross). The actual number of employment varies depending upon the type, scale and operation ratio of enterprises. (The number is 200 is the case of the Plo Gadung industrial estate.) If the average number of workers per area (125 per one hectare) is taken, the number of workers to be employed directly by enterprises at the Ujung Pandang industrial estate will be 25,000. In addition, there will be those people indirectly employed at the industrial estate. Firstly, there will be those needed for the management and operation of the industrial estate. They include employees of the company which operates the estate as well as guards, fire fighters and employees of a shoping center etc. Secondly, there will be indirect employment in a broader sense. There will be the employment of workers by the construction, transportation and other industries to be induced by the development of the industrial estate. In the case of the Plo Gadung industrial estate, the number of workers indirectly employed reached about the same as that of workers directly employed at the estate. If the same trend happens in the case of the Ujung Pandang industrial estate, the number of workers indirectly employed in expected to be about 25,000.

Next, there will be employment opportunities to be created by the tertiary industry which serves those who are directly or indirectly employed at the industrial estate as well as their family members. The number of employment opportunities

to be created by the development of the industrial estate will be about 50,000. The majority of these workers will be young people. Therefore, it is not proper to calculate the total population dependent on the industrial estate by multiplying the number of workers by 5 or 6, which is the average number of family members per household. In the case of the Plo Gadung industrial estate, the average family members per household was two. If this figure is applied, the total population of the Ujung Pandang industrial estate, including family members, will be about 100,000. The tertiary industry to be induced by this population increase is expected to employ about 44,000 workers.* If their families are added, there will be an increase in population of 130,000.

footnote:

. . . . . .

* Let the number of tertiary industry workers per unit population (a) and the average number of family members (n), then an increase in population by A will increase the number of tertiary industry workers by A·a, and the population will expand by A·a·n. This in turn will increase tertiary industry workers by $A \cdot a^2 \cdot n$, resulting in an increase in population by $A \cdot a^2 \cdot n$. This process will continue indefinitely and theoretically the number of tertiary industry workers to be induced by an increase in population by A can be obtained by the formula of the sum of the infinite series:
$A \cdot a/(1 - a \cdot n)$ Here A = 100,000; a = 190/one thousand n = 3(estimated to be slightly larger than the case of industrial estates).

. . . . . .

When the 100,000 people dependent on the industrial estate are added, the total population will be 230,000. If this population is added to an estimated population of 650,000 for 1981, the total population of Ujung Pandang will reach 880,000 in 1991. The figure roughly corresponds to an estimated population for the same year. (See I-3-1)-(1)and Table I-28.) This means that, if should the population of Ujung Pandang for 1991 be assumed to be 870,000, it would be sufficient only to develop an industrial estate of 200 hectares in order to create employment matching this population. But there are already more than 10,000 people unemployed in the city. It is therefore diffcult to achieve full employment in 1991 unless employment opportunities are created in other sectors as well.

The need to increase the number of people employed in the secondary industry in 1991 to 47,000 is pointed out in Chapter III-3-1. To achieve this goal, it is necessary to create employment opportunities for about 30,000 in the secondary industrial estate reaches 25,000, the expected growth in manufacturing industries outside the industrial estate will take care of the remaing 5,000.

2) Inrease in Industrial Output

As mentioned in Chapter I, it is necessary to raise the regional Gross Domestic Product share of the manufacturing industry to about 13% by 1990 if the South Sulawesi Province is to keep up with the pace of the nation-wide industrialization. For this purpose the value added of the industrial sector should be raised by 33,000 million Rps (about $80 million). To what extent will the Ujung Pandang industrial estate contribute toward this goal ?

Productivity of workers employed in the manufacturing industry per person in Ujung Pandang at present is about 0.21 million Rps on the value added base, or less than a half of the national average of 0.43 million Rps. (See VI-1.) However, considering the kinds of enterprises to be operating in the Ujung Pandang industrial estate, per capita productivity will not be below the national average. Productivity is expected to rise annually as a gradual change into a modern process industry will take place. Since the growth rate of industrial production is estimated at about 10% per year (Table I-30), it is possible to expect the labor productivity to increase at an annual rate of 3 to 4%.

Considering these factors, the value added per worker at the Ujung Pandang industrial estate in 1990 will be about one million Rps ($2,400). Otherwise, it will be impossible to attain the $250 per capita Gross Domestic Product. So, the total annual value added to be created by the development of the industrial estate (25,000 workers x one million Rps) will be 25,000 million Rps ($60 million). In other words, 75% of the target amount mentioned earlier will be created at the industrial estate.

3) Other development Effects

Besides the employment creation effect and value added expansion effect mentioned above, the development of a 200-hactare industrial estate will have great impacts on other aspects, all the more because there is a little industrial accumulation in the region. Some of such effects are:

Practical training of manpower

Development of distribution system

Promotion of transportation and construction industries

Expansion of infrastructures such as roads, power and service water

Moreover, in the long-run, the development of the industrial estate will have such effects as an expansion of market and an accumulation of local capital through an increase in the incomes of the local inhabitants. The industrial estate is expected to have a trigger effect to break the vicious circle of economic stagnation. To put it more positively, the Ujung Pandang industrial estate should be so planned and developed as to make this economic take-off effect as large as possible.

4. Advantages of Ujung Pandang as Site of Industrial Estate

The Ujung Pandang region has the following advantages in developing an industrial estate:

Advantageous geographical location

Existence of large cheap labor power

Existence of distribution center for farm and marine products

Existence of urban facilities

Existence of good port facilities

Relative ease in obtaining sites of industrial estates in the outskirts

Ujung Pandang is located roughly in the middle of whole Indonesia, which extends 5,000 kilometers from east to west.

Among major cities in East Indonesia, the City of Ujung Pandang is located most closely to Jawa, which is a relatively advanced region. This means that Ujung Pandang faces tough price competition from Jawa and Sumatra as far as the entire market of East Indonesia is concerned. On the other hand, its closeness to an economically advanced region means that Ujung Pandang has an advantage in inviting enterprises into the city.

Ujung Pandang faces the Makassar Straits, an international sea route. The Makassar-Lombok route has come to attact an increasing attention due to the congestion of ships passing through the Malaka Straits. As the importance of the Makassar-Lombok route increases, the geographical advantage of Ujung Pandang for the ex port-oriented industries will increase, and it would be possible to plan the development of a large-scale export processing base in the future.

III CONCEPTUAL PLAN OF UJUNG PANDANG'S URBAN DEVELOPMENT

III CONCEPTUAL PLAN OF UJUNG PANDANG'S URBAN DEVELOPMENT

1. Outline of Ujung Pandang City

Before Proceedingto study what the City of Ujung Pandang should look like in the future, let us take a brief look at the current state of the city, which is the subject of the present planning, in four aspects--that is, the natural environment, the economic environment and the infrastructure. Details of the city's meteorology, population, industry and other information are given in the reference material attached hereto.

1) Natural Environment

As regards climate, the city has two seasons--the dry (June-October) and the rainy (October-May), and more than 80 per cent of the annual precipitation (3,000 millimeters) is concentrated in the rainy season. The temperature is high throughout the year, averaging 24.4 degrees C. (21.7-31.8 degrees). The humidity exceeds 90 per cent in the rainy season, and remains high at 50 per cent or so even in the dry season. Winds of 1 to 12 knots blow from the sea (west and northwest winds) by day and winds of about five knots (east wind) from land by night.

The urban center of Ujung Pandang is located between the Tallo River and the Jenneberang River. The Tallo flows on the north of the city and meanders near its mouth, forming a 554-hectare swamp areas. The width of the river is 60 meters where the national highway crosses it, and 200 meters at the estuary. In the dry season, the amount of river water drop to 0.7 cubic meter per second, and the water becomes turbid. The Jenneberang River flows to the south of Ujung Pandang from the Gowa Kabupaten. Its water amount reaches as much as 2,800 cubic meters per second in the rainy season, but plummets to only 1.5 - 4.5 cubic meters in the dry season. The water of this river is utilized for Gowa's paper mill (at a rate of 3.65 cubic meters per second), urban water demand (for drinking) (0.35 cubic meter) and irrigation (2.9 cubic meters). Meanwhile, another river, the Maros, flows north of the Tallo. Its water volume is small at 7 cubic meters per second, showing, however, little difference between the dry and rainy seasons.

The Mamajang district is about level with the sea surface. It is often flooded during the rainy season with the waters of the Jenneberang flowing in. In the dry

season, however, the district is apt to be hit by a drought.

The urban area is about flat, but hilly sections spread in the eastern and northeastern sections, such as Momconglowe (300 meters above the sea level), Kabung (250 meters) and Saukang (337 meters).

Geologically, South Sulawesi Province consists of the bedding of rocks of the pre-Tertiary period. The Ujung Pandang area comprises sediments from Mt. Lompobattang. Formerly, this mountain was a volcano, and the earth from the mountain is formed by lime sand and sandy lime. It is covered with 15 to 25-meter-thick layer of alluvium. This layer is thicker in the coastal district.

2) Social Environment

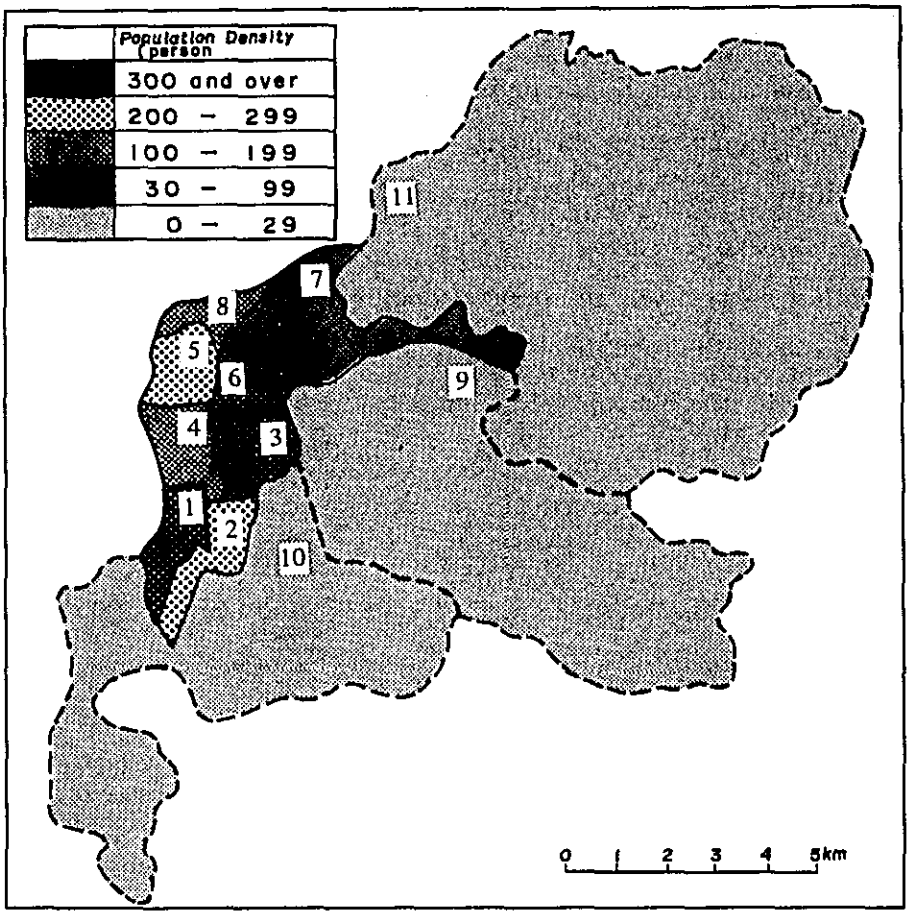
The population of Ujung Pandang City stood at 570,000 as of 1973, and the average annual growth rate in the preceding 10 years worked out at 1.46 per cent. The sex ratio was balanced at 101. By age, the 0-14 bracket accounted for 42 per cent and the 15-24 bracket 22 per cent. These two age groups represented two-thirds of the total population.

Administratively, the Ujung Pandang City is divided into 11 counties (kecamatan). Fig. III-1 shows the population and population density of each county. The three suburban counties, specified as 9, 10 and 11 in the said figure, were annexed to the city in 1971. The population density of the city as a whole is given as 35 persons per hectare, but 76 per cent of the total population lives in the old urban district, which accounts for only 15 per cent of the total area of the city. Therefore, population density exceeds 300 persons per hectare in some sectors of the urban center.

The city's population engaged in economic activities is estimated at 140,000. Their breakdown by industry will be given in the next section.

There are about 66,000 houses in the city, and the average number of persons per house is as high as nine (1.6 households). As for housing quality, permanent structures made of bricks or concrete account for 23 per cent and semipermanent structures (partially made of bricks or concrete with lumber and other organic materials used for the rest) 21 per cent, whereas 56 per cent or more than half are temporary structures (made of nondurable materials, such as palm leaves for thatching). The city authorities take the stand that temporary structures are undesirable because they are not resistant to earthquake and fire. From this point

Fig. III–1 Population and Population Density of Each Kecamatan in Ujung Pandang City



Countries (Kecamatan)		Population (in thousand persons)			
1	Mariso	48,362	6	Bontoala	66,404
2	Mamajang	61,090	7	Tallo	41,556
3	Makassar	82,832	8	Ujung Tanah	35,931
4	Ujung Pandang	52,345	9	Panakukang	53,759
5	Wajo	45,152	10	Tamalate	47,580
			11	Biringkanaya	35,695

(Source) Pre - F/S for UPIE, 1975

of view, they are encouraging occupants of temporary structures to replace palm-leaf roofs with galvanized iron sheets or tiles. Meanwhile, they are planning to undertake a large-scale housing estate project in the Panakukang district.

Major facilities in the city are shown in Fig. III-2.

The city has a total of 501 educational facilities as shown in Table III-1. Of them, 230 are primary schools and 47 are lower secondary schools. Average enrollment stands at 230 pupils per primary school and 283 students per lower secondary school. Elementary education is relatively widespread in Ujung Pandang City and its vicinity. The city's illiteray rate is 22 per cent or lower than 49 per cent for South Sulawesi Province as a whole.

Hasanuddin University is the largest comprehensibe university in Eastern Indonesia. It was born in 1956 through the merger of four branch schools of Indonesia University--the School of Economics, the School of Laws, the School of Social Science and the School of Education. In 1960, it set up the faculty of engineering. The period of education is six years for the faculties of medical science, mathematics-physics, and dairy farming, and five years for other departments. Student enrollment in 1972 stood at 7,057. Each year, 700 to 800 students matriculate at the university, and about as many graduate.

As for religion, 76.7 per cent of the population is Muslems, followed by Christians (14 per cent, mostly Protestants), Confucianists (5 per cent), Buddhists (3 per cent) and others (2 per cent). Mosques are seen in each urban block and suburban community, including the Central Mosque in the city with a long tradition. (There are 261 mosques and 48 Christian churches.)

The city has a number of parks, including Karabosi Plaza and Benteng, the former site of a castle dating from the days of Portuguese rule, and various events are staged at these places. As for amusement facilities, there are several each of movie theaters, night clubs, bars and billiard parlors. Two small islands, Lae-Lae and Kayangan, located several hundred meters out to sea, serve as a marine recreation center. There is a ferryboat service to the islets. Other suburban recreation centers for Ujung Pandang citizens include Bantimurung, a park at a riverhead area in Maros Kabupaten; Pancana Beach, a bathing resort 85 kilometers to the north; and coral islands scores of kilometers off the coast.

Means of transport in the city are Becat and Helica (small truck-buses).

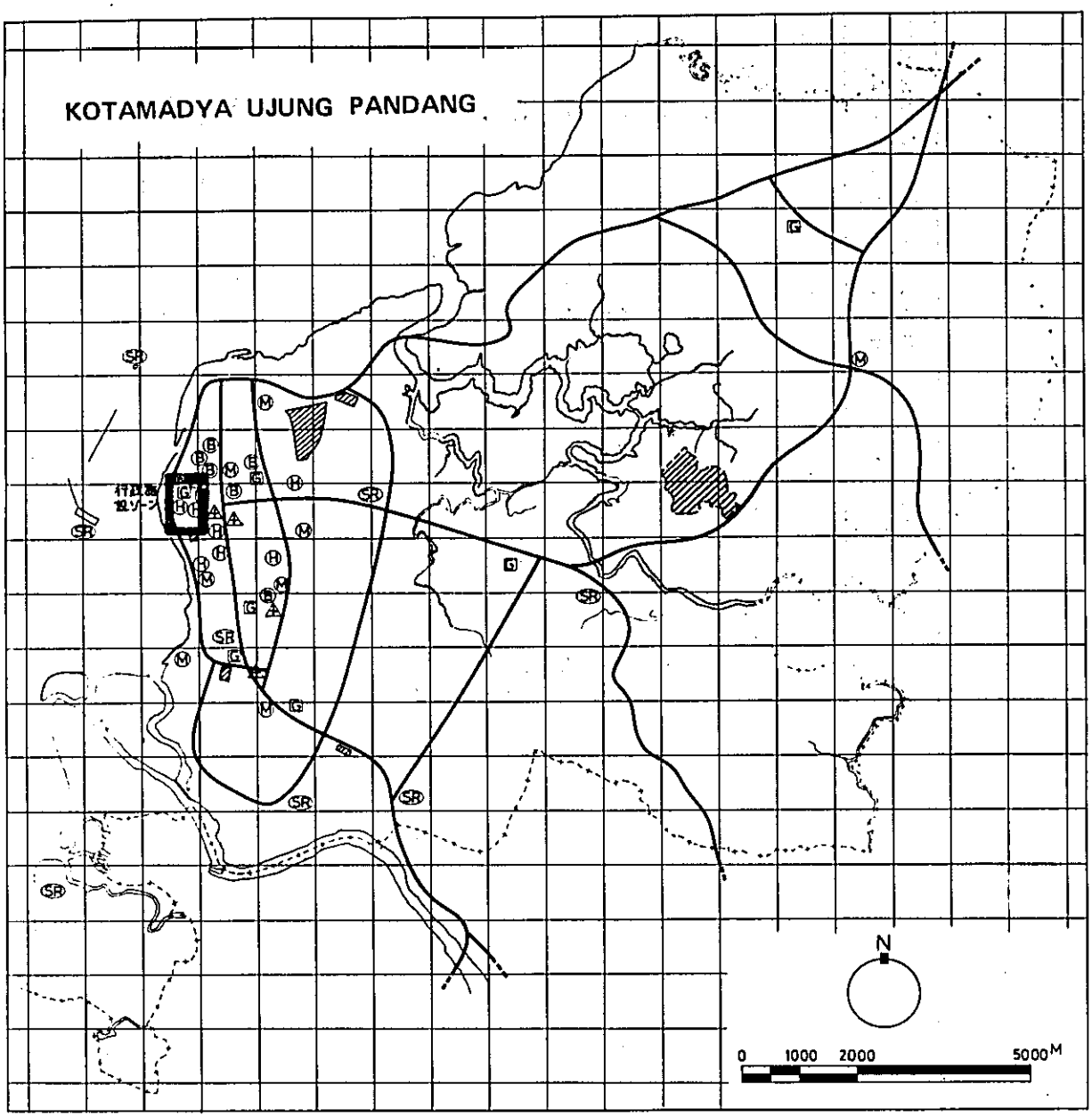


Fig. III-2

Facilities condition

LEGEND

G	Administvative facilities
	University
M	Market
+	Hospital
SR	Sports and recreation facilities
H・B	Hotel.Movies

Table III-1 Educational Facilities of Ujung Pandang (1973)

Facilities	No. of schools	Enrollment	No. of teachers	Enrollment per shcool	No. of teachers per school
1. Kindergartens	70	4,211	205	60	3
2. Primary schools	230	63,721	1,859	277	8
3. Ordinary lower secondary schools	40	11,346	637	283	16
4. Vocational lower secondary schools	7	2,189	178	313	25
5. Ordinary upper secondary schools	24	6,170	540	257	23
6. Vocational upper secondary schools	14	4,527	483	323	35
7. Professional high schools	19	5,054	958	266	50
8. Universities	13	11,293	3,434	867	264
9. Islamic shcools	67	7,307	418	109	6
10. Technical training schools	12	501	80	42	7
11. Special schools	3	68	8	23	3
12. Dormitories	1	83	9	83	9
13. Seminars	1	69	16	69	16
Total	501	116,538	8,225	233	16

(Source) Pre-F/S for UPIE, 1975

3) Economic Environment

As the industry of Ujung Pandang City will be dealt with in the next section, the income level of the citizens is analyzed in this section.

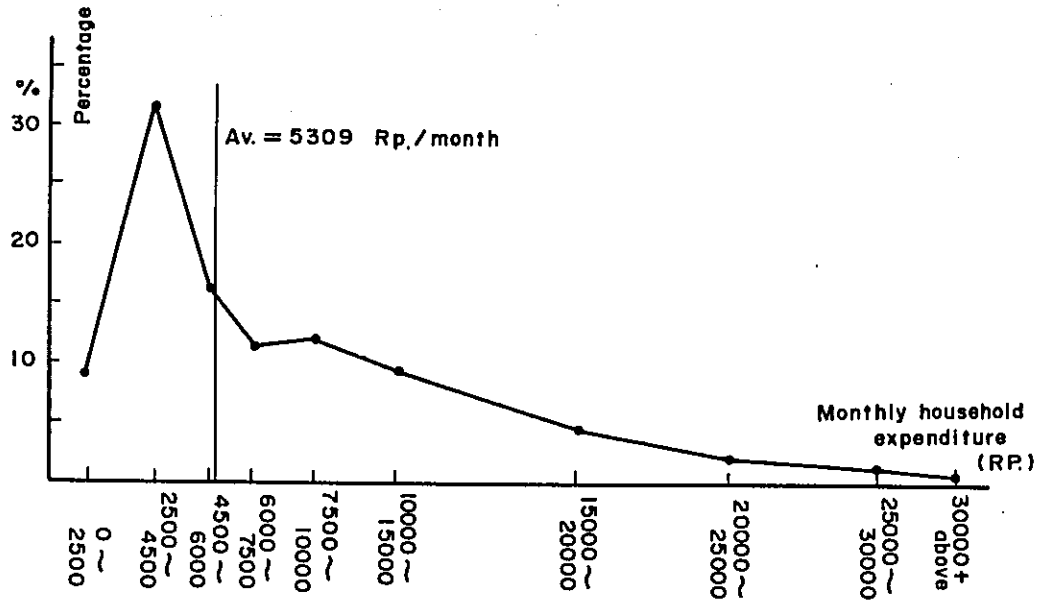
Fig. III-3 shows the distribution of the city's population in terms of monthly expenditure per household as of 1969. The average household expenditure works out at 5, 309 rupiahs (about ¥3, 000), and households below this average standard of living account for 55 per cent of the total. By occupation, public service personnel enjoy the highest standard of living (6, 354 rupiahs in terms of median), followed by those in the manufacturing industries (6, 141 rupiahs), those in commerce (5, 676 rupiahs), mining (5, 250 rupiahs) and agriculture (5, 000 rupiahs). At the bottom of the list are people in the transport industry (3, 130 rupiahs), and the most of them are drivers of 15, 000 Becats in the city.

According to Pre-F/S for UPIE, 1975, the 1975 income standards are classified as follows:

1	Public service personnel		
	(i) High-ranking	20, 000-50, 000	Rupiahs/month
	(ii) Middle-ranking	10, 000-20, 000	"
	(iii) Lower-ranking	1, 000-10, 000	"
	(iv) Those hired by the day	500	Rupiahs/day
2	Merchants	500	"
3	Others		
	(i) Farmers	200	"
	(ii) Laborers	150	"
	(iii) Fishermen	150	"
	(iv) Peddlers	150	"
	(v) Others	150	"

As shown above, the lowest income level is 150 rupiahs a day. Assuming the average household consists of a man, his wife and three children, the per capita cost of living works out at 30 rupiahs (about ¥20) per day.

Fig. III–3 Distribution of the City's Population according to Monthly Household Expenditure (1969)



Source: Prepared by the survey team from/data of Ujung Pandang City

Table III-2 shows a breakdown of household expenditure by expense item for each income bracket. According to the table, the higher the income level, the lower Engel's coefficient--that is, from about 60 per cent for low-income brackets to about 30 per cent for high-income brackets. By contrast, the proportion of other expenses (miscellaneous) increases with the rise of income.

Table III-2 Household Expenditure as Broken Down by Expense Item (1969)

Income level (Rp./month)	Food	Housing	Clothing	Others	Total
0 - 2,500	64.7	13.2	9.3	12.8	100.0
2,500 - 4,500	61.1	12.9	10.5	15.6	100.0
4,500 - 6,000	59.4	14.3	10.5	15.8	100.0
6,000 - 7,500	57.7	14.7	11.0	16.7	100.0
7,500 - 10,000	55.2	15.9	11.5	17.4	100.0
10,000 - 15,000	52.3	17.2	11.7	18.7	100.0
15,000 - 20,000	48.3	17.3	12.5	21.9	100.0
20,000 - 25,000	45.0	18.0	12.9	24.1	100.0
25,000 - 30,000	42.1	18.4	13.1	26.4	100.0
30,000 or more	36.6	20.7	13.9	28.8	100.0
Average	59.4	14.3	10.5	15.8	100.0

(Source) Data of Ujung Pandang City.

4) Land Use and Infrastructure

(1) Land Use

How land in Ujung Pandang is used is shown by Fig. III-4 and Table III-3. Of the total municipal area of 16, 352 hectares, 88 per cent is now used, according to the table. The urban center and suburban communities (1 to 7 in the table) total 1, 931 hectares or 13 per cent of the total, the remainder being farms and swamps. A comparison of aerial photos taken in the 1950s and early in 1970 reveals scarcely any spacial expansion of human settlement.

Of late, however, farms have started to be switched to other uses. For instance, enterprises have been built along the national highway (Jl. Gowa Jaya), while a radiowave relay station, a workshop of the Ministry of Public Works and a golf links have been built in the Biring Kanaya district. Besides, Hasanuddin University is scheduled to be moved to Tamalanrea Village in the near future.

Table III-3 Use of Land in Ujung Pandang City

Land Used	Area (ha)	%
1. Sites of government buildings	82.20	0.50
2. Commercial areas	128.00	0.78
3. Educational areas	88.96	0.54
4. Housing & industrial areas	1,544.00	9.44
5. Cemeteries	33.20	0.20
6. Parks, plazas	22.14	0.14
7. Ports & harbors	32.88	0.20
8. Dry farms	3,283.47	32.58
9. Swamps	3,536.57	21.63
10. Paddy fields	5,599.84	34.25
Total	14,351.24	100.00

(Source) Pre - F/S for UPIE, 1975

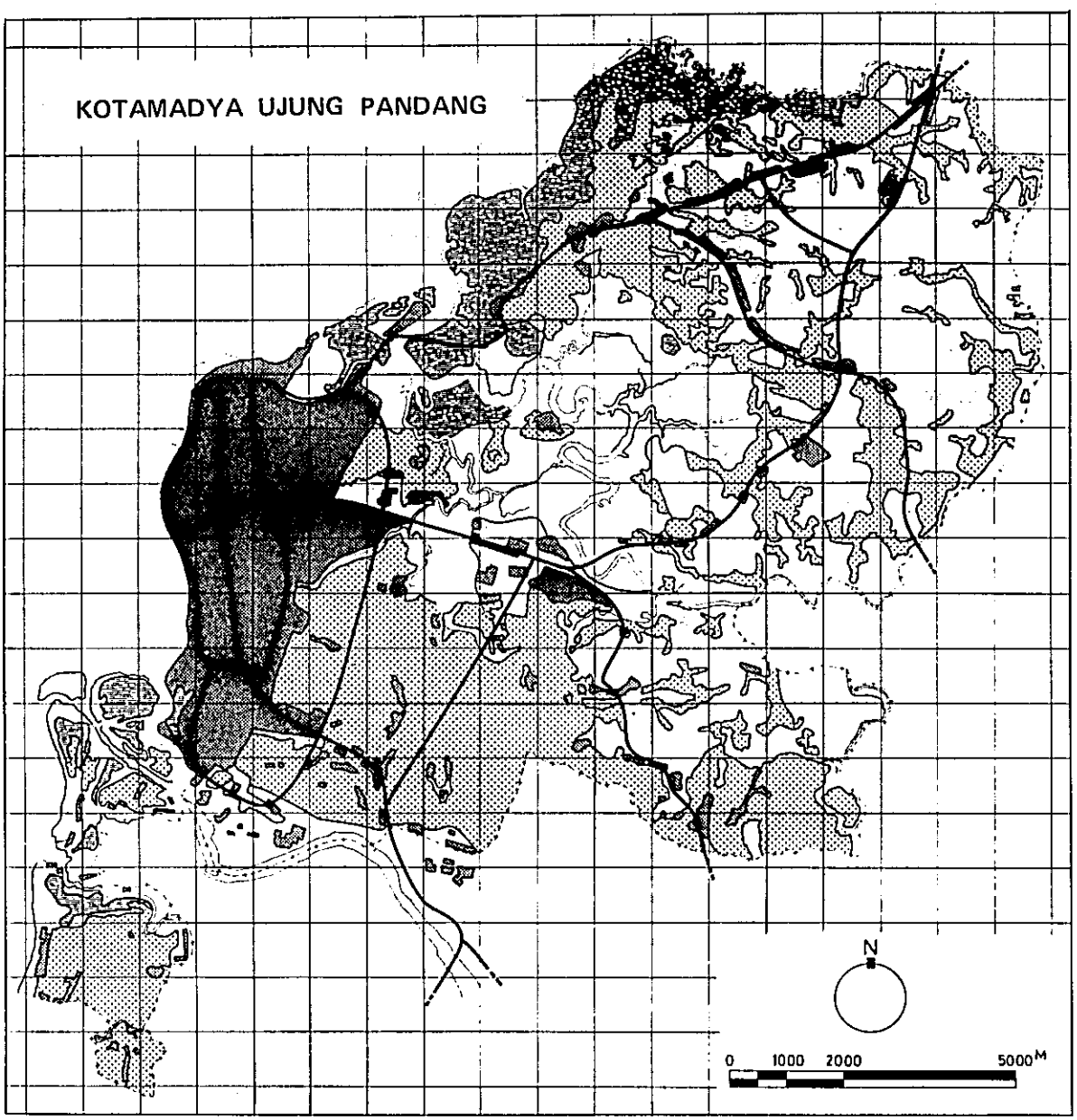


Fig. III-4

Land use condition

LEGEND

	Urban built up area · Village
	Paddy
	Cultivated land
	Shrimp and prawn culture
	Swamp
	River

(2) Roads

As shown in Table III-4, roads in Ujung Pandang City have a total length of 359 kilometers, of which 285 kilometers are paved with asphalt. The city's roads cover a total area of 2,223 hectares with the road ratio standing at 14 per cent. But since the urban center is limited in area, its road ratio is fairly high. There are two interurban roads—that is, Gowar Jaya highway leading northward to Maros Kabupaten and Gowa Raya highway leading southward to Gowa Kabupaten.

The city's road network consists of three main roads running parallel to the coastline and lesser roads crossing them at right angles. Because of poor maintenance, the asphalt surface is conspicuously cracked or otherwise damaged in places. Moreover, several places are flooded whenever a heavy rain hits the city, owing to inadequated drainage. At present, the city is still free of traffic congestion because motor vehicles are still limited in number. But during rush hours, cars are forced to slow down in the urban center because of undivided traffic including many "becat."

Table III-4 Length of Roads in Ujung Pandang City

No.	Class	Road Condition (m)				Design Load
		Asphalted	Solid Road	Unsolid Road	Total	(ton)
1.	I	117,739	16,592	-	134,311	7 - 12
2.	II	23,943	2,000	-	25,943	5
3.	III	40,081	2,980	-	42,989	4
4.	IV	103,974	2,000	50,000	155,975	2.5 - 3
	Total	285,739	23,480	50,000	359,219	-

(Source) *Pre-F/S for UPIE, 1975*

(3) Port

For an outline of the port, please refer to Chapter I, Section 1. Principal facilities of the port are given in Table III-5, and the plan of the port and the depth of water in Figs. III-5 and III-6.

Table III-5 Main Facilities of Ujung Pandang Port

Outer facilities	· A natural breakwater is formed by coral reefs 5 kilometers off the coast. · There are two breakwaters made of stones piled up on coral reefs. · There are two fairways for entering and leaving the port (northern and southern entrances), but only the northern entrance is used.
Mooring facilities	· The port has two piers--Soekarno Pier and Hatta Pier. Soekarno Pier--Caisson pier with an apron width of 12 meters. · Besides Soekarno Pier and Hatta Pier, the port has Hasanuddin wharf, two petroleum wharves (-8. 5 meters) and other mooring facilities. · The tide range of Makassar Port is 1. 2 meters and 3. 1 meters high above the sea surface. · The water depth in front of berth is 7 meters according to sounding as of April 1964.
Cargo handling facilities	· The total area of shedhouses of both piers is 56, 000 square meters. (The ratio of used space of the shedhouses is now 20 per cent.) · The two piers have no cranes. Usable at present are only two mobile cranes (7 and 5 tons).
Others	· Makassar Port is adjoined by a fishing port. · There is no land earmarked for future expansion of port facilities in case of a sharp increase in cargoes handled.

(Source) Port of Makassar, Handbook 1973

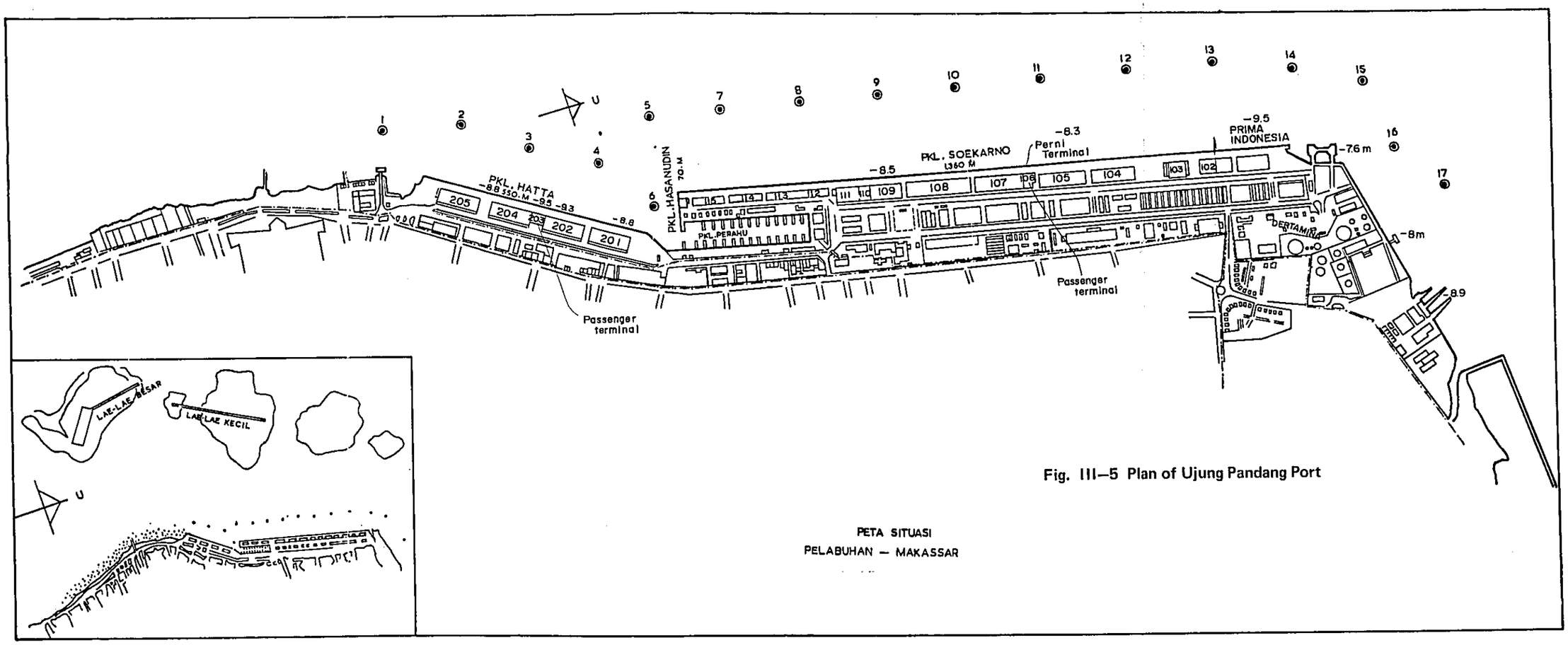
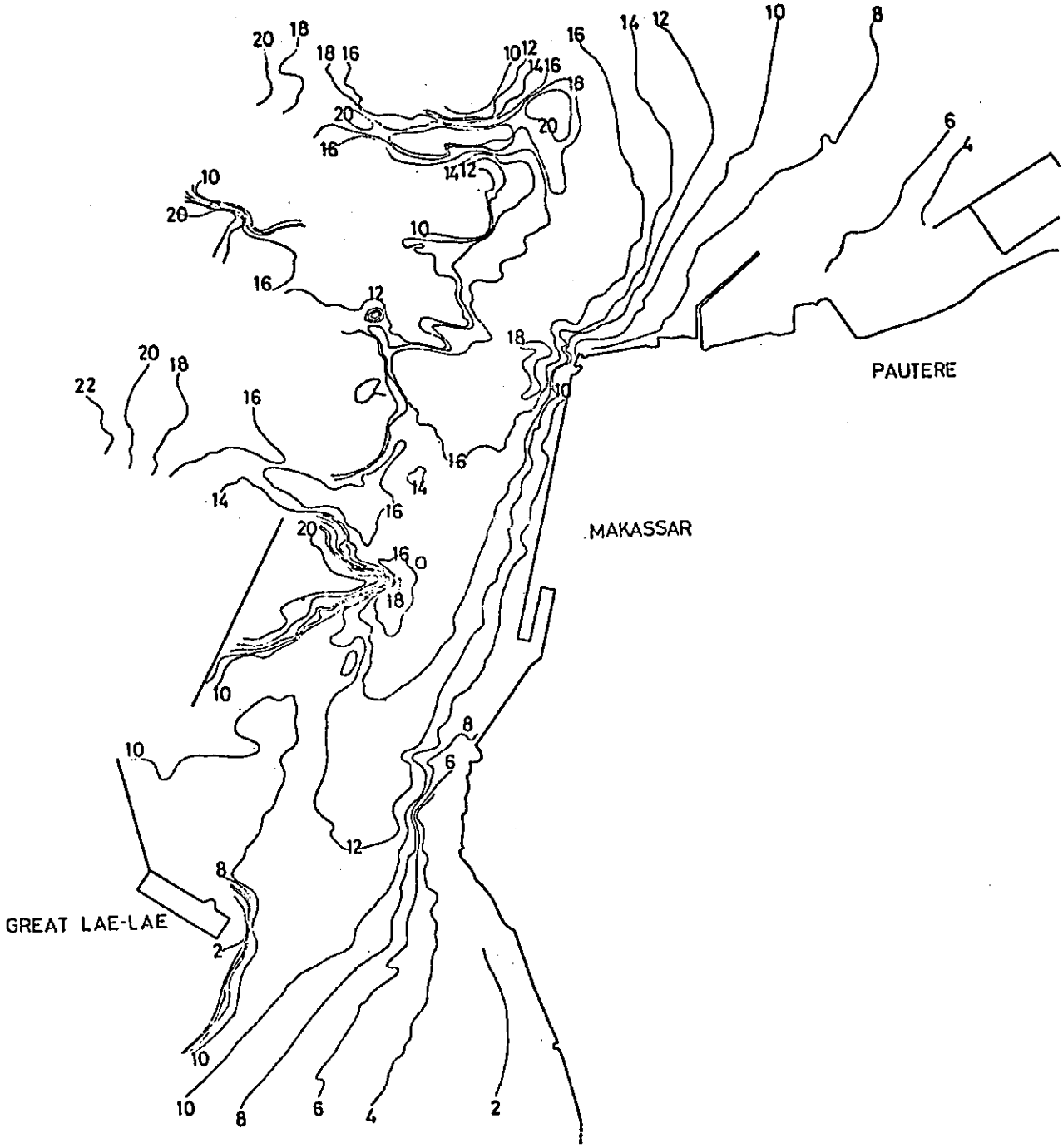


Fig. III–5 Plan of Ujung Pandang Port

Fig. III-6 Water Depth of Ujung Pandang Port



(4) Electricity

Electric power consumption of Ujung Pandang City totaled 3, 130, 000 kWh in 1974 as against the supply capacity of 347, 670, 000 kWh. The consumption ratio is thus short of even one per cent. One of the reasons is that many of local enterprises have power generating facilities of their own. Moreover, the Tallo Power Station is relatively new and therefore, power distribution facilities have yet to be completed. In terms of population, the power use ratio stands at about 25. 7 per cent.

Of the power consumption, 28 per cent is for home use, 56 per cent for business and 5. 5 per cent for industrial production. Power generating facilities are shown in Table III-6.

Table III-6 Power Generating & Supply Facilities of Ujung Pandang (1973)

Power Stations	No. of Generators	Capacity (Kw)		Remarks
		Generating	Supply	
Bontoara	7	9,520	6,500	
Tallo	2	5,720	5,000	
Tallo (Thermal power)	2	25,000	-	out of work
Total	11	40,240	11,500	

(Source) Pre-F/S for UPIE, 1975

(5) Water supply

Watersupply capacity in 1974 stood at 575 liters per second, and a project is now under way to boost the capacity by 500 liters per second. Meanwhile, demand for water is about one liter per second per 1, 000 persons, and the total consumption in 1974 is estimated at 600 liters per second. Of this, 90 per cent went to households in general and 5 per cent to schools, offices, hospitals, industrial plants and fire fighting.

(6) Airport

Refer to Chapter I, Section 1.

2. Industrial Structure of Ujung Pandang City

The industrial structure of Ujung Pandang City was briefly mentioned in Chapter I, but will be explained at some length in this section in regard to major industries.

Table III-7 shows the city's economically active population on an industry-by-industry basis:

Table III-7 Ujung Pandang City's Economically Active Population by Industrial Sector

	Economically Active Population	Construction (%)
Primary Industry		
Agriculture-forestry	7,336	5.3
Fishing	3,365	2.4
Secondary Industry		
Mining	385	0.3
Manufacturing	10,610	7.6
Construction	5,724	4.1
Tertiary Industry		
Commerce, restaurants, hotels	38,041	27.4
Transport, communications	16,062	11.6
Electric power, gas, water supply	437	0.3
Financing, insurance	1,378	1.0
Public service personnel, community services	45,399	32.7
Others, not definable	10,239	7.4
Total	138,976	100.0

(Source) Prepared by the mission from 1971 National Census.

As is evident from the table, one of the characteristics of the city's industrial structure is that the ratio of people engaged in the primary industry--that is, agriculture-forestry and fishing--is very low. Of the economically active population of about 140,000, only a little more than 10,000 or about 8 per cent belong to this category. The ratio is extremely low compared with 66 per cent for the whole of South Sulawesi Province. The prime reason for this is that a considerable portion of the city area consists of the urban center and swamps, and therefore, farming land is limited in area. Moreover, there are virtually no forest resources. Thus the city has little room for the development of the agriculture-forestry industry and there is only a potential for the future development of fishery.

The second characteristic is that the proportion of population in the secondary industry is very low compared with that of the tertiary industry--that is, 12 per cent (17,000 persons) as against slightly more than 80 per cent of the tertiary industry. This is because Ujung Pandang City's manufacturing and construction industries are still in their infancy. For instance, the manufacturing industries consist for the most part of light and household industries employing only several persons per enterprise. As for modern industries, such as basic and chemical industries, requiring large numbers of employees, the city still has only a few enterprises in this category.

The third characteristic is the ratio of population engaged in the tertiary industry is exceedingly high. The biggest reason is that since the days of former Makassar City, the tertiary industry, such as foreign trade, commodity distribution, transportation and community and services, has developed as Makassar Port has been functioning as an export base for agricultural, forestry and fishery products from various parts of South Sulawesi. Another likely reason is that because of the regarded primary and secondary industries, population that cannot be absorbed into these sectors has flowed into the tertiary industry. Therefore, it is considered that the tertiary industry population includes a considerable proportion of concealed disguised unemployment.

Next, let us take a look at the current state of major industries in the city.

1) Agriculture-Forestry

Ujung Pandang City was newly created in 1971 through a rearrangement of administrative districts, including the annexation of parts of the adjacent three kabupaten. As a result, the municipal area has widened from 1,936 hectares of the former Makassar City to 16,352 hectares -- a more than eightfold expansion. Most of the newly annexed areas are farming areas. Therefore, the agricultural output of Ujung Pandang City has substantially increased compared with that of former Makassar City.

For instance, rice production leaped a whopping 575-fold from 19 tons of 1971 prior to the administrative rearrangement to 10,925 tons in 1973. Tapioca output also swelled 775-fold from 24 tons to 18,602 tons. Output of maize, which was negligible in the former days, amounted to 15,900 tons in 1973.

The geographical expansion of the municipal area has markedly boosted agricultural production, but the proportion of agriculture in the city's economy is still very low as is clear from the ratio of farming population in the economically active population of the city in 1973.

Meanwhile, the city has few forests worthy of mentioning. Therefore, there is practically no forestry industry.

Table III-8 Main Farm Products of Ujung Pandang City

Products	Output (ton)
Rice	10,925
Tapioka	18,602
Maize	15,900
Mung bean	291
Sweet potato	132
Copra	82
Tobacco	20
Kapok	5

(Source) Prepared by the mission from Pre-F/S for UPIE, 1975

2) Fishery

Ujung Pandang City is a center of coastal fishing, and a total of 3,400 fisherman live mainly in three neighboring kabupaten--Ujung Tanah, Tallo and Mariso. The city's fishing industry mostly comprises coastal fishing, since rich fishing grounds lie in the nearby waters. But fishing is also conducted along rivers and in swamps. Recently, shrimp and prawn culture has also been started. Main fishery products include shrimp and prawn, dried bonito, agar-agar and other seaweeds, shark's fin, roe of flying fish, shellfish and dried sea cucumber.

In 1973, output of fish and shellfish totaled 836 tons and that of shrimp and prawn 17 tons. Fishery products are mainly distributed through two markets in the city.

3) Manufacturing Industry

Ujung Pandang's manufacturing industry is now in an incipient stage.

As of 1973, the city had 1,339 manufacturing enterprises (employing one person or more), but only several of them are worthy of being called modern

industry, the remainder being small-scale enterprises with only several employees.

Table III-9 gives the details of the 1,339 manufacturing enterprises in the city, such as investment, production value and number of employees, on an industry-by-industry basis.

Those industries which have relatively large numbers of enterprises are listed below:

I. Textile industry..... Ready-made apparel (20 enterprises), weaving (5), sewing (4)

II. Basic industries .... Automobile assembly (2), TV set assembly (1), sewing machine assembly (1), galvanized iron sheet manufacture (1)

III. Chemical industry .. Chlorine (2), oxygen (1)

IV. Maritime industry .. Shipyard (2)

V. Household industries. Gold mark and silverwork (128), sewing (127), timepiece repair (26), dental material manufacture (17), iron material processing (9)

VI. Light industries.... (a) Food manufacture--bread, confectionery (27), biscuits (21), ice candy (20)

(b) Leather processing--shoe manufacture (6), leather goods (2)

(c) Woodworking--lumber transport (182), lumbering (64), construction material manufacture (34)

(d) Printing, paper processing--printing (78), bookbinding (8), tobacco paper processing (6)

(e) Plastic sundry goods--plastic receptacle manufacture (3), plastic cord manufacture (1)

(f) Nonmetallic minerals--lime manufacture (22), tile manufacture (18), brick manufacture (6)

(g) Metalworking--construction material manufacture (38), metal receptacle manufacture (17)

(h) Vehicle assembly, repair--bicycle and becat repair (54), motorcycle repair (38),

automobile repair (37)

(i) Others--detergent manufacture (25), radio repair (23)

Of a total of 1,339 enterprises shown in Table III-9, light industries account for the largest proportion of slightly more than 70 per cent (971 enterprises). Of these, the processing and transport of wood rank first with 320 enterprises, followed by food manufacture (180), vehicle assembly and repair (169) and printing and paper processing. Next to light industries in the number of enterprises are household industries accounting for a quarter (329) of the total. Conspicuous in this category are gold work and silverwork (128 enterprises) and sewing (127).

Relatively capital-intensive enterprises are still limited in number--that is, five enterprises in the basic industries, three in the chemical industry and two in the maritime industry.

When classified by owner, 497 enterprises are owned by native Indonesians (puribumi), 454 by non-native Indonesians (non-puribumi, mostly Chinese) and 388 by foreigners. Thus manufacturing enterprises in Ujung Pandang city are about equally divided among puribumi, non-puribumi and foreigners.

Next let us take a look at the investment value, production value and number of employees.

The investment total of all enterprises up to 1973 came to about 12,000 million rupiahs. Of this, about 10,000 million rupiahs or 82 per cent was invested in light industries, far exceeding 1,000 million rupiahs for the chemical industry and 700 million rupiahs for the maritime industry, which ranked second and third. Although investment per enterpirse is small in light industries, the total investment adds up to a big sum because numerous enterprises are operating in this sector. That is, investment per enterprise in light industries is only 10 million rupiahs as against 360 million rupiahs for the maritime industry and 200 million rupiahs for basic industries.

Next, to observe how much output is achieved from invested capital (production value as against investment), the textile industry ranks first with an output of 1,387 million rupiahs or 8.4 times the investment of 166 million rupiahs. Second is the household industry (2.1 times the investment), followed by light industries (1.9 times). By contrast, basic industries, chemical industry and maritime

industry show figures below the average of 1.8 times for all industries. Especially low are the ratios of the chemical industry (0.9 time) and the maritime industry (0.03 time). This is apparently because large-scale investments were made in these two sectors rather recently, and therefore, their operating ratios are still low.

Lastly, as for the number of employees, light industries and household industries, which comprise many enterprises, account for large proportions of 74 per cent (6,825 persons) and 13 per cent (1,180 persons), respectively, of a total of about 9,300 employees in the manufacturing industry. But these two industries' numbers of employees per enterprise are low--namely, seven for light industries and four for household industries--in stark contrast with 108 for the chemical industry and 54 for the maritime industry.

From the foregoing, the average image of the bulk of enterprises located in Ujung Pandang city is that it is a very small enterprise which employs about seven persons and produces 16.5 million rupiahs of goods out of an investment of about nine million rupiahs.

Table III-9 Current State of Manufacturing Enterprises in Ujung Pandang City by Industrial Sector (1973)

	No. of Enterprises				Investment	Production	No. of Employees	Investment per Enterprise	Production per Enterprise	No. of Employees per Enterprise	Production as against Investment (times)
	Puribumi	Non-Puribumi	Foreigners	Total	(million Rps.)	(million Rps.)		(million Rps.)	(million Rps.)		
I. Textile industry	19	7	3	29	166	1,387	609	5.7	47.8	21	8.4
II. Basic industries	4	0	1	5	1,009	1,736	211	201.8	347.2	42	1.7
III. Chemical industry	3	0	0	3	109	96	325	36.3	32.0	108	0.9
IV. Maritime industry	2	0	0	2	712	21	107	356.0	10.5	54	0.03
V. Household industries	111	92	126	329	159	338	1,180	0.5	1.0	4	2.1
VI. Light industries	358	355	258	971	9,880	18,464	6,825	10.2	19.0	7	1.9
Total	497	454	388	1,339	12,034	22,042	9,282	9.0	16.5	7	1.8

(Source) Prepared by the mission from Pre-F/S for UPIE, 1975.

4) Foreign Trade and Distribution

At present, nearly 100 trading firms have offices (head offices or branches) in Ujung Pandang City and engage in export or shipment to other parts of Indonesia in regard to primary products turned out in various parts of South Sulawesi. Some of the trading firms specialize in single products, such as coffee, ebony and teak, but the greater part of the trading concerns handle multiple commodities (many deal in products of different industries--for instance, agricultural and forestry products, and forestry and fishery products). There are also firms handling a comprehensive variety of goods, such as agricultural, forestry, livestock and fishery products.

Table III-10 lists main export firms with head offices or branches located in the city, as classified by commodity handled. Altogether, there are 93 of them, but when more than one commodity is handled, by a single firm, it is counted in duplications.

As shown in the table, forestry products, such as ebony, teak and rattan, are handled by the largest number of firms--that is, 55 out of a total of 93 firms. Of the 55 firms, 39 deal in other products as well with 16 specializing in forestry products. As for goods in this category, ebony ranks first.

The second most transacted item is agricultural products, which are handled by 47 firms. Many of them, however, also deal in other products, but 18 specialize in farm products alone, six of them in the coffee export trade.

Meanwhile, 29 firms handle fishery products with five of them specializing in such products as shrimp and prawn, fish roe and agar-agar.

As for mineral products, there are only two firms dealing in nickel and tin, because the mining industry has not yet fully developed.

Industrial goods are also exported, but limited to the products of the traditional household industry, such as silverwork and wood carvings.

Table III-10 Export Trade Firms in Ujung Pandang City

Goods Handled	Main Commodities	No. of Firms
Agricultural products	Coffee, maize, copra, peanut, peas and beans, nutmeg, kemiri, flax, palm oil, copra grounds, perfumes, fruits, castor seeds, kapok seeds, etc.	47
Forestry products	Ebony, teak, lunak-lumber, kuku-lumber, rattan, rubber-copal, etc.	55
Livestock products	Domestic animals, animal bones, animal hides, deer bones, etc.	14
Fishery products	Shrimp and prawn, shark's fin, flying fish, fish roe, sea cucumber, agar-agar, etc.	29
Mineral products	Nickel, tin	2
Industrial products	Silverwork, wood carvings, ornaments, etc.	3

3. Conceptual Plan of Ujung Pandang's Urban Development

When an industrial estate project for Ujung Pandang is studied in detail, such as location, scale, industries to be established and necessary facilities, a long-term comprehensive development plan for the city--that is, a master plan--becomes necessary. That is, the industrial estate project cannot be worked out independently. The study of industrial site and industrial estate must be preceded by and goals of the city's population, labor force, industry, etc., a plan for future use of land according to such goals, plans for improvement of the infrastructure, plans on various facilities, etc.

Nevertheless, Ujung Pandang City has not yet mapped out a master plan comprehensively dealing with various industries and the use of land. Therefore, our industrial estate survey mission will give its opinions on varied factors indispensable for drafting the industrial estate plan, such as the future population of the city, the direction of its development, the use of land and the improvement of the infrastructure. The following proposals and opinions are the result of studies we conducted in as comprehensive a manner as possible on the basis of data and information made available to us. But they may possibly be revised and altered after further consultations with the South Sulawesi Government and the Ujung Pandang municipal authorities. Be that as it may, it is imperative to arrive at conclusions regarding the above-men-

tioned factors, which ought to constitute given conditions for the industrial estate planning, through adjustment of opinions with various related bodies, before a feasibility study on the industrial estate construction which is to be conducted in the next phase.

1) Establishment of Development Targets

As noted in the previous chapter, Ujung Pandang is defined as the "growth pole" for Eastern Indonesia lying east of Makassar Strait and Lonbok Strait. Our survey mission also considers this an appropriate idea. Following are the roles which we believe Ujung Pandang should perform as such "growth pole."

a The role of a bulwark against the outflow of population

b The role of a center for production

c The role of a center for distribution

d The role of a center for cultural activity

These goals will be attained through various policy means, such as the creation of employment with the introduction of industry as a leverage, the expansion of the economic and social infrastructure through concentrated development investments, the fostering of manpower, the modernization of the distribution structure, and offer of various incentives for establishment of industrial enterprises.

In studying the future vision of Ujung Pandang, we took the following basic position:

1 To ensure a sustained growth of the city

A city constantly grows and changes like a living thing. For instance, even if the target year of a city's plan is 10 or 15 years ahead, this does not mean that the city will cease to grow in the target year. In the case of a plan for building a city with a population of one million, for instance, if the city is designed for habitation of just one million, the city would get suffocated when the population reaches one million. That is, although the target year of the present industrial estate plan for Ujung Pandang is set at 1991, we must consider the morphology of the city from a longer-range point of view. For instance, we must consider designing the city in such a way as to enable a further development of the city in the 1990s and even in the 21st century. This is the most important and basic condition for city planning.

2 To make the city's population grow at appropriate speed

Generally speaking, the more animated a city's economic activity, the faster its population grows. To put it in another way, a stagnation of population growth is a proof of the economic stagnation of a city. From this point of view, the fact that Ujung Pandang's population increase has fallen short of the natural growth rate since the 1960s amounts to evidence that the city's economic functions have remained dull.

As industrial plants are set up in the city from now on as typified by the planned industrial estate, the growth of the city's population will gradually pick up speed. But too rapid a population increase would result in distorting the morphology of the city. That is, if the improvement of the infrastructure, such as housing, roads, hospitals, schools and water supply system, lags behind the growth of population, numerous urban problems would crop up, such as outbreak of squatters, traffic congestion, traffic accidents and confusion in the use of land, rendering it difficult to maintain urban order and amenities.

The maximum limit of urban population growth varies according to the scale and financial capability of a city, but generally, it is not desirable to let the growth exceed 5 percent a year.

Table III-11 Future Population of Ujung Pandang City (same as Table I-28)

Year		1971	1981	1991	2001
Population (in 1000 persons)	South Sulawesi Province	5,300	6,160	7,490	9,590
	Ujung Pandang City	550	650	870	1,190
Annual growth rate (%)	South Sulawesi Privince		1.5	2.0	2.5
	Ujung Pandang City		1.5	3.0	3.5

(Source) Prepared by the mission.

In the survey, we envisioned the future population of Ujung Pandang as indicated by Table III-11. That is, although the city's population growth rate was lower than that of South Sulawesi Province in the 1960s, the two rates become about equal in the 1970s, and from the 1980s on, the city's population growth will somewhat exceed the natural growth rate (that is, 0.5-1.0 percent). As a result, the city's population will surpass one million in the mid-1990s, accounting for one half of the urban population in South Sulawesi Province.

3 To attain a balanced development of various industries

A city which specializes in limited industrial sectors is structurally fragile and liable to be largely affected by external environmental changes. It is, therefore, desirable to ensure a balanced development of different industrial sectors for the benefit of stability in urban development. In the case of Ujung Pandang City, the tertiary industry, such as commerce and service trades, has so far carried overwhelming weight in the city's industrial fabric, bringing about a relative drop in the city's function as a center for distribution. And this has led to a standstill in the city's growth.

We have envisioned the desirable employment structure of the city as per Table III-12, combining both forecasts and targets. If this plan materializes, the ratio of employment among the primary, secondary and tertiary industries, which stood at 8:12:80 in 1971, will change to 6:13:81 in 1981 and 5:21:74 in 1991.

Table III-12 Ujung Pandang's Future Labor Force by Industry

(in 1,000 persons)

Year	Population	Productive-age Population	Economically Active Population			
				Primary Industry	Secondary Industry	Tertiary Industry
1971	550	383	140	11	17	112
1981	650	420	157	10	20	127
1991	870	540	224	12	47	165

[Assumptions]

(i) The productive-age population ratio (10-64-year-old population/total population) shows a slight decrease from year to year according to a national tendency, but that of the urban area is 2 to 4 per cent hither than that of rural areas.

(ii) Ujung Pandang's sex ratio (male population in terms of 100 for female population) stood at 100.8 in 1971, but will change to 101 in 1981 and 102 in 1991.

(iii) The participation ratio (economically active population/productive-age population) is projected as follows:

The employment ratio of males will somwhat decline as the ratio of those receiving higher education increases. On the other hand, the employment ratio of females will go up (that is, disguised unemployment will diminish as employment opportunities increase). On balance, therefore, the overall employment ratio will level off.

(vi) Farmland in Ujung Pandang City will shrink with the spread of "sprawl" phenomenon due to housing construction, building of an industrial estate, relocation of the university, etc. As a consequence, the farming population will also somewhat decline.

(v) A city's population engaged in the tertiary industry is closely related to the total population of

the city and its development stage. In Japanese cities, those working in the tertiary industry now stand at 190 per 1,000 of urban population and are expected to increase to about 215 in 1985. In Ujung Pandang City, the tertiary industry population already reached 201 in 1971, but this included a considerable number of unemployed persons. Therefore, as employment opportunities in each sector of the secondary industry increase from now on, the unemployed will flow into the secondary industry, reducing the ratio of those engaged in the tertiary industry. Our study is based on the assumption that the tertiary industry employment per 1,000 of population will drop to 195 in 1981 and 190 in 1991.

(vi) The economically active future population minus those employed in the primary and tertiary industries will stand at 20,000 in 1981 and 47,000 in1991. Those employed in the secondary industry in 1971 totaled 16,000 (the figure in Table less unemployment). It follows from these figures that the city will have to create employment opportunities for about 30,000 people in the secondary industry–that is, manufacturing, construction and mining–in the next 15 years.

Table III-13 Sex Ratio

	Males	Females	Total
1971	57 %	13 %	35.2 %
1981	56	14	35.1
1991	55	15	35.2

4 Toward orderly city building

The current land use mainly in the old urban center of the city represents a mixture of housing areas, commercial areas, government officies, military installations and industrial plants. It may be said that the city has grown unsystematically just to meet the needs for the moment, without giving due heed to the living environment, the production environment and the natural environment of the city's periphery. Population density in the urban center is as high as 500 per hectare with one or two-storied houses crowded together. Of the four factors generally required for a city, namely, convenience, safety, comfortableness and sanitation, Ujung Pandang can now meet only one requirement--that is, convenience. Therefore, in planning a future expansion of the town area, it is essential to prevent confusion in the use of land by clarifying the urban structure and to make clear differences between the living environment, the production environment and the natural environment.

5 Future frame of Ujung Pandang City

On the basis of Chapters I and II, Ujung Pandang City's frame for the year 2001 may be projected as follows:

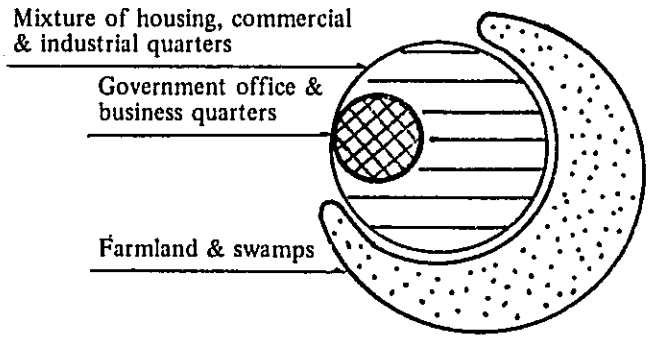
Population 1,190,000

GDP $500 - 600 (GDP for South Sulawesi Province will be $420. But since the city's industrial agglomeration will reach one half of that of the province, the city's GDP is estimated higher.)

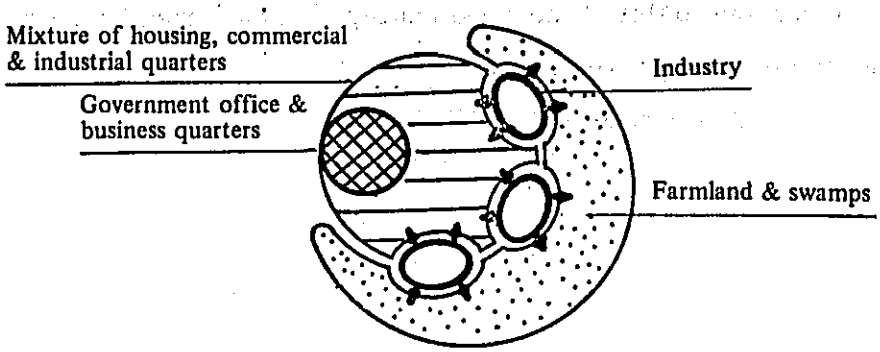
2) Direction of Ujung Pandang's Development

(1) Direction of Urban Development as Viewed from City Planning

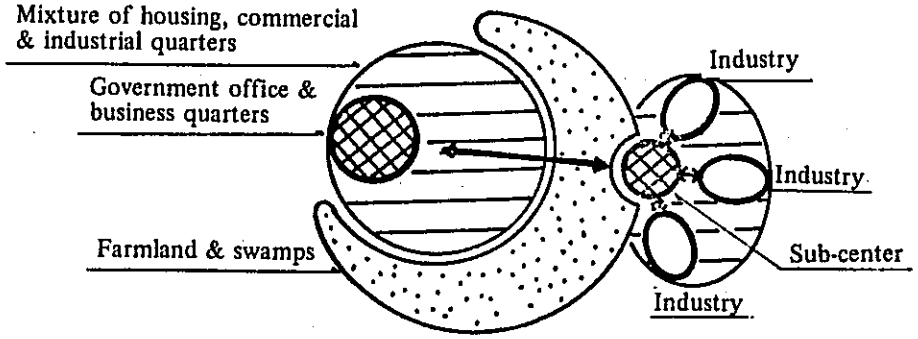
Since the 18th century, Ujung Pandang City has continued to play a major role as an administrative center in Eastern Indonesia. The city's next important functions are education and commerce. As for urban morphology, the core is formed by the government and business office area and the port, surrounded by a mixture of housing, commercial and industrial quarters. Beyond this mixture lie farmland and swamps.



When a new industrial zone is established in a city of such a form, the easiest way is to set up the industrial zone along the outer perimeter of the housing-commercial-industrial mixture. In this case, the zone adjoins the existing town area, and therefore, housing areas for factory workers are also laid out along the outer perimeter of the existing town area. Accordingly, there is no need for large-scale construction of facilities and infrastructure related to daily life, since the existing facilities can be relied upon. Under this pattern, the mixture of commercial, housing and industrial quarters is expanded, and functionnally, the city assumes a centripetal pattern, giving rise to many urban troubles, which tend to paralyze the city's activities.



Therefore, in order to forestall such adverse phenomena, the separation of administrative and educational functions from industrial and distribution functions will become an important consideration in future city planning. From this point of view, the following pattern is conceivable.



(2) Study of Urban Morphology and Urban Zone

The morphology of a city may be grasped from two angles--that is, (a) a theory of spatial expansion of urban functions and (b) a theory of structure inside a city. The former theory means "how a region is formed from the economic, administrative and cultural points of view," and the latter "how a region is formed from a viewpoint of grouped functions."

(a) Spatial expansion of urban functions

Under this theory, three zone structures may be defined with the urban center as the kernel.

The first zone is the urban area contiguous to the urban center.

The second zone is the area whose economic, cultural and other activities are closely linked with those of the urban center on a daily basis.

The third zone is the area which has strong economic and cultural ties with the urban center though not on a daily basis.

According to this three-zone concept, K. M. Ujung Pandang may be divided into the following three zones:

First zone--KEC UJUNG PANDANG
KEC MAKASSAR
KEC WAJO
KEC BONTOALA
KEC UJUNG TANAH
KEC AMATAN TALLO
KEC MARISO
KEC AMATAN MAMAJA
DESA KARUWISI
DESA PANAIKANG
DESA JONGAYA
DESA MACINISOMBALA

This is the area in which redevelopment should be undertaken by dividing functions into those vital for the formation of the urban center and those incidental to them.

Second zone--KOTAMADYA UJUNG PANDANG

This zone is usually called "sphere of the city," which is considered the most important core of the city in regard to various urban problems, such as land use plans, facilities plans and measures on land price.

Third zone--KOTAMADYA UJUNG PANDANG
KABUPATEN MAROS
KABUPATEN PANGKAJENE KEPULAUAN
KABUPATEN TAKALAR
KABUPATEN GOWA

This zone is usually called "trading sphere of the city," which is marked by an intensive collection and shipment of producer goods and consumer goods and an active inter flow of persons.

(b) Structure inside a city

The urbanization of K. M. Ujung Pandang is spreading like ripples from the central business district (CBD) connected with the port. Functionally, the city may be classified into the following district.

i Central business district (CBD)
ii Educational district
iii Light industry & wholesale district
iv Low-class residential district
v High-class residential district

vi Suburban residential district

vii Suburban industrial district

(3) Facilities of the City as Growth Pole

The Indonesian Government's strategy for rectifying an imbalance in the development of the country as evidenced by "depopulation and backwardness" in outlying districts calls for developing Ujung Pandang City as core city or "growth pole" in Eastern Indonesia (Region D).

The significance of the adoption of the "growth pole" formula lies in priority investment in regional development rather than across-the-board investment, for the purpose of maximizing regional characteristics and investment effects.

For Ujung Pandang City to play the role of "growth pole" in Eastern Indonesia (Region D), the following urban facilities are needed:

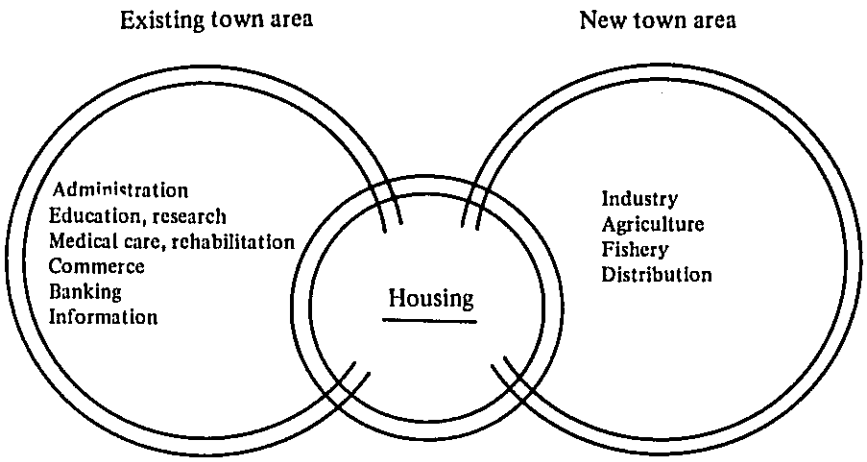
1 The city has the role of bulwark against the outflow of population from Eastern Indonesia to developed areas in Java and Sumatra. For this purpose, it must become an attractive city well balanced both socially and economically. Especially noted in this report are the creation of "places for employment" and the development of the city's roles mentioned in 2 to 4 below as the center of Eastern Indonesia.

2 Ujung Pandang City has the role of production center in Eastern Indonesia. To this end, it is essential to promote industrial development centering on manufacturing industries, which also requires the qualitative improvement of the work force and the expansion of the infrastructure. From a viewpoint of regional planning, it is important to establish production spaces.

3 The city has the role of distribution center in Eastern Indonesia. For this, it is called upon to have the functions of distribution base for not merely industrial manufactures, but also farm and fishery products. To establish the said role, the construction of the central business district (CBD) is of great importance, combining the improvement of the port and roads, and commercial and financial facilities, to say nothing of the distribution center.

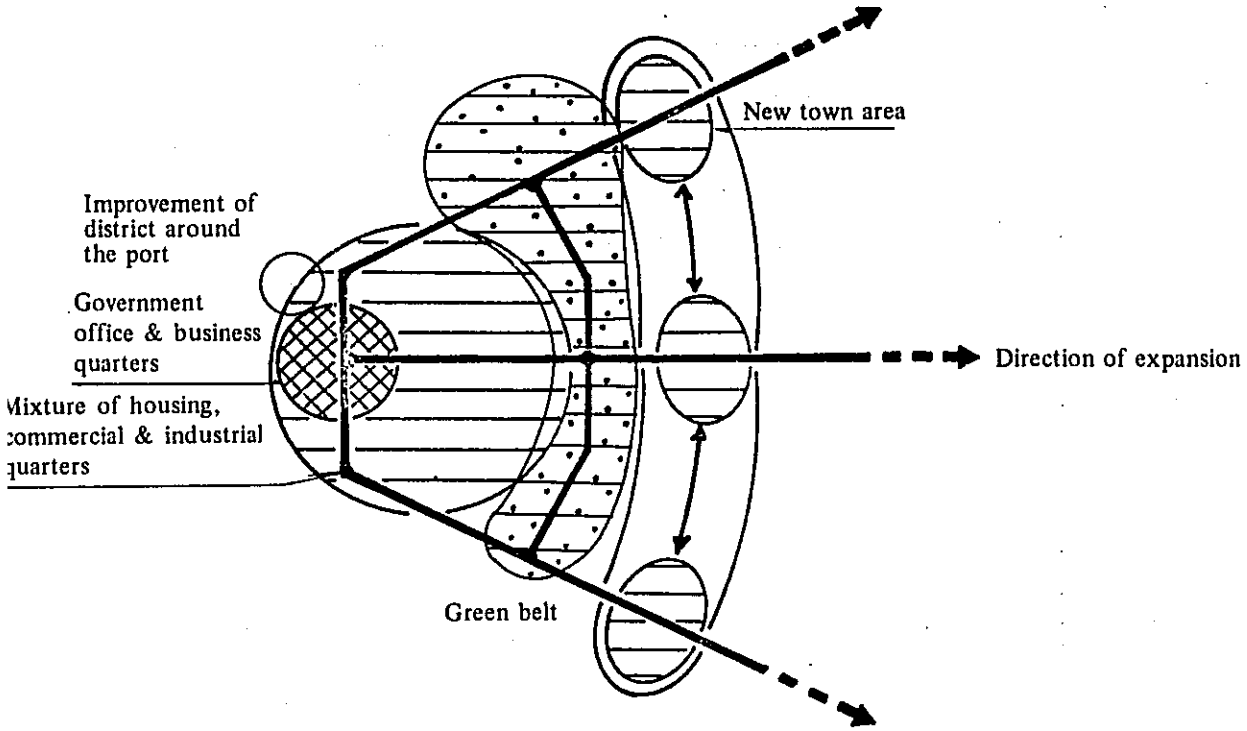
4 The city has also the role of cultural center. To this end, it must have such functions as education, research, medical care, sports and recreation. It is thus necessary to set up an educational and research zone, medicare and rehabilitation zone and sports-recreation zone.

The basic plan for the future development and improvement of Ujung Pandang City has roughly two pillars--namely, the improvement of the existing town area and the development of a new town area. In the existing town area, it is essential mainly to improve such functions as administration, education and research, medical treatment and rehabilitation, commerce, banking, and information. In the new urban center, meanwhile, such functions as industry, agriculture, fishery and distribution ahould be paimarily developed. Improvement of the housing function should cover both area. This is indicated by the following diagram:



(4) Direction of Expansion and Concept of Urbanization

Ujung Pandang, it is said, originated in Sungumi Nasa in Gowa Kabupaten. But the present center of the city is Kec. Ujung Pandang and Kec. Makassalu. If the western area facing the sea develops, the district around the port will improve faster than elsewhere in the process of the sophistication of the port functions. Nevertheless, it is considered that the city will mainly develop along main inland trunk roads in the course of the expansion of the city's economic sphere and the rise of its density.



3) Industrial Structure and Demand for Land

(1) Total Population and Industry-by-Industry Population

The total population of Ujung Pandang City in 1971 stood at 518,000. The future population estimated in Chapter on the basis of this figure is 650,000 in 1981, 870,000 in 1991 and 1,190,000 in 2001.

The beginning of the 21st centure, when Ujung Pandang is expected to assume an appearance of a modern city both socially and economically, has been chosen as the time for the estimated demand for land broken down by use, which will constitute the content of the city's future vision.

The economically active population in 2001 is estimated at 285,600 if the ratio of productive-age population is put at 60 per cent and the proportion of economically active population to productive-age population at 40 per cent. Next let us cite the ratio of population on an industry-by-industry basis and population estimates.

First, the following ratios are indicated as an industry-by-industry population make up on a national land scale, required for attaining the per capita GDP of $500 to $600 a year in the economic sphere of Ujung Pandang. (Cf. Theory of Industrial Development in the Republic of Korea, authored by Young Hoon Paik (Ph.D.))

Participation ratio in primary industry	34.8%
" in industrial sector	27.6%
" in other industries	37.6%

Next, the industry-by-industry population composition of an ideal city with a population of one million is indicated below on the basis of the Japanese example. (Source: Theory of Industrial Land Planning, by Akira Konno)

Population ratio of primary industry	1.6
" of secondary industry	41.9
(" of manufacturing industry	36.4)
" of tertiary industry	56.5

From the above two sets of date, Ujung Pandang City's industry-by-industry make up and population in 2001 are assumed as follows:

Table III-14 Ujung Pandang's Industry-by-Industry Population Composition in 2001

	Ratio	Population
		persons
Primary industry population	2 %	5,700
Secondary industry population	35	100,000
(Manufacturing industry population)	(30)	(85,700)
Tertiary industry population	63	179,900
Total	100 %	285,600

(2) Total Population, Industry-by-Industry Population and Demand for Land by Use

a. Industrial land

The number of people engaged in industry in 2001 is estimated at 85,700. This represents an increase of 77,075 over 8,625 in 1971. Assuming that employee density in industrial areas is 125 persons per hectare, land demand for the increment works out at 617 hectares.

It is said, meanwhile, that a good many enterprises now having factories in the urban center want to move out into new industrial sites because of the urban center improvement project and the difficulty of expanding factory sites. Assuming half of the 1971 industrial population of 3,625 is thus removed to new

sites, industrial land demand covering them works out at 35 hectares. This plus the above-mentioned 617 hectares comes to 652 hectares.

b. Housing land

The total population in 2001 is estimated at 1,190,000. This represents an expansion of 672,000 over 518,000 of 1971. Assuming the average number of housefold members is four, housing land will be required for 168,000 households.

Next, let us estimate the number of houses in consideration of possible household split. The 1971 population of 518,000 lived in 73,046 houses (according to Pre - F/S for UPIE, 1975). Assuming the average number of household members is four, 129,500 houses are needed for this population. On balance, 56,454 houses will be newly in demand. This plus the above-mentioned 168,000 houses stands at 224,454 houses.

If the land area per house is put at 120 square meters on the basis of the on-the-spot survey and sites for roads, parks, etc. are estimated at 30 per cent, a total of 3,501 hectares will be newly demanded for housing.

4. Study of Land Use

The land use plan, which will be needed in determining the direction of Ujung Pandang's expansion ought to have different contents according to such factors as the site of industrial estates to be built in future and the direction of thier expansion. Therefore, in studying the land use plan, we shall show altenative patterns of industrial development covering several appropriate sites chosen for industrial development (of. Chapter IV, 5), and present a land use plan for Ujung Pandang City in relation to industrial development. At the same time, those appropriate sites for industrial development which can satisfy all of the several alternative development patterns will be sought and established as scheduled sites for the initial stage of industrial estate construction.

1 In the drafting of alternative patterns of industrial development, due heed is given to the present roads and roads planned by the municipal authorities. Besides, the Panakukang Housing Plan of the city is also taken into account as an established plan in our drafting of the land use plan.

2 Our land use plan calls for building a new port in addition to the present Ujung Pandang Port. But this should be interpreted as a trial proposal for the

future, since in the present stage, Ujung Pandang Port is capable of coping with an expected cargo increase in the years ahead.

3 Our plan covers the municipal area of Ujung Pandang.

But part of it also covers a section of KABUPATEN GOWA. However, proper sites for industrial development mentioned for KABUPATEN GOWA are hypothetical because no such sites are known yet in the area.

Patterns of industrial development conceivable for Ujung Pandang City may be summed up in the following four patterns:

* Linear-type development pattern
* Cluster-type development pattern
* Large-scale centripetal development pattern
* Loop-type development pattern

The contents of each pattern are as follows:

(1) Linear-type development pattern (see Fig. III-7)

This pattern shows the progress of industrialization in Ujung Pandang City along the road (S2) (see Note) linking the existing urban center and Hasanuddin Airport. The S2 road serves as a main trunk road in the city, and an urbanization trend is already noticeable along the route as instanced by the construction of several new plants, a vocational training center, etc. and the relocation of Hasanuddin University.

This plan covers proper sites for industrial development that lie along the trunk road S2. That is, it envisages the construction of a bypass as a flow pattern of goods distribution parallel to the trunk road in order to connect such sites. That is, industrial development will proceed from the area adjacent to the existing urban center in a northerly direction. As for the character of industries, the area near the existing urban center is for the initial stage of industrialization centering on medium-scale industries. As the industrialization expands northward, the second and third stages of industries will be established gradually in that order. (See Chapter IV, Section 2)

Merits and problems of the linear-type development pattern are as follows:

Merits ---- * The trunk road S2 is already used as a principal road of Ujung Pandang City. Therefore, the existing infrastructure can be used to a maximum extent.

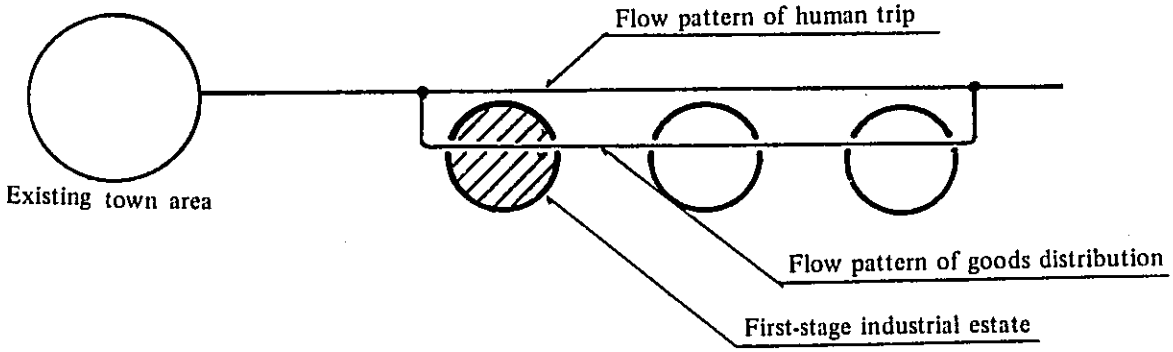
* Work outside the planned sites can be minimized in the course of construction work.

Problems -- * There is a danger of accelerating the city's "sprawl" phenomenon.

* Already, several facilities (Hasanuddin University, military barracks, etc.) exist or are planned along the trunk road. Therefore, it will become necessary to make adjustments with these facilities in regard to land use.

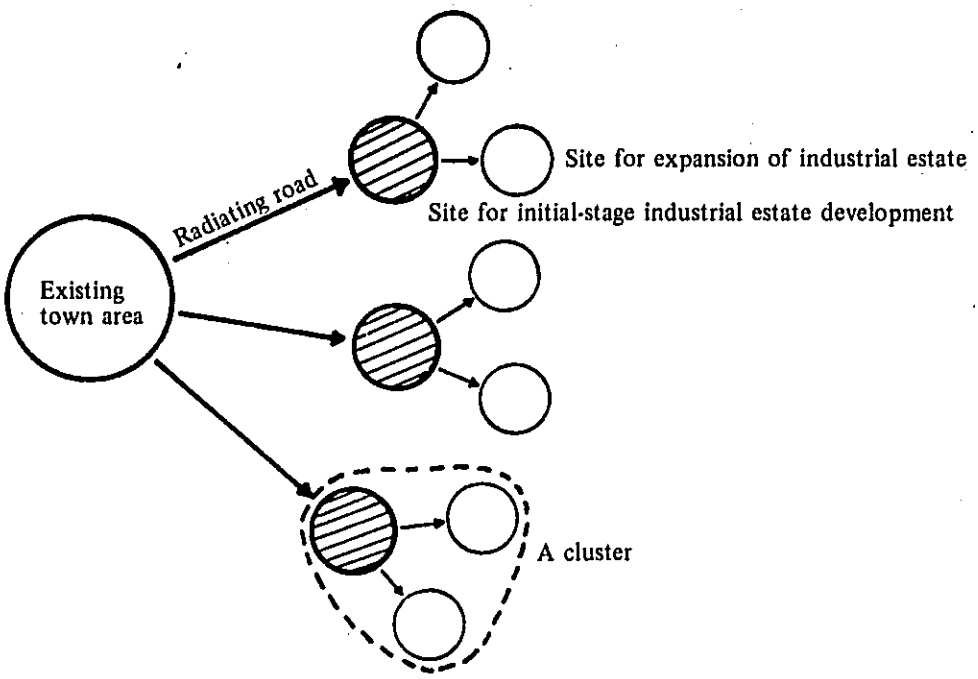
* The efficiency of land use is low, since only the limited area along the existing road will be earmarked for development.

(Note : Road numbers are indicated in Fig. III-11. Please refer to the figure in reading the text.)



(2) Cluster-type development Pattern (see Fig. III-8)

Under this pattern, roads radiating from the existing urban center will lead to appropriate sites for industrial development, which will serve as cores for the second and third stages of industrialization spreading around them. To be more specific, earmarked for industrial development are areas capable of development (which correspond to Appropriate Sites 4 and 8 in Fig. IV-15 -- Map of Candidate Sites Chosen for Industrial Development) that link to radiating roads S2, S3 and S4. As for the radiating road S4, an appropriate site for industrial development will be sought in KABUPATEN GOWA outside Ujung Pandang City.



The following industrial character may be conceived for each cluster:

Clusters linking with trunk roads S3, S4 -- First stage industries centering on medium and small-scale industries

Cluster linking with trunk road S2 -- This area has in its vicinity proper sites for large-scale industrial development. Moreover, it is close to the site for the proposed new port, which is considered necessary for the third stage of industrialization. For these two reasons, it is deemed appropriate for diversified industrial development and scaled-up industries for sophisticated processing.

The merits and problems of the culster-type development pattern are as follows:

Merits ---- * This pattern is suitable for industrial development around the existing town area.

* Related costs are low because as for roads, the existing ones can be used for improvement.

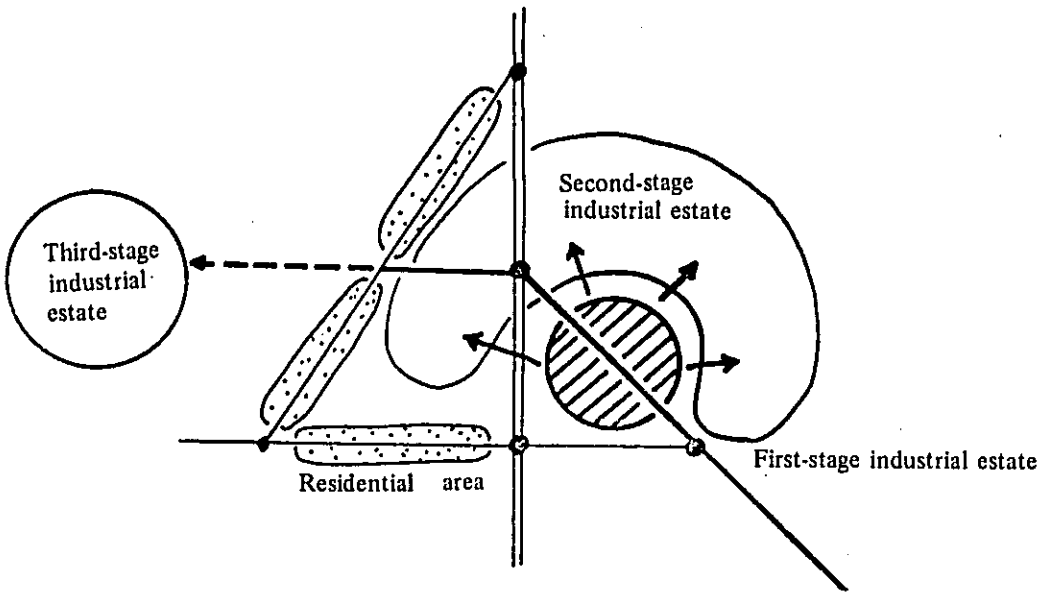
Problems -- * Liaison is not easy to establish between the clusters.

* The same trunk roads are used for both the flow of goods and the flow of humantrip.
* In case industrial expansion is planned beyond each cluster, this may be difficult for some clusters in the context of appropriate sites nearby for such expansion.
* It is desirable to set up physical distribution facilities at the crossings of physical distribution flows from the clusters. The nodal area of S2 and S5 forms such a crossing. But there is no room left in this area for construction of physical distribution facilities, since housing areas, cemeteries, the vocational training center, the health center, etc. are already located here as a result of the city's "sprawl" phenomenon.

(3) Large-scale centripetal development pattern (see Fig. III-9)

This pattern envisages deploying industries in the north of Ujung Pandang City where appropriate sites for larte-scale industrial development are situated. At present, there are relatively few swamps and paddies in this area which consists mostly of dry farms and thus possesses appropriate sites for large-scale industrialization. Therefore, it is possible to establish fairly large industrial estates over a long term. (About 1, 300 hectares of usable land may be noted in the district north of the trunk road R6.)

Under this pattern of industrial development, an industrial estate will be formed in the vicinity of the node of the trunk roads R6 and S2 in the initial stage and expanded outward in the second stage. Furthermore, the establishment of a proposed new port on the western coast and industrial development in the direction of the port will be considered in the third stage of industrialization.



As for the character of industrial development, the district around the node of the trunk roads R6 and S2 is earmarked for the first-stage industries (agglomeration of medium and small-scale industries). The second-stage agglomeration of factories covering an area of one to five hectares each will be formed through expansion into areas around the first-stage zone. Then in the third stage, the district directly behind the new projected port will be chosen for industrial development in connection with the construction of the new port.

Merits and problems of the large-scale centripetal development pattern are as follows:

Merits ---- * Because of many appropriate sites for industrial development, the expansion of the industrial estate will be easy.

* Since industrial sites will be secured on a concentrated basis, confusion can be avoided in regard to the use of land.
* Flows pattern of human trip and goods can be clearly differentiated as S2 and S1 will be used respectively for commuters and physical distribution.
* It is possible to take proper measures in each stage of industrialization.

* As the industrial sites are separated from the urban center, environmental problems affecting the urban center can be forestalled.

Problems -- * As industrial sites expand over a long term, there is expected to arise demand for spaces for housing and living environment facilities. Therefore, it is essential to reserve land for such non-industrial uses.

* Pre-emption of substantial industrial sites will become necessary. If this is impossible, measures will be needed to restrict industrial development.

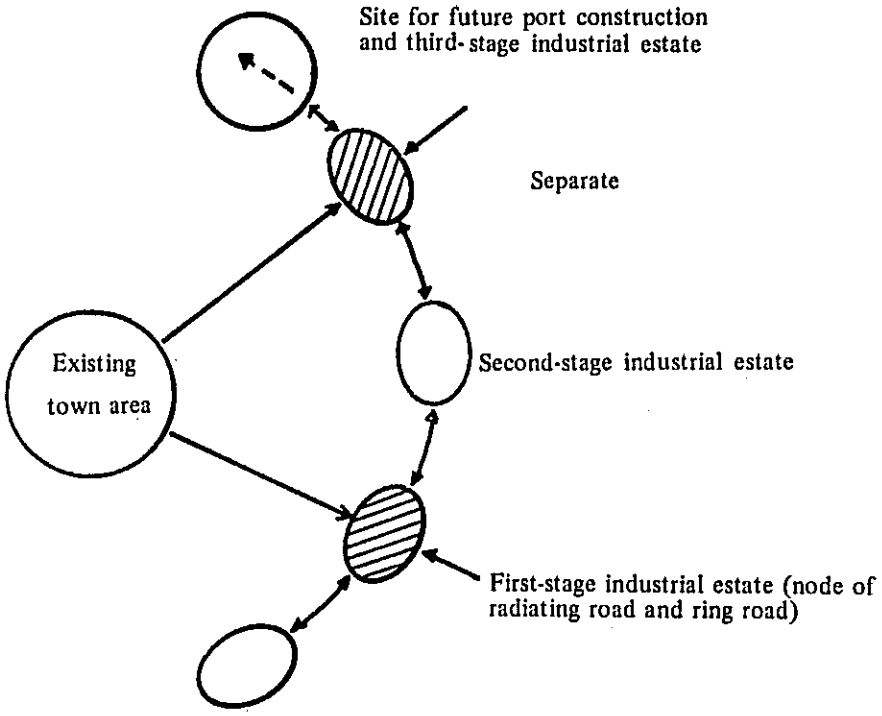
* It will become necessary to lay out industrial estates in such a way as to adjust to the phased expansion of industrial development.

* The problem of including industries of a "household industry" nature which should preferably be located near the existing urban center.

* It is necessary to take measures for workers' commutation from the existing urban center.

(4) Loop-type development pattern (Fig. III-10 Loop-Type Development Pattern)

Under this pattern, the existing ring road (leading into KABUPATEN GOWA) along the periphery of Ujung Pandang City will be widened and improved. At the same time, industrialization will be promoted along the ring road. That is, the outer ring road will be made the infrastructure for the regional development strategy. The ring road (S6), crossing Ujung Pandang City and KABUPATEN GOWA, represents a flow pattern of good distribution over a large area. Moreover, this flow pattern is a route to be set up as an axis for industrialization in the Ujung Pandang urban region. As for this route, due heed will also be given to the future linkage with the projected new port. This is designed to meet a move for building a new port in the future when the amount of ocean cargoes surpasses the handling capacity of the existing Ujung Pandang Port.



Under the pattern, the first-stage industrialization will be located at the nodes of lading roads and the ring road, and the second-stage industrialization will be promoted along the ring road. In the third stage, development will be undertaken in the vicinity of the proposed new port as is the case with the large-scale centripetal development pattern.

As for the character of roads, R6 may be defined as large-area flow pattern of goods distribution; S1 as intra-urban flow pattern of goods distribution; and S2 as flow pattern of human trip such as for commutation.

Merits and problems of the ring-type development pattern are as follows:

Merits ---- * The establishment widening and improvement of the outer ring road will facilitate movement of goods between Ujung Pandang and neighboring areas.

* The flow pattern of goods distribution and the flow pattern of human trip can be clearly differentiated from each other.

* A network incorporating the future port can be clarified.

Problems -- * There is the problem of where to set up the outer ring road in relation to appropriate sites for industrial development, including those in KABUPATEN GOWA.

We have so far studied the contents of and plans for the respective patterns of industrial development. Appropriate sites for industrial development, which may be chosen for the initial stages of all the four patterns, are Appropriate Sites 4 and 8 (see Map of Candidate Sites Chosen for Inudstrial Development). In the second and third stages of industrialization, industrial expansion will likely be promoted with the Site 4 or 8 as the core.

Here are comments on the land use related to the industrial development of Ujung Pandang City:

i) The site for relocation of Hasanuddin University and adjacent areas should be defined as a zone for agglomeration of technology and knowledge. In particular, research institutes or facilities with research departments, and public facilities related to technical education should be systematically established in the zone.

ii) Desa Barcmbong is the only open space near the urban center. Therefore, it should be not only preserved as farmland, but also organized as a recreation center for urban dwellers. Especially, since the area has a coastline, it should be fostered as a center for ocean recreation.

iii) Ujung Pandang has relatively few parks and green areas. As a means of securing green areas in the urban center, we would like to propose that the present site of Hasanuddin University, planned to be moved out, be earmarked for a large park and an athletic park.

iv) As already noted, the coast north of the Tallo River and west of Desa Bira and Desa Bulurokeng is a candidate site for the construction of a new port in the fairly advanced stage of industrialization. Nevertheless, at the present time, Ujung Pandang Port still has a sufficient capacity for cargo handling, and moreover, the candidate site for a new port is an important place for shrimp and prawn culture. Therefore, full consideration needs to be given to these factors and appropriate plans for land use should be determined in advance.

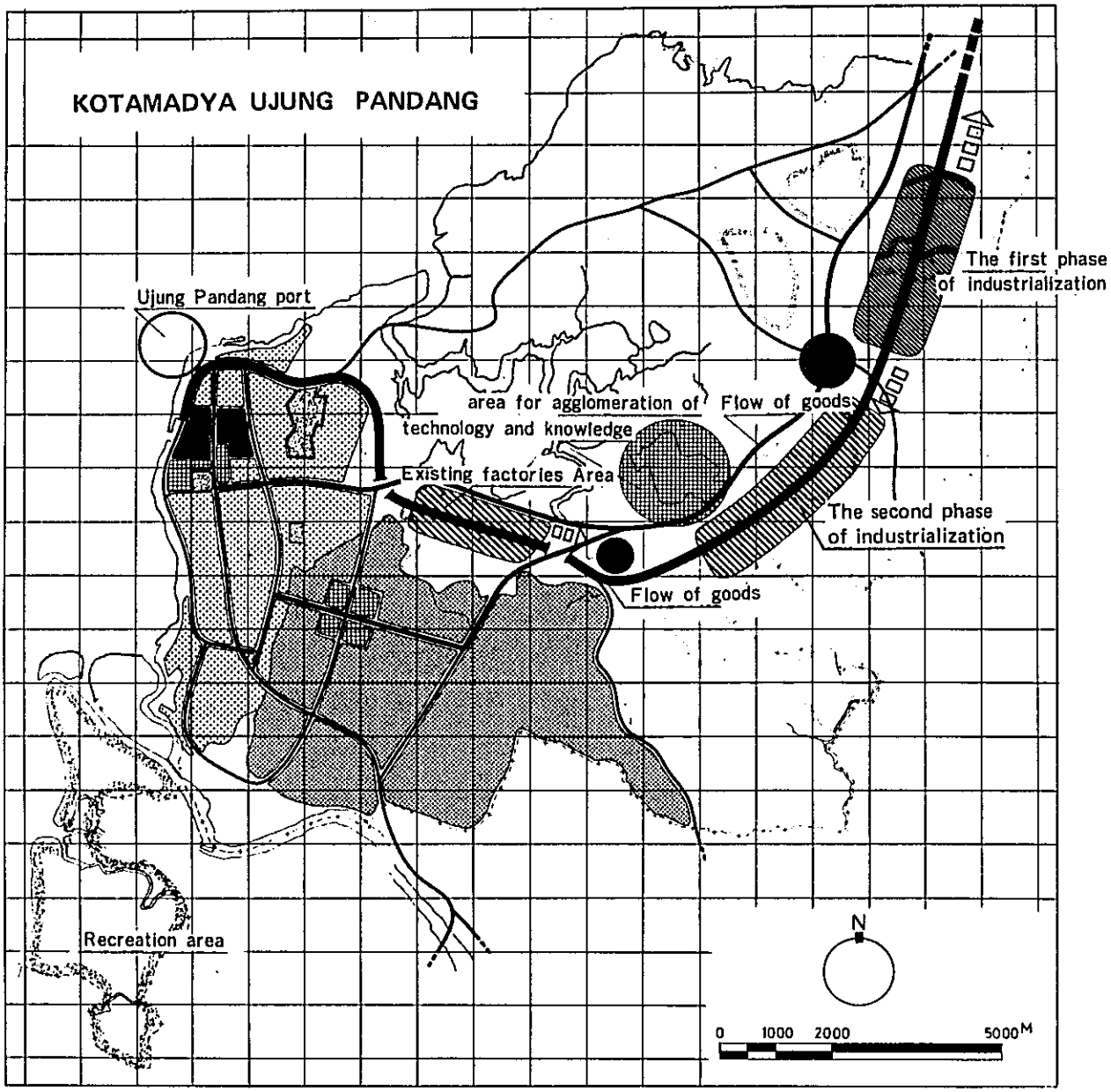


Fig. III-7

Linear-type development pattern

LEGEND

	Existing urban area
	Projected housing area
	Commercial area
	Administrative center area
	Industrial area
	Park and athletic area

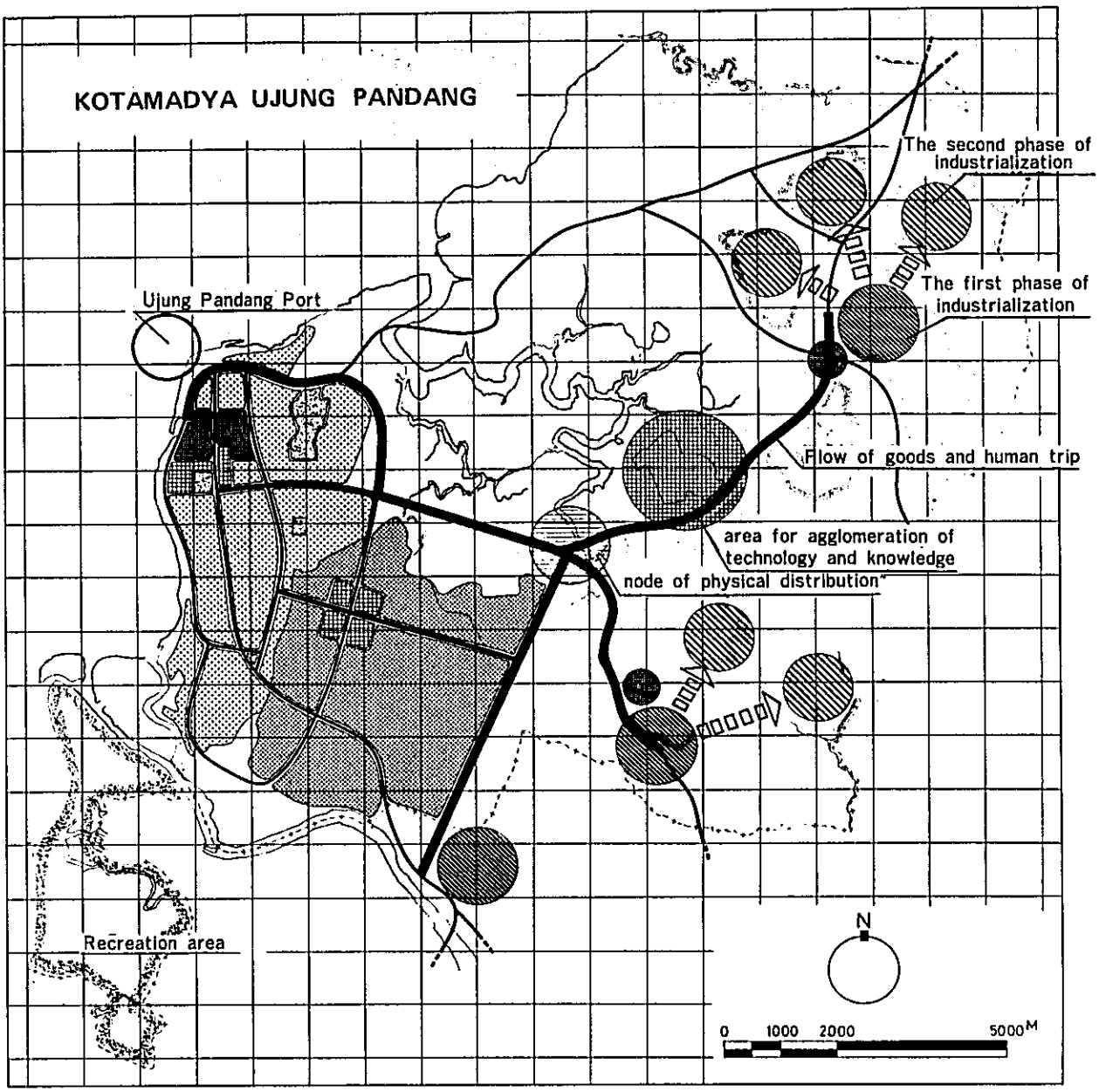


Fig. III-8

Cluster-type development pattern

LEGEND

	Existing urban area
	Projected housing area
	Commercial area
	Administrative center area
	Industrial area
	Park and athletic area

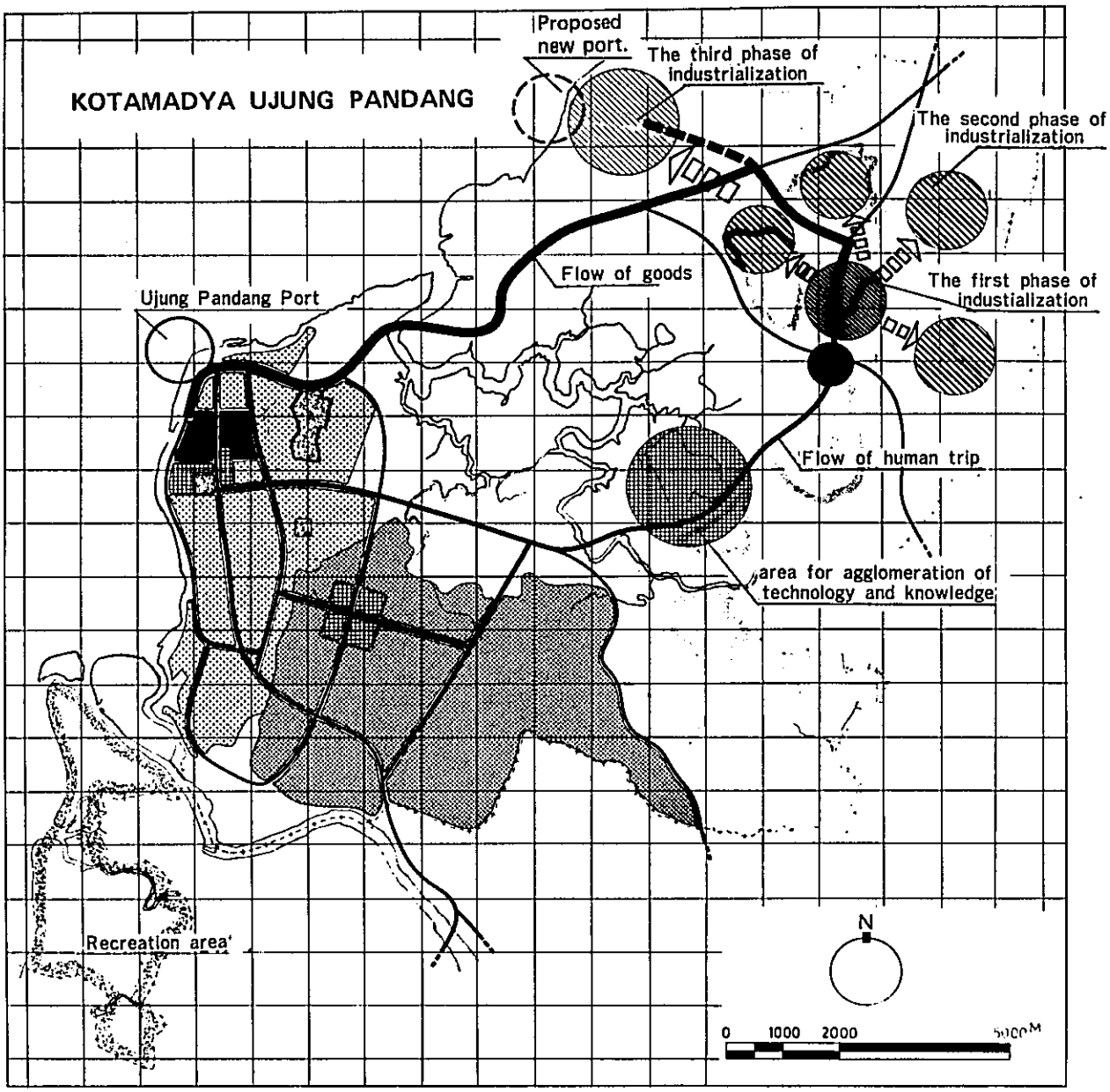


Fig. III-9

Large-scale centripetal development pattern

LEGEND

	Existing urban area
	Projected housing area
	Commertial area
	Administrative center area
	Industrial area
	Park and athletic area

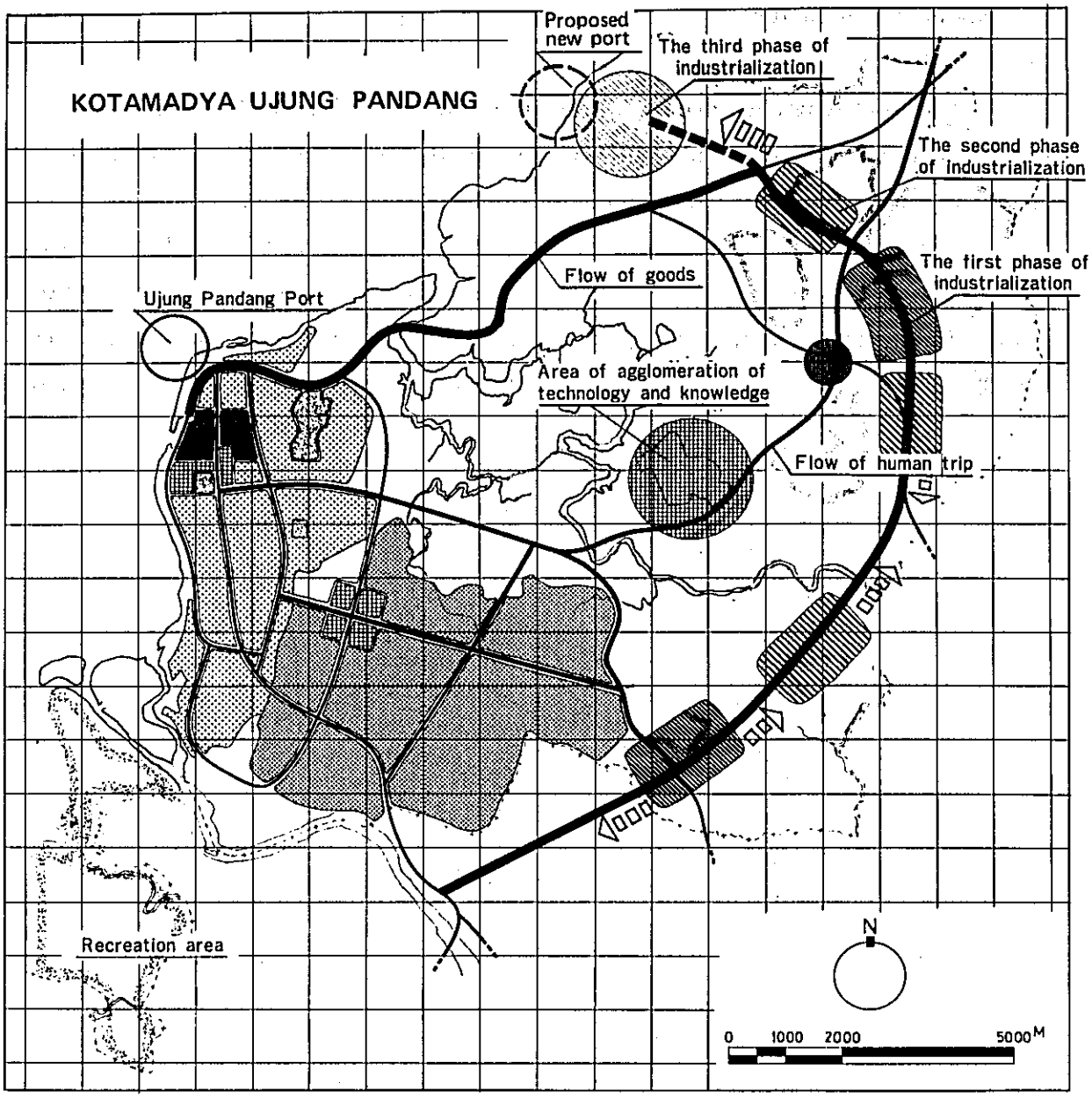


Fig. III-10

Loop-type development pattern

LEGEND

	Existing urban area
	Projected housing area
	Commercial area
	Administrative Center area
	Industrial area
	Park and athletic area

5. Study of Infrastructure

1) Roads

The total lengthand area of all roads in the city stand at 359 kilometers and 222. 3 hectares. Those roads which will become especially important when Ujung Pandang's population increases to one million are (a) S2 leading from the urban center to the airport, (b) S3 leading from the urban center to KABUPATEN GOWA, (c) S1 running along the northern coast, (d) S4 leading from the urban center to Gowa Via Sungguminasa, and (e) the ring road R6. These will become vital trunk roads connecting various districts and therefore, should have a four-lane structure.

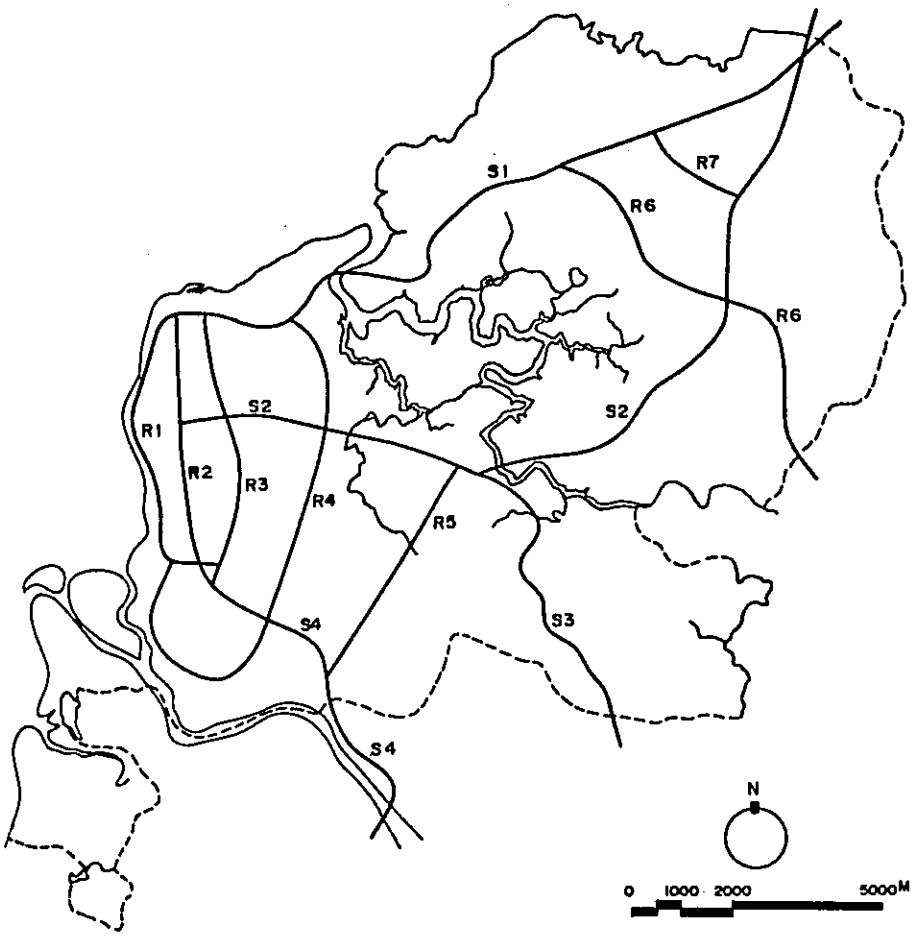


Fig. III-11

Route number of main roads

2) Electricity'

As of 1974, electric power consumption totaled 3, 131, 266 kilowatt-hours or only 14 per cent of the power supply capacity of 347, 673, 000 kilowatt-hours. Of the total consumption, about 28 per cent went to general households, and 56 per cent to business offices and service trades, but only 5.5 per cent to industries. Assuming 200 hectares of industrial estates are developed, an additional consumption of 60, 000 kilowatt-hours is expected, since consumption rate of the industrial estates is estimated at 0.03 kWh/m^2 in view of the industries to be introduced. Therefore, the city will still have a sufficient supply capacity even if consumption for home use and business establishments grows to 15, 000 and 30, 000 kilowatt-hours.

3) Water Supply

As of 1974, 600 liter/sec (518, 400 m^3/day) of service water was consumed, and the supply capacity stood at 89 per cent. The consumption was broken down into about 90 per cent for home use and 5 per cent for schools, offices, factories and fire fighting. At present, a water purification plant with a supply capacity of 1, 000 liter/sec (864, 000 m^3/day) is under construction. The future population of 1, 190, 000 will require 3, 570, 000 m^3/day at a basic rate of 300 liters per person per day. Therefore, a still larger water purification plant and water sources will become necessary, and at present, development of additional water resources is under study by public authorities concerned.

As for industrial use, assuming 200 hectares of industrial estates are established, 40, 000 m^3/day will be needed if consumption is estimated at 200 m^3 per hectare in view of the industries to be introduced. In the future, when industrial estates grow to 652 hectares, 195, 000 m^3/day will be necessary.

4) Ports

At present, there are two ports, one for ordinary ships and the other for small boats. The average depth is 6.9 to 9.5 meters. The average cargo handling capacity stands at 13 to 18 tons per hour, and there are three cranes and six forklifts for cargo handling. The number of port workers is estimated at 2, 000. For the time being, the cargo handling capacity will be boosted to cope with an increase in ocean cargoes.

Ⅳ STRATEGY AND TREND OF INDUSTRIAL DEVELOPMENT

IV. STRATEGY AND TRENDS OF INDUSTRIAL DEVELOPMENT

This chapter reviews and compares the present status and existing industrialization policies of both Indonesia at the national level and the province of South Sulawesi. Then, details of existing industries in South Sulawesi are analyzed. Based upon the results of these analysis, formation of industrial development strategies in this particular region, which is primarily aimed to transform Ujung Pandang into the center of industrial development in Eastern Indonesia and also is in conformity with the direction of industrialization in whole Indonesia, is carried out.

1. Industrial Development Policy and Status Quo of the Major Industries in Indonesia

1) Long-range views of industrial development

At present, agriculture is the most important industry in Indonesia, but plainly speaking, the future course of its economic development should be as follows: from a balanced expansion of both farm and factory industries at an initial stage to a steady growth of the national economy making the latter a mainstay.

We may say that variety is the most outstanding characteristics of the industrial development in Indonesia, which assumes such an important role as stated above, if we compare it with that seen in all other developing nations. We can point out two factors to explain such a characteristics. That is to say, Indonesia has a great variety of natural resources (subterranean resources as well as agricultural and aquatic resources) and a huge population.

Having a vastly extended territory and being able to make use of the speciality of each region as basic resources for her industrialization, Indonesia has a potentiality of developing all types of industries.

In fact, it was indispensable for the nation not only to hasten her industrialization but also to develop various kinds of industries simultaneously, in spite of a lack of such requisites for industrialization as skilled labor force and capital. Incidentally, the first five-year development plan gave priority on the following industries out of the strategic needs:

a) Industries contributive to expansion of agriculture

b) Industries contributive to acquisition of foreign currency
(Industries manufacturing exportable goods and substitutes for imported goods)

c) Industries utilizing domestically produced raw materials

d) Industries contributive to promotion of employment (Labor-intensive industries)

e) Industries contributive to promotion of regional development

As previously stated, the government tried to develop various types of industries at the same time at the initial stage of the nation's industrialization without a clear-cut perspective of industrial development in Indonesia. It now possesses, however, a more accurate view of the future course of industrial development based on the results of industrial development put through in accordance with the first five-year development plan. That is to say, the government intends to foster raw and half-processed materials processing industries, going further from the industries developed during the first program's five-year period to manufacture domestically consumer goods, durable consumer goods and metal products, with a view to promote substitution of imported goods for home products as well as the nation's industrialization by establishing an integrated production system. The government also wants to start domestic production of some capital goods.

Table IV-1 Long-range View of the Industrial Development

	Industries to be given priority
The 1st five-year development plan (1969/70 - 1973/74)	Agriculture supporting industries (Fertilizer, cement & chemcial industries) and Textile industry
The 2nd five-year development plan (1974/75 - 1978/79)	Raw material processing industries and Small-scale industries
The 3rd five-year development plan (1979/80 - 1983/84)	Integrated production industries
The 4th five-year development plan (1984/85 - 1988/89)	Machine industry

(Source) "The Second Five-year Development Plan

Remarks: In the first five-year development plan for the nation's industrial development, priority given to agriculture supporting industries as well as the textile industry. When we evaluate the achievement of the first five-year program, the development of such agriculture supporting industries as fertilizer and cement industries was far behind the target, while the textile industry attained the goal. In the second five-year development plan now being under way, priority was given to material processing industries as well as to small-scale industries. The cement and fertilizer industries still receive priority, being included in the category of raw material processing industries. Small-scale industries are worthy of note and we will take them up later on.

2) Industrialization policy of Indonesia

The Indonesian government applies such a basic principle that her industrialization should be carried out through the activities of private capital. The essential role of the government in regard to the nation's industrialization is to promote private corporates' activities indirectly through the development of physical infrastructure such as roads, shipping, communication facilities, electric power and water supply, together with that of non-physical infrastructure such as amelioration of banking and tax systems, legislation and administration.

In 1967, the government dared to lift a curb on foreign capital induction into Indonesia by enacting the Act Regarding Foreign Capital Investment, and then enacted the Act Regarding Investment of Local Capital the following Year to set up an integrared system for encouraging investment of both domestic and overseas private capital. Plainly speaking, this policy gained a great success, but at the same time, it produced some hampering effects. Accordingly, the government changed the policy from indiscriminate introduction of foreign capital which had put into practice up to that time to selective induction, amending the Foreign Investment Law. More concretely, the government thereby intended to realize more balanced investment by bringing about a correlation between various preferential measures and a degree of contribution to the nation's industrial development, evaluating it with such criteria as contribution to economization of foreign

exchange reserves, acquisition of foreign currency, development of other regions than Java, expansion of infrastructure, development projects on which priority was given by the government, etc. The government also took a necessary step not to approve further investment in specific fields of light industries. At the same time, the government set about giving administrative guidance to industries which had succeeded in introducing foreign capital, in order to let them co-operate with the government's industrialization policy, for instance, elevation of the domestic production ratio and establishment of integral production system from raw materials processing to finished goods manufacturing. On January 22, 1974, the government modified its policy again and announced a new guideline as to investment of local and foreign private capital. The most outstanding characteristic of the re-orientation was the 'PURIBUMIZATION of capital', that is, a raise in the ratio of native Indonesian capital in each investment. In this guideline, the government required 'Indonesianization' of a majority of capital within ten years to come, as well as PURIBUMI's sustantial control of each Indonesian equity. Behind such a turning of the policy, there was the fact that a gap between powerful economic groups consisting of foreigners and NON-PURIBUMI and economically weak PURIBUMI groups had been widening in the course of the nation's industrialization carried out by activities of domestic and foreign private capital.

In the second five-year development plan which has been put into practice in April 1974, the government aimed at equalizing benefits gained by industrial development as a basic policy, establishing clearly such lines as (a) giving priority to labor-intensive industries, (b) building up small scale industries, (c) promoting extension of corporate activities into major regions.

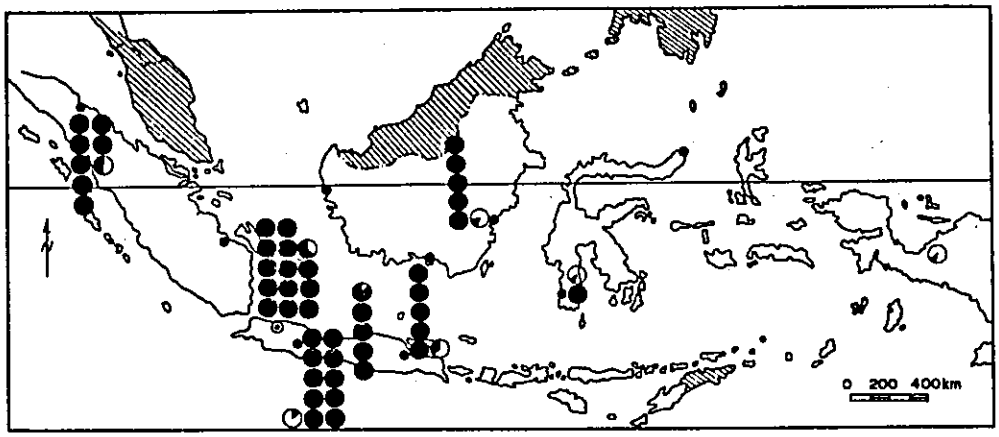
The government is going to take the following steps in order to put these lines in practice.

- An application for investment shall be permitted or approved and a special fovor shall be granted on the basis of the capital-to-labor ratio of the project with a view to giving priority to labor-intensive industries.
- Small-scale industries shall be built up with the many-sided assistance of the government varying from financial and technical aids to guidance for marketing, cooperative activities, etc.
- In order to promote extension of corporate activities into major regions, the government is making every effort (a) to encourage transmigration of skilled

workers into remote regions, (b) to establish local BKPM, to develop further local economy by setting up BAPPEDA, and (c) to dispatch talents in the central government to local administration. It also took such steps as a curb on investment in specific industries in Western or all-over Java.

For your reference, we will show regional distribution of government approved investment projects with domestic capital in Fig. IV-1 and of those with foreign capital in Fig. IV-2.

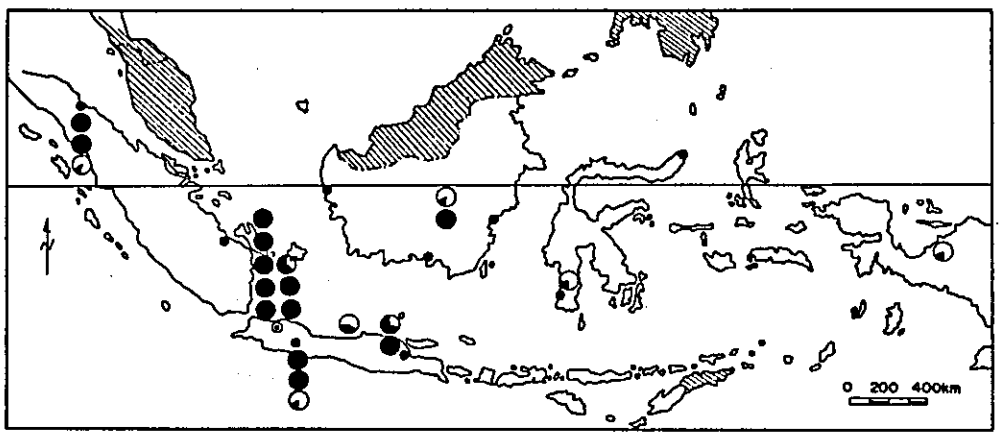
Fig. IV–1 Projects Approved by the Act Regarding Domestic Capital Investment



(Sourse) Prepared by the mission

● 50 Projects

Fig. IV–2 Projects Approved by the Act Regarding Foreign Capital Investment



(Sourse) Prepared by the mission

● 50 Projects

3) Strategy for Developing Key Industries and the Development Projects of These Industries

As previously stated, the Indonesian government applies such a basic principle that her industrialization should be carried out by local of foreign private capital. The government is taking the initiative, however, for developing such industries as those which require a huge amount of investment, those which are too much for private capital because a large-scale development of infrastructure in the surrounding areas is indispensable for carrying out the project, or those which failed to attract active investment of private capital. Among industries which have been developed chiefly with the government's initiative, such processing industries as fertilizer, cement, paper & pulp, oil refining, petrochemicals, iron & steel, are most representative. We should like to outline the recent trend of these industries in the following paragraphs.

(1) Fertilizer Industry

The demand for fertilizer is rapidly increasing because the policy of raising rice production mainly relies on such measures as cultivation of high-yielding rice plants, expansion of irrigation facilities and intensive fertilization for disseminating it. (The apparent annual demand for fertilizer soared from 440,000 tons in 1970 to 1,400,000 tons in 1974 and to 2,160,000 tons in 1975.) Three fertilizer-manufacturing plants, PUSRI No. 1 and No. 2, and PETROKIMIA, have been built by this date, but the total production capacity of these three plants is no more than 525,000 tons a year. Most of the growing demand was satisfied with imported fertilizer, for which Indonesia spent about $900 million in 1974. Against such a backdrop, the highest priority was given to projects for promoting home production of fertilizer. At present, construction of PUSRI No. 3, as well as of a PERTAMINA's plant floating on the sea of West Kalimantan, is under way on an international scale, aiming at completion in 1976 or in 1977. A project initiated by PERTAMINA in the Western part of Java was placed under the government's control, and it is expected to be completed by 1978 with the financial aid of the Iranian government. Table IV-2 shows all projects of fertilizer-manufacturing plants including those stated above.

Table IV-2 Projects of Fertilizer Manufacturing Plants

Project		Production capacity	Completion
PUSRI	No. 1	Urea 300t/day(Mitsui Toatsu Method)	September 1963
	No. 2	Ammonia 600t/day(Kellog) Urea 1,000t/day(Mitsui Toatsu Method)	August 1974
	No. 3	Ammonia 1,000t/day(Kellog) Urea 1,750t/day(Mitsui Toatsu Method)	1977 (scheduled)
PETROKIMIA		Urea 150t/day(Inventa Method)	August 1970
PERTAMINA			
West Kalimantan (Floating Plant I)		Ammonia 1,500t/day(Grande Paroisse Method) Urea 1,700t/day (DSM Method)	April 1976 (scheduled)
Western Java (under the government's control since April 1975)		Ammonia 1,000t/day Urea 1,700t/day	1978 (scheduled)
Ache		Similar to that of the plant in West Kalimantan	in the planning stage

(Source) Prepared by the Mission

(2) Cement Industry

The cement industry grows steadily because (a) it can make use of raw materials produced in the country, that (b) fairly large domestic demand can be expected mainly due to active construction of infrastructure, and that (c) cement production technique is standardized. The demand for cement in the country rose from 1,000,000 tons in 1969 to 2,560,000 tons in 1974 at an annual average rate of 21%.

The existing three cement companies, P.T. Semen Gresik, P.T. Semen Padan and P.T. Semen Tonosa, have made efforts to expand their equipment (850,000 tons a year in all), but they still can not meet a rapidly swelling demand. Accordingly, the ratio of self-sufficiency in cement has declined sharply. (The ratio stood at 32% in 1974.)

Priority is given to the cement industry which is regarded as an industry related to expansion of agricultural irrigation and to construction of infrastructure. The government employs, therefore, a policy of promoting the cement industry by introducing foreign capital, in addition to expansion of the existing state-owned plants. Since cement's freight-bearing capacity is relatively small, the cement industry is regarded as very promising in view of Indonesia's vast territory, as well as of extension of industrial development to remote regions. We can make a long list with projects for expanding existing state-owned cement plants and those for constructing a new plant with the induction of foreign capital. (See Table IV-4)

If these projects are carried out as scheduled, cement supply will exceed domestic demand from 1977 or thereabout, and the cement industry will grow into an export industry.

Table IV-3 Demand for Cement

(Unit: 1,000 t)

	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974
Production	345	339	322	411	535	560	555	628	829	821
Import	390	152	197	250	471	640	882	999	1,497	1,743
Home demand	735	491	519	661	1,006	1,200	1,437	1,627	2,326	2,564
Self-sufficiency ratio (%)	46.9	69.0	62.0	62.2	53.5	46.7	38.6	38.6	35.6	32.0

(Source) Prepared by the mission from the import statistics issued by the Ministry of Industry

Table IV-4 Cement Production Projects in Indonesia

(Unit: 1,000 t)

	1973	1974	1975	1976	1977	1978	1979	1980
GRESIK	475	500	500	700	700	1,000	1,000	1,000
PADAN	220	240	330	330	730	830	830	830
TONASA	105	110	110	110	350	420	500	500
CIBINON	-	-	390	480	990	1,080	1,200	1,200
INDONESIA	-	-	-	375	500	500	500	500
CIREBON	-	-	-	400	450	500	500	500
CILACAP	-	-	-	250	500	500	500	500
ACHE	-	-	-	-	-	500	750	1,000
DAHOROK	-	-	-	-	-	320	360	400
BATURAJA	-	-	-	-	-	400	450	500

(Source) Ministry of Industry, Cement Association

Table IV-5 Forecast for Demand and Supply of Cement in Indonesia

(Unit: 1,000 t)

	Demand (I)		Demand (II)		Supplying capacity	Self-sufficiency ratio (I) %	Self-sufficiency ratio (II) %
	Quantity	Change from the previous year (%)	Quantity	Change from the previous year (%)			
1973	1,880	(15)	1,826	(13)	800	42.5	43.8
1974	2,162	(15)	2,050	(13)	850	39.3	41.5
1975	2,486	(20)	2,310	(13)	1,330	53.5	57.6
1976	2,983	(20)	2,593	(13)	2,645	88.7	102.0
1977	3,579	(15)	2,916	(13)	4,520	126.3	155.0
1978	4,294	(15)	3,279	(13)	6,050	140.9	184.5
1979	4,938	(10)	3,687	(13)	6,500	133.5	178.7
1980	5,678	(10)	4,141	(13)	6,930	122.1	167.1

(Source) Ministry of Industry, Cement Association

(3) Pulp & Paper Industry

The demand for paper had been increasing at an annual average rate of 23 % during the 1969 - 1974 period, being boosted by the growing demand of paper for text books and for industrial use. Seven government enterprises are engaged in paper manufacturing and no foreign capital investment is permitted in this sector. Priority was given to the pulp & paper industry as it makes use of home-produced raw materials, and thus paper mills were streamlined or expanded during the period of the First Five-year Development Plan.
In fact, however, they still cannot meet the needs in terms of both quantity and quality. As to quantity, more than 80 % of the home demand for paper is filled with imports. As regards quality, there are three paper mills which mainly use straw as raw materials, and needless to say, their products are inferior in quality.

Table IV-6 Demand and Supply of Paper in Indonesia

(Unit: 1,000 t)

	1965	66	67	68	69	70	71	72	73	74
Import	67	40	68	55	70	110	120	130	214	196
Production	12	10	9	11	16	21	27	39	45	51
Demand	79	50	77	66	86	131	147	169	259	247

(Source) Prepared by the mission

Table IV-8 Demand-Supply Program for Paper & Pulp

(Unit: 1,000t)

Fiscal Year	Output	Demand
1974/75	47.3	265.5
1975/76	51.4	300.0
1976/77	92.7	344.2
1977/78	117.2	386.5
1978/79	201.2	465.1

(Source) The Second Five-Year Development Plan

Paper mills in Gowa (South Sulawesi) and in Bannwangi (East Jawa) are most modernized ones, each of which has the production capacity of 30 tons a day. These mills manufacture printing and writing paper from bamboo and imported

pulp. Even these modernized mills have very modest production capacity as compared with an international level of 500 tons a day. In addition, their products cannot compete with foreign-made paper. The Indonesian government imposes heavy duties on imports, therefore, to protect home products. The government mapped out such a demand-supply program for paper as shown in Table IV-8 for the Second Five-year Development Plan. According to the program, the ratio of self-sufficiency in paper will still remain at a level of 43% even in the 1978-1979 period. In a long-range view, however, we can expect that the paper industry in Indonesia will follow the path which leads to construction of an integrated lumber-paper mill taking advantage of abundant forest resources.

Table IV-7 Major Paper Mills

	Completion	Output in 1973 (t)	Production capacity	Products	Raw Materials
P. N. Kertas Padalarang	Before the Independence	3, 186	5, 600 (5, 400)	Cigarette paper, Drawing paper	Straw, Imported pulp (10%)
P. N. Kertas Leces	- ditto -	11, 251	10, 000 (→ 19, 000 ~ 30, 000)	Printing & writing paper, paper board, wrapping paper	Straw, Imported pulp (10% 20%)
P. N. Kertas Blabak	1960	5, 066	7, 200	Paper board, wrapping paper	Straw, Imported pulp (10% 20%)
Perum Kertas Basuki Rachmat	Before the Independence	9, 330	10, 000 (→ 11, 000)	Printing & writing paper	Bamboo
Perum Kertas Gowa	1967	9, 788	9, 900 (→ 15, 000)	- ditto -	Bamboo
Pabrik Kertas Martapura	1972	1, 555	3, 000	- ditto -	Araucaria (GP), Gumtree scrap Imported pulp (10%)
Pematang Siantar	1962	-	4, 500	Newsprint	Pine tree, Waste paper, Imported pulp

(Note) Figures in parentheses with an arrow (→) indicate production capacity after complition of the plant enlargement plan.

(Source) Prepared by the mission from BAPINDO Annual report and other materials.

(4) Oil refinery

In Indonesia, oil refining is monopolized by PERTAMINA. All pertroleum products except a handful of special ones are sufficiently produced to meet the home demand. In addition, 40 to 50% of the total output of petroleum products, mainly residual oil, are exported. According to the production program of the Indonesian petroleum industry for the period of the Second Five-year Development Plan, which is shown in the Table V-9, it is expected that the home demand for petroleum products will increase year after year at an average annual rate of 14% and the ratio of exports to the total output will decline gradually.

Table IV-9 Petroleum Industry's Production Program during The Second Five-Year Development Plan Period.

(Unit: Million bbl.)

	Crude oil output	Volume of processed crude oil	Home demand for products	Export of products
1974/75	529	118.6	69.0	47.8
1975/76	550	125.7	78.8	47.5
1976/77	620	162.1	89.1	55.7
1977/78	660	174.5	99.7	56.6
1978/79	720	185.0	113.2	58.9

(Source) PERTAMINA

At present, there are nine refining plants throughout the country with the daily refining capacity of 527,000 barrels in all (See Table IV-10), but PERTAMINA plans to change the oil refinery in Plaju into a polypropylene plant, because the Musi River, a sole approach to the refinery for tankers, is becoming unsuitable for navigation.

The most outstanding trend of the petroleum industry in these days is the refining in an intermediate area. At present, two projects are under way in the form of Indonesian-Japanese joint venture.

The first project is to construct a refining and petrochemical production center in Batam Island situated at the north of Malaka Strait, off the coast of Singapore. The Indonesian Government decided to carry out this porject as the first step of the Batam Comprehensive Development Plan. Two Japanese business groups, the one composed of Nissho-Iwai, Daikyo Oil and Maruzen Oil and the

other formed Mitsubishi Corporation and Mitsubishi Oil, expressed a desire to participate in the project and have already obtained PERTAMINA's consent as to basic points.

According to the project, the refinery will start its operation from 1977 with the refining capacity of 100,000 barrels a day. It will be raised to 200,000 barrels a day in 1984 and to 400,000 barrels a day at the final stage. The projected refinery will receive crude oil mainly from oil-producing countries in the Middle East.

The second project aims at constructing an intermediate refining center in Weh Island, off the coast of North Sumatra, in partnership of Sumitomo Shoji Kaisha. The refining center will have a capacity of 100,000 barrels a day in the beginning, and will be expanded to such a scale that having a daily refining capacity of 300,000 barrels in future. The Japanese trading firm is now making a feasibility study with PERTAMINA's consent. It is quite interesting that the company has a plan to induce capital investment from the suppliers of crude oil, that is some of oil-producing countries in the Middle East.

Table IV-10 Oil Refinery Plants in Indonesia

(bbl/d)

	Crude oil processing capacity	Simple topping	Reforming	Actual operation results (in April, 1974)*
1. Lemigas, Jjepu (East Jawa)	4,000	-	-	1,693
2. Pertamina Balik Papan	75,000	-	-	55,383
3. Dumai (Central Sumatra)	100,000	-	7,000	91,750
4. Pakning (Central & Southern Sumatra)	50,000	-	-	40,004
5. Pangkalan Brandan	4,500	-	-	4,636
6. Pladju (South Sumatra)	111,200	-	-	72,138
7. Sungei Gerong	79,000	19,500 ECC	-	50,661
8. Wonokromo (East Jawa)	4,000	-	-	1,755
Subtotal	427,700	19,500	7,000	318,020
9. Nissho-Iwai (Batam Island)	400,000	(1974-1990)		
10. Pertamina-Cilacap	100,000	(1976)		

(Source) World Oil, Pertamina

* On the basis of the quantity of products

(5) Petrochemical industry

The domestic demand for petrochemicals in Indonesia in 1974 is estimated at around 120,000 tons, putting raw materials of both resin and synthetic fiber altogether. The sole petrochemical plant at work in Indonesia is the polypropylene plant constructed in the premises of PERTAMINA's refinery in Plaju in 1973. The plant uses residue gas supplied by the refinery as materials, and its production capacity is rather small, remaining at the level of 20,000 tons a year. It is estimated, therefore, that the current rate of dependance on imports exceeds 90%, taking account of imports in the form of finished goods.

The feasibility study conducted during the period of the First Five-year Development Plan came to a conclusion that it is possible to construct a petrochemical complex which produces at least the following ten products: high-density polyethylene, low-density polyethylene, vinyle chloride monomar, polyvinyl chloride, polystyrene, polypropylene, DPC, terephthalic acid, ethylene glycoal and caprolactum. According to the UNIDO's forecast, the demand for raw materials of resin (i.e., high-density polythylene, low-density polyethylene, polyvinyle chloride, polypropylene, ethylene glycol) will increase at an average annual rate of 23% to reach the level of 248,000 tons in 1980.

At present, the under-mentioned two large-scale projects are conceived, taking account of the increasing demand for petrochemical products, and being supported by the government's policies of encouraging establishment of integrated production system for synthetic fiber as well as export of industrial materials made from petroleum rather than export of petroleum itself as fuel.

a) Project of an olefin complex

This project is to construct a petrochemical complex with a capacity of 450,000 tons in terms of ethylene production, making use of natural gas resources in North Sumatra. The initial plan was as shown in Table IV-5. The project was laid on the table, however, as of May 1975, to undergo a review. According to the recent information, however, it is said that Dow Chemical decided to participate in the project aiming at production of ethylene. Anyway, it is little likely that the projected complex will start its operation before 1980.

b) A project of aromatics center

This project aims at producing BTX making use of naphtha. According to the initial plan, a plant would have been constructed in South Sumatra by 1978 at the cost of around $ 500 million, but it is now put under review.

The Indonesian Chemical Co. was established jointly by PERTAMINA, Teijin and Tomen in 1974 as a part of this project.

The company plans to produce paraxylene (100,000 tons a year), DMT (120,000 tons a year) and raw materials of polyester (10,000 tons a year) in a plant to be built with an investment of $ 156 million.

(6) Iron & steel industry

The apparent consumption of iron and steel increased at an average annual rate of more than 23% from approximately 500,000 tons in 1969 to about 1,400,000 tons in 1974. However, the apparent per capita consumption still remains at a low level chalking up 11kg, and the demand structure is none other than that characterestistic of developing nations, as three quarters of the total demand are created by civil engineering and construction.

The output of secondary products of iron and steel has increased to such a level that can afford to meet the home demand with a surplus, part of which is exported to the Middle East. There is no integrated steel mill in Indonesia yet, because, needless to say, the domestic demand is too small to have it.

However, the plan for constructing an integrated steelworks (Krakatau Steel) in the Cilegon Area in Merak Peninsula, West Java, for manufacturing steel by the direct gas reduction process, became more concrete shortly after the start of the Second Five-year Period, as the problem of production scale became surmountable due to commercialization of the direct gas reduction process. The Indonesian government is pushing forward the plan with a view to constructing an iron and steel production center in Merak Peninsula, making the above-mentioned steel mill a core. The projected annual production capacity was reduced from initially planned 2,000,000 tons to 500,000 tons, because PERTAMINA, which directs management of P.T. Krakatau Steel, came into financial difficulties. The government also had to put off a plan to construct a steel mill in Lampon which is the second steelworks for manufacturing steel by the direct gas reduction process after the Cilegon Steelworks. Major definite

steelworks projects at this moment are listed in Table IV-11.

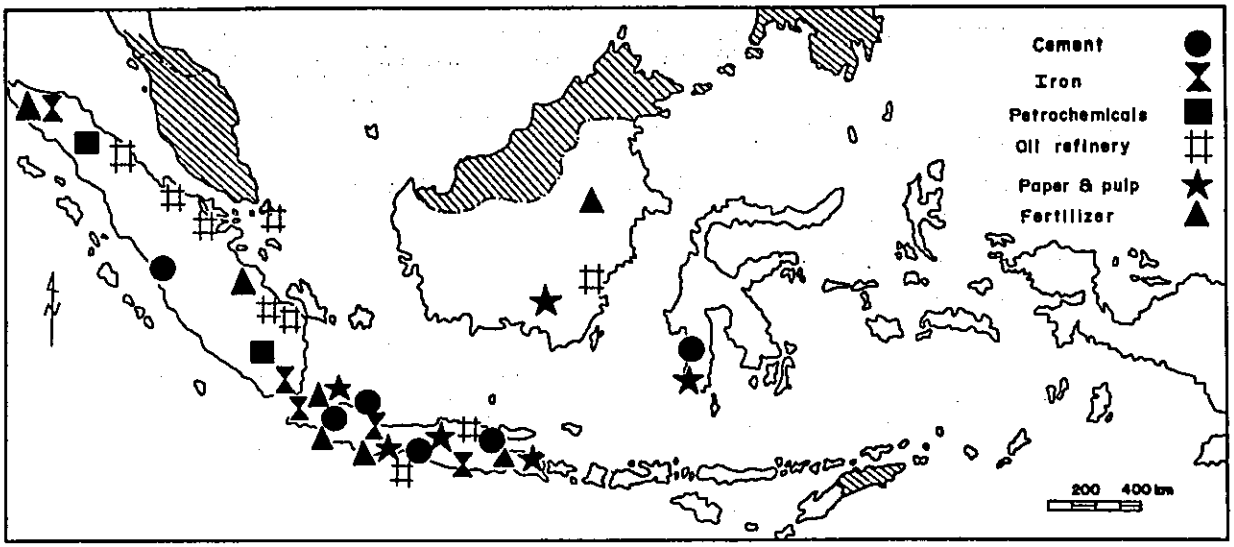
Geographical distribution of these key industries discussed in the preceding paragraphs is shown in the Fig. IV-3. As is seen in the map, there are apparent geographical concentration, both of in the areas reserves of natural gas and other resources exist area and in Java where big market and industrialization have developed.

Table IV-11 Major Iron & Steel Projects

Project	Promoting organizations	Site	Start of operation	Remarks
Steel-making by the direct gas reduction process	P. T. Krakatau Steel/ Ferrostaal Group (F. R. G.)	Cilegon, West Jawa	1978-79	Annual output of steel by the direct gas reduction process: 500,000 t (2,000,000 t) Iron & steel Crude steel Plant: The order was accepted by Krupp Steel bars Feed: Natural gas The construction of a pipeline of 220 kilometers long from the oil field of Ardjune in West Jawa. Pipeline: The order was accepted by Marubeni and Nippon Steel Corp.
Plant for manufacturing long products	P. T. Krakatau Steel	- ditto -	In operation	Wire drawing Oxygen plant: Projected with the aid of U. S. S. R. Steel bar works: Making use of materials stored by Cilegon Steelworks. (Reconstruction is under way)
Manufacture of cold rolled sheets	P. T. Krakatau Steel/ Marubeni, Nippon Steel Corp., etc.	Anyer, West Jawa	1977	Output of cold rolled sheets: 350,000 t/year Hot rolled steel strips to be used as materials are imported from Japan.
Steel-making by the direct gas reduction process	P. T. Krakatau Steel taking a leading part of the project	Lampon (South Sumatra) Ache (North Sumatra) Jogjakarta (Central Jawa)	Postponed	Originally planned as the second steel mill coming after the Cilegon Steelworks, but the plan was indefinitely postponed because of PERTAMINA's financial difficulties.
Manufacture of steel plates & sheets	P. T. Krakatau Steel	Cilegon	Postponed	Output of steel plates & sheets: 1,000,000 t/year Indefinitely postponed by the above-mentioned reason.

(Source) Prepared by the mission from various sources

Fig. IV–3 Regional Distribution of Key Industries



2. Present Situations of Industrialization in Ujung Pandang Territory

1) The level of Industrial Development in the Province of South Sulawesi

According to the survey conducted by the government of the Provinco of South Sulawesi in 1973, there were 1,495 manutacturing enterprises (those with more than 4 employees respectively and using the power, or those with more than 10 employees respectively but not using the power). These enterprises, as of 1973, altogether employed 25,684 laborers, and attained the production of 11,726 million rupiahs and created value added of 5,383 million rupiahs.

These figures, when compared to each of the corresponding national figures, account respectively for 5.5% (number of enterprises), 2.8% (number of employees), 1.1% (amount of production) and 1.3% (amount of the value added).
The population of South Sulawesi in the same year was 5,355 million or 4.2% of the total population. As far as the above-mentioned industrial indexes are concerned, the only one which is higher than 4.2% was the index for the number of enterprise, and all other indexes such as those for employment, production and added value are much lower than 4.2%.

Table IV-12 Outline of the Industrial Development in South Sulawesi

	The whole country (A)	South Sulawesi (B)	B/A x 100 (%)
Population (thousand)	120,088	5,355	4.2
Industrial production (million rupiahs)	1,071,818	11,726	1.1
Value added (million rupiahs)	402,941	5,383	1.3
Number of enterprises	27,184	1,495	5.5
Number of employees	931,991	25,684	2.8

(Source) Prepared by the mission from the materials of Central Bureau of Statistics and the provincial government of South Sulawesi.

As seen from the above statistics, the productivity of the enterprises in the Province of South Sulawesi has remained at low levels. For example, the amount of production per enterprise in the Province of Sourth Sulawesi was 7.8 million rupiahs, whereas the national average of the same was 39.4 million rupiahs. That is to say, it is no more than one fifth of the national average. This perhaps can be attributed to the facts that in South Sulawesi, the number of employees per enterprise was 17.1 which was about a half of the national average and the productivity measured in terms of the production per employee was 0.46 million rupiahs which was 40% of the national average. The smaller scale and lower productivity which are common to the enterprises in South Sulawesi seems to have something to do with the fact that the industries in this province are mainly the indigenous industries. For example, whereas the national average of the ratio between the modern industry and such indigenous industy is estimated to be about 7 to 3, that of South Sulawesi is regarded to remain 2 to 8.

Table IV-13 Index of Productivity for the Enterprises in the Province of South Sulawesi

	National	South Sulawesi
Number of employees per enterprise	34.3	17.1
Amount of production per employee (million rupiahs)	1.15	0.46
Value added per employees (million rupiahs)	0.43	0.21
Output per enterprise (million rupiahs)	39.4	7.8
Value added per enterprise (million rupiahs)	14.8	3.6

(Source) Data prepared by the mission.

The per capita amount of industrial production or the same of value added can be used as the index to indicate the general level of the industrialization.

In the case of Indonesia, the per capita amount of industrial production was 8,501 rupiahs (about 20.5 dollars) and the same of value added, 3,129 rupiahs (about 7.5 dollars) in 1973. And the general industrial development level of Indonesia as a whole is reflected by these figures. While, in South Sulawesi, the per capita industrial production was 2,191 rupiahs (about 5.2 dollars) and the same of value added, 1,005 rupiahs (about 2.4 dollars), that is, 26% and 32% of the nation's averages respectively. In other words, the level of industrialization in South Sulawesi can be said to be about one third of the nations average.

Fig. IV—4 The level of Industrial development in the Province of South Sulawesi (manufacturing sector)

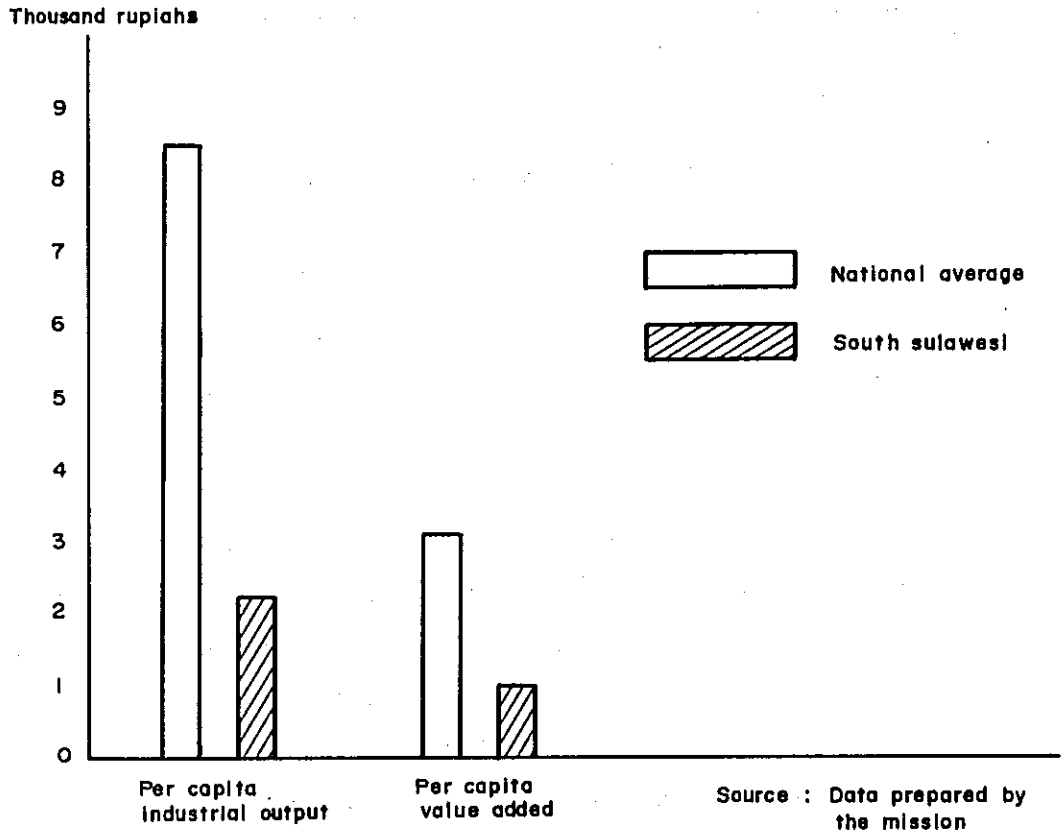


Table IV-14 Comparison of Various Industrial Indexes of the Province of South Sulawesi with National Indexes

	National	South Sulawesi	(%)
Population (thousand)	126,088	5,355	4.2
Industrial output (million rupiahs)	1,071,818	11,726	1.1
Industrial value added (million rupiahs)	402,941	5,383	1.3
Number of enterprises	27,184	1,495	5.5
Number of employees	931,991	25,684	2.8
Per capita output (rupiahs)	8,501	2,191	25.8
Per capita value added (rupiahs)	3,129	1,005	32.1
Output per enterprise (million rupiahs)	39.4	7.8	19.8
Value added per enterprise (million rupiahs)	14.8	3.6	24.3
Output per employee (million rupiahs)	1.15	0.46	40.0
Value added per employee (million rupiahs)	0.43	0.21	49.0
Number of employees per enterprise	34.3	17.1	50.0

(Source) Data prepared by the mission.

2) Progress in recent years

In recent years, the industrial development of the Province of South Sulawesi has made a remarkable progress. For example, the amount of industrial production which was about 7.6 billion rupiahs in 1968 has reached about 29.6 billion rupiahs, a little less than four times that of 1968. The average annual growth rate during this period has marked a tremendously high rate of 25.4%. In this connection, we refer to the average annual growth rate of GDP of Indonesia for the same period which was about 7% and that of industrial production which was about 13%. Thus, as far as the rate of growth is concerned, South Sulawesi is the province which attracts our attention. As seen from Table IV-15, the industries whose average annual growth rates for the period of 1968 to 1974 have surpassed 25.4% - the average growth rate of all industries for the same period-are the following three industries i.e. the chemical industry (including the cement industry), basic industry (mainly ferreous metal products industry) and maritime industry (mainly shipbuilding and ship repair industry) which have marked such high growth rates of 54.6%, 88.6% and 132.1% respectively. On the other hand, the light industry, home industry and textile industry have also marked the high growth rates of 21.6%, 22.2% and 17.7% respectively, but all of these rates are below the average annual growth rate of all industries.

Table IV-15 Industrial Production in Recent Years

(Unit: Million rupiahs)

	1968	1969	1970	1971	1972	1974	Average annual growth rate (%)
Light industry	6,471.3	9,244.8	10,045.5	10,106.4	11,978.2	20,926.4	21.6
Home industry	195.2	247.6	462.4	462.4	815.6	651.3	22.2
Textile industry	627.7	507.1	327.1	349.1	770.2	1,670.9	17.7
Chemical industry	313.9	987.3	1,193.1	1,382.7	2,064.4	4,299.0	54.6
Basic industry	-	-	137.1	704.9	1,216.2	1,736.4	88.6
Maritime industry	-	-	-	-	63.8	343.9	132.1
Total	7,608.1	10,987.6	12,165.4	13,005.5	16,908.4	29,627.9	25.4

(Source) Data compiled by the mission from the data furnished by the provincial government of South Sulawesi

(Note) In 1973, the survey was conducted only on limited enterprises and thus the data for this year is not listed in order to maintain the consistency of the contents of the data.

As seen from the foregoing, the disparity in the growth rate between different industries is so great that a rapid change is taking place in the industrial structure itself. As seen from Table IV-16 showing the trend in the relative weight of each industry, the ratio of the production of the indigenous industry including the light industry, home industry and textile industry (mainly the silk fabrics industry in the Kabupaten Wajo) has continued to fall from 95.9% in 1968 to 78.4% in 1974. While, the rate of the Production by the modern industry such as the chemical industry, basic industry and maritime industry has tended to increase.

Table IV-16 Change in the Production of the Industries of the Six Categories

(Unit: %)

	1968	1969	1970	1971	1972	1974
Light industry	85.1	84.1	82.6	77.7	70.8	70.6
Home industry	2.5	2.3	3.8	3.6	4.8	2.2
Textile industry	8.3	4.6	2.7	2.7	4.6	5.6
Chemical industry	4.1	9.0	9.8	10.6	12.2	14.5
Basic industry	-	-	1.1	5.4	7.2	5.9
Maritime industry	-	-	-	-	0.4	1.2
Total	100	100	100	100	100	100

(Source) Data compiled by the mission from the data furnished by the provincial government of South Sulawesi.

3) Industrial structure and the characteristics of industries

According to the industrial survey conducted in 1974, 3,970 enterprises were located in the Province of South Sulawesi, employed 33,229 workers, and attained the production in the amount of 29.6 billion rupiahs. Also, the investment made in the same year amounted 22.4 billion rupiahs. These figures by the six categories of the industry are as shown in Table IV-17.

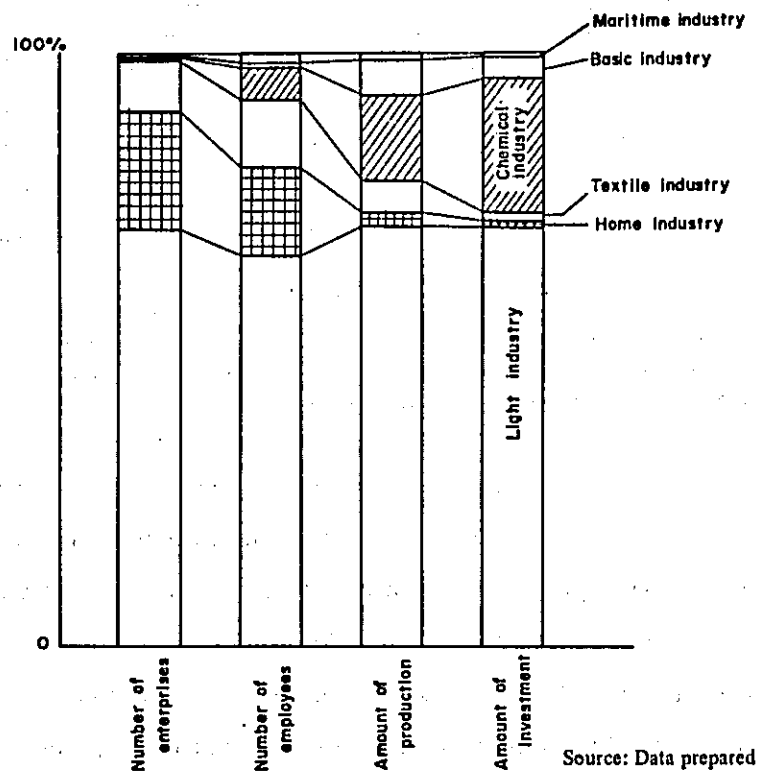
Table IV-17 Status of Industries of the Six Categories (1974)

	Number of enterprises	Number of employees	Production (million Rp.)	Amount of investment (million Rp.)
Light industry	2,796	21,803	20,926	15,733
Home industry	778	5,005	651	285
Textile industry	354	3,840	1,671	305
Chemical industry	5	1,795	4,299	4,937
Basic industry	5	211	1,736	1,008
Maritime industry	32	575	344	88
Total	3,970	33,229	29,628	22,356

(Source) Data compiled by the provincial government of South Sulawesi.

Fig. IV-5 shows the percentage of each industry the following factors: the number of enterprises, number of employees, amount of production and investment. From this chart we can see the following:

Fig. IV–5 Structure of industry in the Province of South Sulawesi



Source: Data prepared by the mission.

(1) The light industry is still the most important of all in South Sulawesi.

(2) There are some industries other than the light industry, in which are employed a relatively large number of employees, and also some whose amount of production and investment are relatively large (The examples of the former are the home industry and textile industry, while the chemical industry and basic industry are the examples of the latter).

In the above, the condition (2) implies that the industry in the Province of South Sulawesi has the dual structure. For example, this is reflected on the following facts:

The characteristics of the individual industries viewed in terms of the per-enterprise and per-employee figures for the amount of production, amount of investment and number of employees are as shown in Table IV-18.

Table IV-18 Characteristics of Individual Industries Viewed in Terms of the Indexes Concerning the Individual Enterprises

	Amount of production		Amount of investment		Number of employee
	Per enterprise (million Rp.)	Per employee (million Rp.)	Per enterprise (million Rp.)	Per employee (million Rp.)	Per enterprise
Light industry	7.48	0.96	5.62	0.72	7.80
Home industry	0.84	0.13	0.37	0.06	6.43
Textile industry	4.72	0.44	0.86	0.08	10.85
Chemical industry	859.80	2.39	994.60	2.75	359.00
Basic industry	347.20	8.23	201.60	4.78	42.20
Maritime industry	10.80	0.60	2.75	0.15	17.97
	7.50	0.89	5.63	0.67	8.37

(Source) Data compiled by the mission from the data furnished by the provincial government of South Sulawesi.

The industrial indexes of the Province of South Sulawesi measured by the weighted average method are 7.5 million rupiahs for the amount of production per enterprise, 5.63 million rupiahs for the amount of investment per enterprise and 8.37 persons for the number of employees. Also, the same measured in terms of per-employee unit are 0.89 million rupiahs for the amount of production and 0.67 million rupiahs for the amount of investment. Naturally, such weighted averages are largely affected by the various industrial indexes of the light industry

whose relative weight in all industries is about 70%; however, the industries can be divided into three groups, according to the weighted averages, as follows:

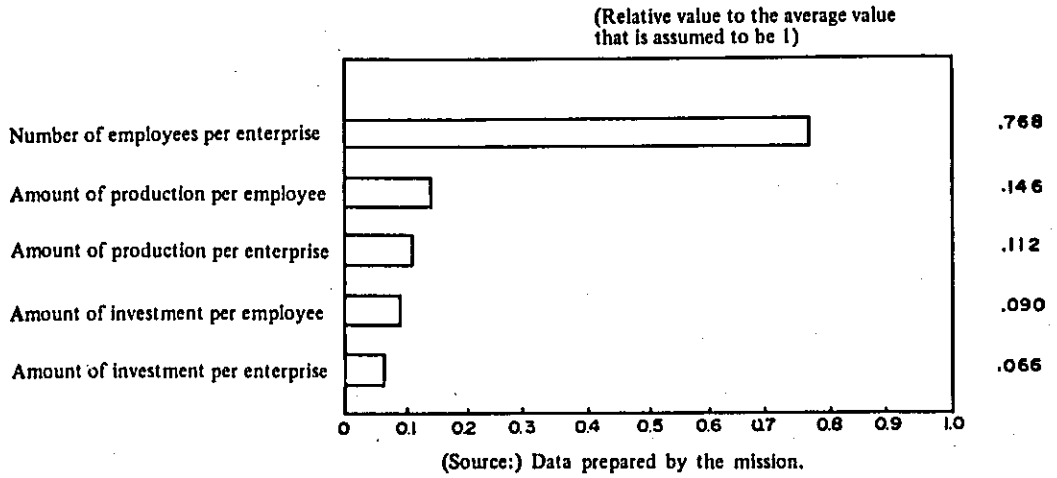
(1) Extremely small industry (ex. home industry).

(2) Industry having the average scale of production (ex. light industry, textile industry, maritime industry).

(3) Large industries (ex. chemical industry and basic industry).

The comparison of the per-employee and per-enterprise indexes of the home industry with the averages of all industries is as shown in Fig. IV-6 and according to this chart, it is clear that the industrial indexes, except the number of employees per enterprise, are much lower than the averages.

Fig. IV–6 Various indexes per enterprise of home industry



(Source:) Data prepared by the mission.

On the other hand, all indexes of both the chemical industry and basic industry are far above the averages, especially, the indexes per enterprise are remarkably higher than the averages.

As seen from the above, various kinds of industries having different characteristics such as the home industry consisting of the business units of extremely small scale and low productivity, the labor-intensive industry such as the light industry, textile industry and maritime industry, and the capital-intensive and large-scale industry such as the chemical industry and basic industry are located in the Province of South Sulawesi; however, the slow progress of industrial development in this province has been caused by the fact that the chemical and basic industries are fewer in this province than in other territories.

Table IV-19 Various Indexes per Enterprise for Chemical Industry and Basic Industry

(Relative value to the average value that is assumed to be 1)

	Chemical industry	Basic industry
Amount of production per enterprise	114.64	46.20
Amount of investment per enterprise	176.60	35.81
Number of employees per enterprise	442.89	5.04
Amount of production per employee	2.68	9.25
Amount of investment per employee	4.10	7.13

(Source) Data prepared by the mission.

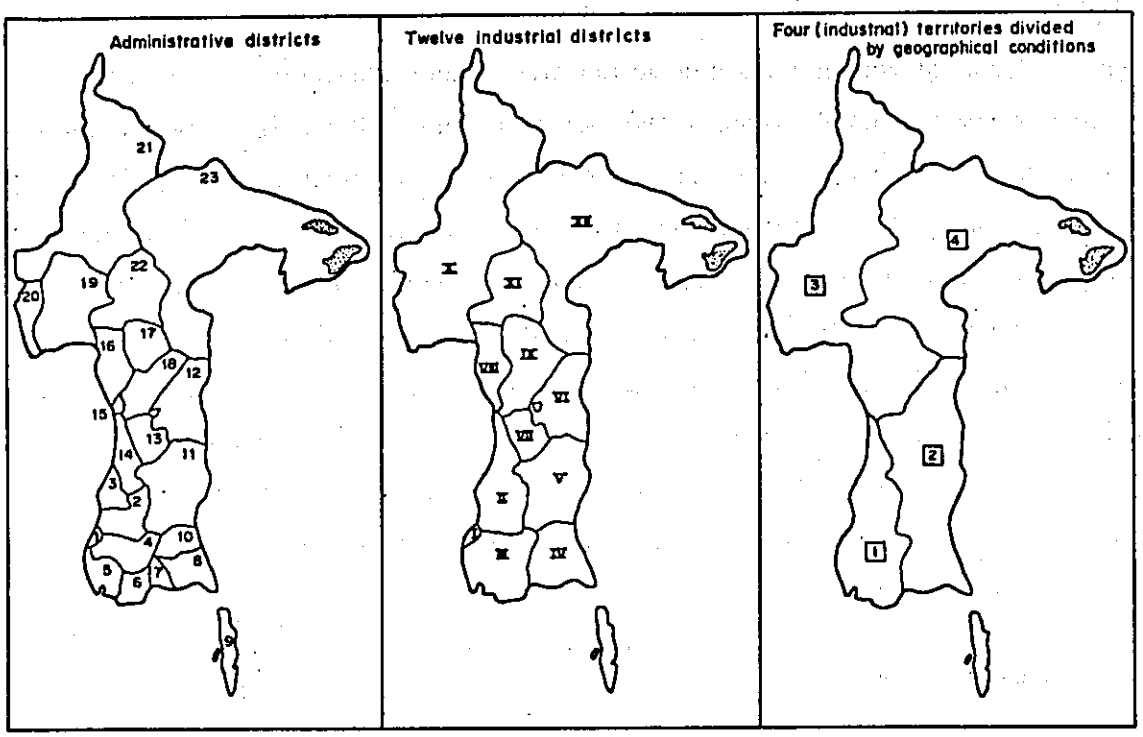
4) Geographical distribution of the industries

In this section, we deal with the geographical distribution and the trends of development of various industries in the Province of South Sulawesi.

In analyzing the above conditions, we have referred to the "Inventarisasi Ulanguan Industri Tahun 1973" (Industrial Survey of 1973) prepared by the Bureau of Industry of the Provincial Government of South Sulawesi. In this statistic, (1) the enterprises as the objects of the survey have been selected according to the two criteria i.e. those falling under the category of the enterprise with more than 4 employees and using power, and those falling under the category of the enterprise with more than 10 employees but not using power; (2) classification of the enterprises by the category of business has been made according to the ISIC code; and (3) the division of industrial district has been made basically according to the administrative district, but sometimes two to four administrative districts are combined as a group, and the whole province is eventually divided into 12 industrial districts.

The mission have given the code Nos. I through XII to the above industrial districts. Also, the mission has divided the Province of South Sulawesi into four territories in consideration of the geographical conditions and these territories are numbered [1], [2], [3] and [4] respectively. The relation of these territories with the administrative districts is as shown in Fig. IV-7.

Fig. IV–7 Division of the Province of South Sulawesi into industrial districts



K.M. Ujung Pandang (1)	I	1
Maros (2) Pangkep (3) Barru (14)	II	
Gowa (4) Takalar (5) Jenepont (6)	III	
Bantaeng (7) Bulukumba (8) Selayar (9) Sinjai (10)	IV	2
Bone (11)	V	
Wajo (12)	VI	
Soppeng (13)	VII	
K.M. Pare 2 (15) Pinrang (16)	VIII	3
Enrekang (17) Sidrap (18)	IX	
Polmas (19) Majene (20) Mamuju (21)	X	
Tana Toraja (22)	XI	4
Luwu (23)	XII	

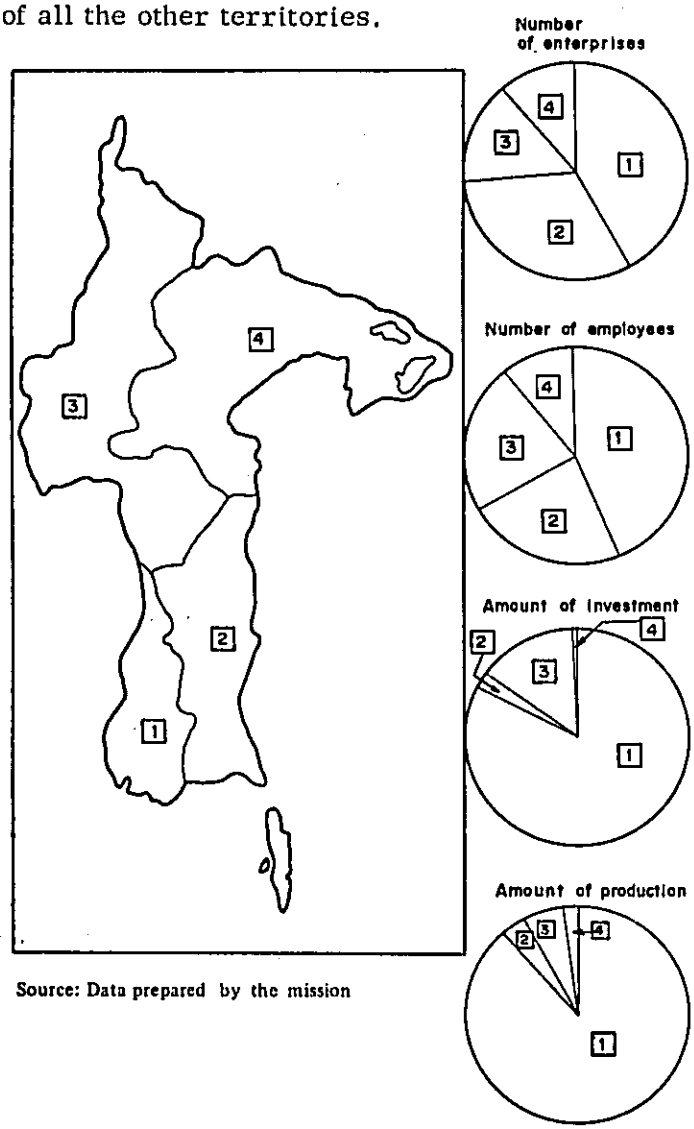
The conditions of the industrial development in the Province of South Sulawesi viewed as to each of the four geographically-divided industrial territories are as follows:

(1) The most conspicuous characteristics of the industrial structure of the province are the development of the industries in territory [1], and the contrastingly underdeveloped conditions of the industries in territories [2], [3] and [4].

(2) The 42% of the total number of enterprises, 43% of the total number of employees and 89% of the total production are concentrated in territory [1].

As for the number of enterprises and the number of employees, the weight of territories [2] and [3] are considerably large, and the figures for territorries [2] and [3] combined are larger than those of territory [1]. Territory [4] is considered most underdeveloped as far as the level of industrialization is concerned, as seen from all the industrial indexes of the territory whose levels are much lower than those of all the other territories.

Fig. IV–8 Development of industry by territory



Source: Data prepared by the mission

Table IV-20 Development of Industry by Territory

	Number of enterprises		Number of employees		Amount of investment (million Rp.)		Amount of production (million Rp.)	
[1]	631	42.2%	11,209	43.9%	18,047	81.4%	10,395	88.7%
[2]	476	31.8	5,928	23.3	448	2.0	439	3.7
[3]	224	15.0	5,909	22.5	3,556	16.0	716	6.1
[4]	165	11.0	2,638	10.3	140	0.6	176	1.5
	1,496	100	25,684	100	22,191	100	11,726	100

(Source) Data prepared by the mission.

(3) Where the industrialization of any given territory has progressed to a considerable extent, there is a general tendency that the amount of production and the amount of investment increase in proportion to the number of enterprises or the number of employees, but where the industrialization of any given territory remains at low level, the number of enterprises or the number of employees tends to show mere potentiality of the industrial activities in the territory.
In the case of the Province of South Sulawesi, the industries spread over the considerably wide area in the province as seen from the indexes such as the number of enterprises and the number of employees, but when such industries are viewed by the indexes concerned with the industrial activities such as the amount of investment or the amount of production, the spread of the industries throughout the province is very much limited.

(4) The industrialization of the Province of South Sulawesi, has been continuing to progress at a rapid rate, but such rapid progress has been seen only in the territory [1] . Consequently, there is an extremely large productivity gap between industries in the territory [1] and those in the remaining territories. Fig. IV-9 shows the comparisons of the scale of enterprise (number of employees per enterprise), productivity of enterprise (amount of production per enterprise) and the labor productivity (amount of production per employee) between the territories. As seen from the chart, the average scale of the enterprise in the territory [1] is slightly higher than the average of whole South Sulawesi, while the average labor productivity is much higher than the provincial average and thus the average productivity of enterprise is also high. In the case of the

enterprises in territory [3] , the average scale of enterprise is considerably higher than that of territory [1] , but the average productivity remains at the level which is slightly higher than those of the territories [2] and [4] .

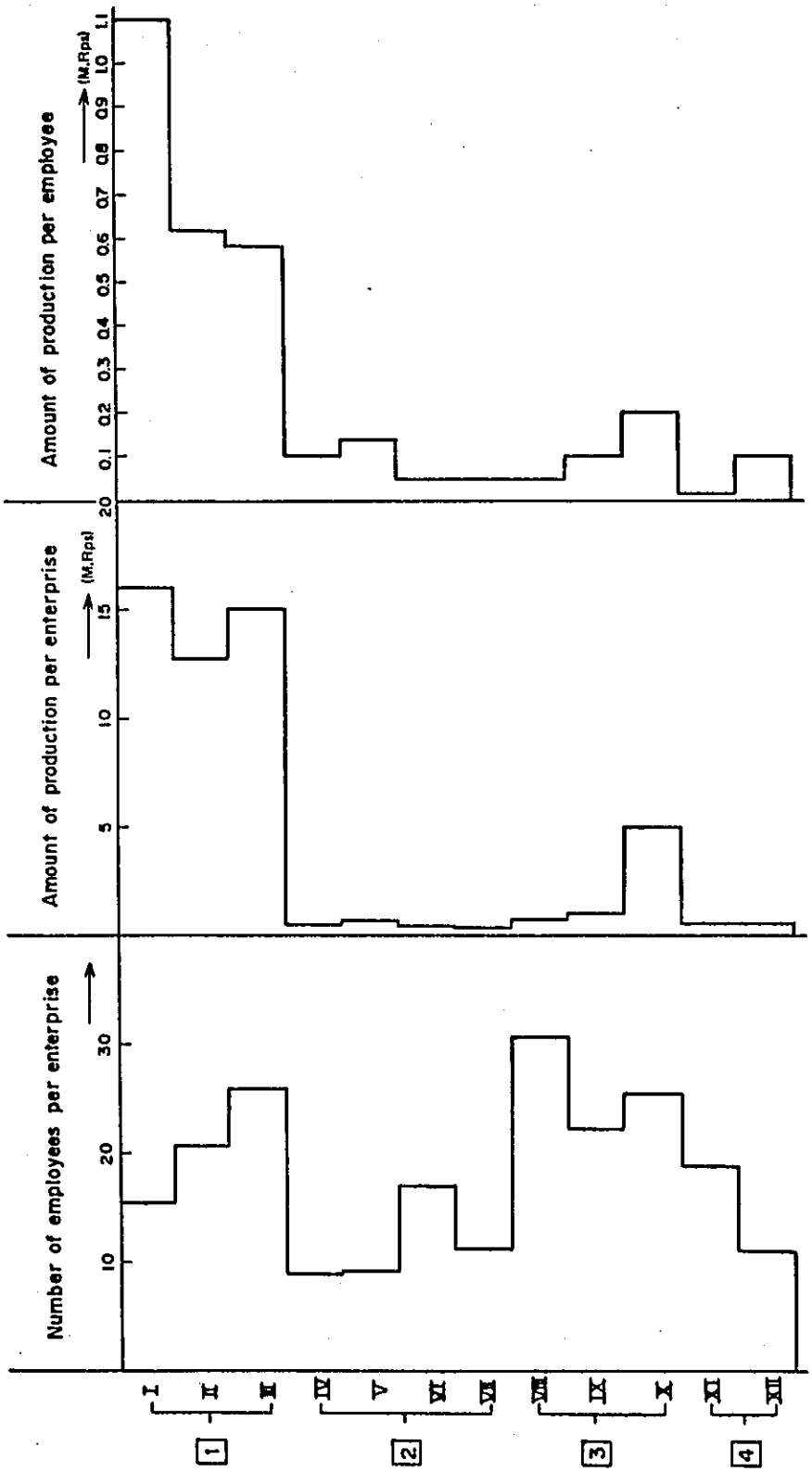
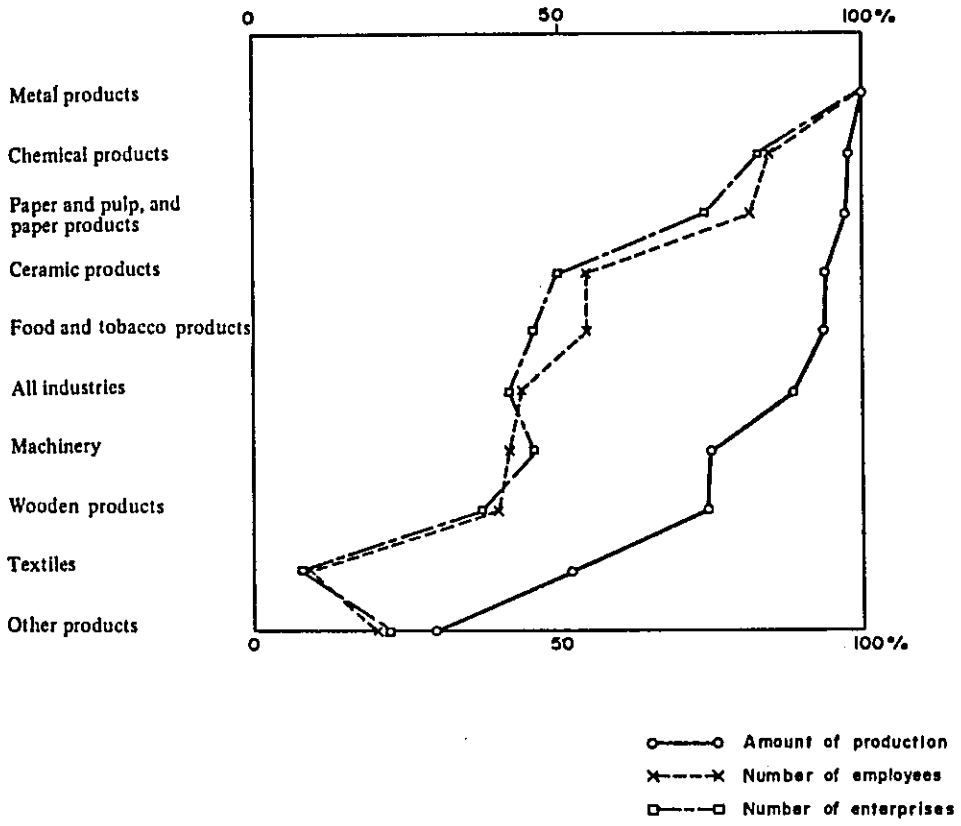


Fig. IV-9 Scale of industry and productivity by territory

Source: Data prepared by the mission.

(5) The concentration of the industries by the categories of the industry in the territory [1] is as shown in Fig. IV-10. In terms of the amount of production, a high concentration of the industries is seen in the territory [1]. For example, more than 75% of the following industries concerned with the food products, tobacco, Wooden products, paper & pulp and paper products, chemical products, ceramic products, metal products and machines is concentrated in the territory [1]. The only category of the industry for which the territory [1] is behind the other territories is the category of the industry classified as the other industries. The textile industry, though not overwhelmingly, shows the concentration of 50%, which is the highest when compared with those of other territories.

Fig. IV—10 Concentrations in the amount of production, number of enterprises and number of employees in territory [1]



Source: Data prepared by the mission

As seen from the foregoing, it is clear that the territory [1] is playing a leading role in various industrial activities and this seems to be attributable to the factors of the individual industries which we have already discussed in (4).

In the next place, we are going to discuss the geographical distribution

of the industries based on the 12 industrial districts of South Sulawesi. We have prepared the matrix of each district as to the number of enterprise, number of employees and the amount of production.

Table IV-22 shows actual figures; Table IV-23 shows the percentages for individual districts assuming that the total of all industries is 100; Table IV-24 shows the percentages for individual industries assuming that the total of all districts is 100. In these tables, the largest figure in each row or column is shown in a rectangular frame. For example, in Table IV-23, the figure in the rectangular frame shows the figure by which the district concerned was ranked first among all districts, and in Table IV-24, the figure in the rectangular frame shows the figure by which the industry concerned was ranked first among all industries.

Table IV-21 Shares of the Number of Enterprises, Number of Employees and Amount of Production by the Categories of Industry

(%)

	Industrial territory \ Category of industry	Food and tobacco	Textile	Wooden products	Paper, pulp and paper products	Chemical products	Glass and ceramic products	Metal products	Machinery	Other products	Total
Number of enterprises	①	46.0	7.9	37.5	74.2	92.8	50.0	100.0	55.7	21.8	42.2
	②	40.1	61.4	27.9	5.1	3.6	20.3	0.0	15.8	34.6	31.8
	③	13.3	15.6	13.8	15.6	3.6	15.4	0.0	20.6	5.4	15.0
	④	3.6	15.1	20.8	5.1	0.0	14.3	0.0	7.9	38.2	11.0
Number of employees	①	54.7	9.4	40.0	91.5	94.7	54.5	100.0	42.1	20.4	43.9
	②	30.7	41.0	20.3	1.9	2.2	10.2	0.0	11.4	20.5	23.3
	③	11.7	39.7	13.0	5.3	3.1	24.9	0.0	34.5	2.2	22.5
	④	2.9	9.9	26.7	1.3	0.0	10.4	0.0	12.0	56.9	10.3
Amount of production	①	93.5	51.8	74.9	97.6	98.4	93.6	100.0	75.3	29.6	88.7
	②	3.3	11.8	9.4	0.4	1.4	2.1	0.0	4.5	28.9	3.7
	③	2.9	33.9	7.6	1.1	0.2	2.2	0.0	18.2	4.2	6.1
	④	0.4	2.5	8.1	0.9	0.0	2.2	0.0	2.0	37.3	1.5

(Source) Data prepared by the mission.

Table IV-22 Industrial Structure by District

Number of enterprises

	Industrial district \ Classification of industry code. No	Food and tobacco 31	Textiles 32	Wooden products 33	Paper, pulp and paper products 34	Chemical products 35	Glass and ceramic products 36	Metal products 37	Machinery 38	Other products 39	Total
[1]	I.	149	15	61	40	26	27	3	126	12	459
	II.	35	1	1	1		14		23		75
	III.	8	1	1	2		82		3		97
[2]	IV.	4	14	14		1	9		12	16	70
	V.	23		21	2		30		10		86
	VI.	3	108	11	1				19	3	145
[3]	VII.	149	12	1			11		2		175
	VIII.	27	5	6	3	1	7		19	1	69
	IX.	10	14	8	3		19		13		67
[4]	X.	23	15	9	3		12		24	2	88
	XI.	1	32	13	1		25		14	14	100
	XII.	15	1	22	2		10		8	7	65
	Total	447	218	168	58	28	246	3	273	55	1,496

Number of employees (person)

	Industrial district / Classification of industry code. No	Food and tobacco 31	Textiles 32	Wooden products 33	Paper, pulp and paper products 34	Chemical products 35	Glass and ceramic products 36	Metal products 37	Machinery 38	Other products 39	Total
1	I.	2,960	478	835	586	306	442	352	968	146	7,073
	II.	448	10	15	13		845		230		1,561
	III.	309	58	11	779		1,351		39		2,547
2	IV.	19	132	104		7	106		125	139	632
	V.	214		225	18		300		30		787
	VI.	87	2,090	99	11				169	8	2,464
	VII.	1,768	173	8			86		10		2,045
3	VIII.	204	825	29	26	10	619		278	16	2,007
	IX.	137	398	126	27		346		492		1,526
	X.	452	1,099	123	27		235		242		2,178
4	XI.	8	569	317			389		263	335	1,881
	XII.	187	10	256	20		114		87	73	747
	Total	6,793	5,842	2,148	1,507	323	4,833	352	2,933	717	25,448

Amount of production (Million rupiahs)

Industrial district	Classification of industry code. No	Food and tobacco 31	Textiles 32	Wooden products 33	Paper, pulp and paper products 34	Chemical products 35	Glass and ceramic products 36	Metal products 37	Machinery 38	Other products 39	Total
[1]	I.	4,841.2	270.4	414.6	145.2	269.7	95.5	1,170.5	703.6	24.7	7,935.4
	II.	7.2	1.7	1.0	1.2		975.2		7.5		993.8
	III.	18.9	186.2	5.4	1,205.8		37.1		16.8		1,470.2
[2]	IV.	1.5	3.2	13.6		3.9	7.4		21.8	20.0	71.4
	V.	57.4		27.8	4.8		16.4		8.4		114.8
	VI.	1.5	101.1	10.1	1.2				12.1	4.2	130.2
	VII.	115.6	0.2	1.8			1.6		0.2		119.4
[3]	VIII.	48.5	2.6	6.4	4.4	0.5	10.8		45.6	0.6	119.4
	IX.	25.9	4.1	15.0	3.7		0.8		98.3		147.8
	X.	75.7	293.1	21.5	7.2		13.9		31.9	3.4	446.7
[4]	XI.	1.1	21.6	16.9	8.1		19.7		17.1	16.4	100.9
	XII.	18.2	0.9	28.8	4.3		5.6		3.0	14.5	75.3
	Total	5,212.7	885.1	562.9	1,385.9	274.1	1,184.0	1,170.5	966.3	83.8	11,725.3

Figure in rectangular frame shows the figure by which the number of enterprises in the industry concerned is ranked first among all districts.

(Source) Data prepared by the mission.

Table IV-23 Industrial Structure by District

Number of enterprise (%)

Industrial district	Classification of industry code. No	Food and tobacco 31	Textiles Textiles 32	Wooden products 33	Paper, pulp and paper products 34	Chemical products 35	Glass and ceramic products 36	Metal products 37	Machinery 38	Other products 39	Total
1	I.	33.4	6.9	36.3	69.1	92.8	11.0	100.0	46.2	21.8	30.7
	II.	7.8	0.5	0.6	1.7		5.7		8.4		5.0
	III.	1.8	0.5	0.6	3.4		33.3		1.1		6.5
2	IV.	0.9	6.4	8.3		3.6	3.7		4.4	29.1	4.7
	V.	5.1		12.5	3.4		12.1		3.7		5.7
	VI.	0.7	49.5	6.5	1.7				7.0	5.5	9.7
	VII.	33.4	5.5	0.6			4.5		0.7		11.7
3	VIII.	6.0	2.3	3.6	5.2	3.6	2.8		7.0	1.8	4.6
	IX.	2.2	6.4	4.8	5.2		7.7		4.8		4.5
	X.	5.1	6.9	5.4	5.2		4.9		8.8	3.6	5.9
4	XI.	0.2	14.6	7.7	1.7		10.2		5.1	25.5	6.7
	XII.	3.4	0.5	13.1	3.4		4.1		2.8	12.7	4.3
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Number of employees (%)

Industrial district \ Classification of industry		Food and tobacco 31	Textiles 32	Wooden products 33	Paper, pulp and paper products 34	Chemical products 35	Glass and ceramic products 36	Metal products 37	Machinery 38	Other products 39	Total
1	I.	43.6	8.7	38.8	38.9	94.7	9.1	100.0	33.0	20.4	27.8
	II.	6.6	0.2	0.7	0.9		17.5		7.8		6.1
	III.	4.5	1.0	0.5	51.7		27.9		1.3		10.0
2	IV.	0.2	2.3	4.8		2.2	2.2		4.3	19.4	2.5
	V.	3.2		10.5	1.2		6.2		1.0		3.1
	VI.	1.3	35.7	4.6	0.7				5.8	1.1	9.7
	VII.	26.0	3.0	0.4			1.8		0.3		8.0
3	VIII.	3.0	14.1	1.4	1.7	3.1	12.8		9.5	2.2	7.9
	IX.	2.0	6.8	5.9	1.8		7.2		16.7		6.0
	X.	6.7	18.8	5.7	1.8		4.9		8.3		8.6
4	XI.	0.1	9.7	14.8			8.0		9.0	46.7	7.4
	XII.	2.8	0.2	11.9	1.3		2.4		3.0	10.2	2.9
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Amount of production (%)

Industrial district		Classification of industry code. No	Food and tobacco 31	Textiles 32	Wooden products 33	Paper, pulp and paper products 34	Chemical products 35	Glass and ceramic products 36	Metal products 37	Machinery 38	Other products 39	Total
1	I.		92.9	30.6	73.7	10.5	98.4	8.1	100.0	72.8	29.6	67.7
	II.		0.1	0.2	0.2	0.0		82.4		0.8		8.5
	III.		0.4	21.0	1.0	87.0		3.1		1.7		12.5
2	IV.		0	0.4	2.4		1.4	0.6		2.3	23.9	0.6
	V.		1.1		4.9	0.3		1.4		0.9		1.0
	VI.		0	11.4	1.8	0.1				1.3	5.0	1.1
	VII.		2.2	0	0.3			0.1		0		1.0
3	VIII.		0.9	0.3	1.1	0.3	0.2	0.9		4.7	0.1	1.0
	IX.		0.5	0.5	2.7	0.3		0.1		10.2		1.3
	X.		1.5	33.1	3.8	0.5		1.2		3.3	4.1	3.8
4	XI.		0	2.4	3.0	0.6		1.7		1.8	19.8	0.9
	XII.		0.4	0.1	5.1	0.3		0.5		0.2	17.5	0.6
	Total		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

(Source) Data prepared by the mission.

Table IV-24 Industrial Structure by District

Number of enterprise (%)

Industrial district \ Classification of industry code. No		Food and tobacco 31	Textiles 32	Wooden products 33	Paper, pulp and paper products 34	Chemical products 35	Glass and ceramic products 36	Metal products 37	Machinery 38	Other products 39	Total
[1]	I.	[32.5]	3.3	13.2	8.6	5.7	5.9	0.7	27.5	2.6	100.0
	II.	[46.7]	1.3	1.3	1.3		18.7		30.7		100.0
	III.	8.2	1.0	1.0	2.1		[84.6]		3.1		100.0
[2]	IV.	5.7	20.0	20.0		1.4	12.9		17.1	[22.9]	100.0
	V.	26.7		24.5	2.3		[34.9]		11.6		100.0
	VI.	2.1	[74.4]	7.6	0.7				13.1	2.1	100.0
	VII.	[85.1]	6.9	0.6			6.3		1.1		100.0
[3]	VIII.	[39.2]	7.2	8.7	4.3	1.4	10.2		27.6	1.4	100.0
	IX.	14.9	20.9	11.9	4.5		28.4		19.4		100.0
	X.	26.1	17.0	10.2	3.4		13.6		[27.4]	2.3	100.0
[4]	XI.	1.0	[32.0]	13.0	1.0		25.0		14.0	14.0	100.0
	XII.	23.1	1.5	33.8	3.1		15.4		12.3	10.8	100.0
	Total	[29.9]	14.6	11.2	3.9	1.9	16.4	0.2	18.2	3.7	100.0

Number of employees (%)

Industrial district		Classification of industry code. No	Food and tobacco 31	Textiles 32	Wooden products 33	Paper, pulp and paper products 34	Chemical products 35	Glass and ceramic products 36	Metal products 37	Machinery 38	Other products 39	Total
[1]	I.		[41.8]	6.8	11.8	8.3	4.3	6.2	5.0	13.7	2.1	100.0
	II.		28.7	0.6	1.0	0.8		[54.2]		14.7		100.0
	III.		12.1	2.3	0.4	30.6		[53.1]		1.5		100.0
[2]	IV.		3.0	20.9	16.5		1.1	16.8		19.8	[21.9]	100.0
	V.		27.2		28.6	2.3		[38.1]		3.8		100.0
	VI.		3.5	[84.9]	4.0	0.4				6.9	0.3	100.0
	VII.		[86.4]	8.5	0.4			4.2		0.5		100.0
[3]	VIII.		10.2	[41.1]	1.4	1.3	0.5	30.8		13.9	0.8	100.0
	IX.		9.0	26.1	8.3	1.8		22.7		[32.1]		100.0
	X.		20.8	[50.5]	5.6	1.2		10.8		11.1		100.0
[4]	XI.		0.4	[30.2]	16.9			20.7		14.0	17.8	100.0
	XII.		25.0	1.3	34.3	2.7		15.3		11.6	9.8	100.0
	Total		[26.7]	23.0	8.4	5.9	1.3	19.0	1.4	11.5	2.8	100.0

Amount of production (%)

Industrial district		Classification of industry code. No	Food and tobacco 31	Textiles 32	Wooden products 33	Paper, pulp and paper products 34	Chemical products 35	Glass and ceramic products 36	Metal products 37	Machinery 38	Other products 39	Total
[1]	I.		[61.0]	3.4	5.2	1.8	3.4	1.2	14.8	8.9	0.3	100.0
	II.		0.7	0.1	0.1	0.1		[98.2]		0.8		100.0
	III.		1.3	12.7	0.4	[82.0]		2.5		1.1		100.0
[2]	IV.		2.1	4.5	19.0		5.5	10.4		[30.5]	28.0	100.0
	V.		[50.0]		24.2	4.2		14.3		7.3		100.0
	VI.		1.2	[77.6]	7.8	0.9				9.3	3.2	100.0
	VII.		[96.8]	0.2	1.5			1.3		0.2		100.0
[3]	VIII.		[40.5]	2.2	5.4	3.7	0.4	9.1		[38.2]	0.5	100.0
	IX.		17.5	2.8	10.2	2.5		0.5		[66.5]		100.0
	X.		17.0	[65.6]	4.8	1.6		3.1		7.1	0.8	100.0
[4]	XI.		1.2	[21.3]	16.8	8.0		19.4		17.0	16.3	100.0
	XII.		24.1	1.2	[38.3]	5.7		7.4		4.0	19.3	100.0
	Total		[44.8]	7.6	4.5	11.9	2.3	10.1	10.0	8.2	0.7	100.0

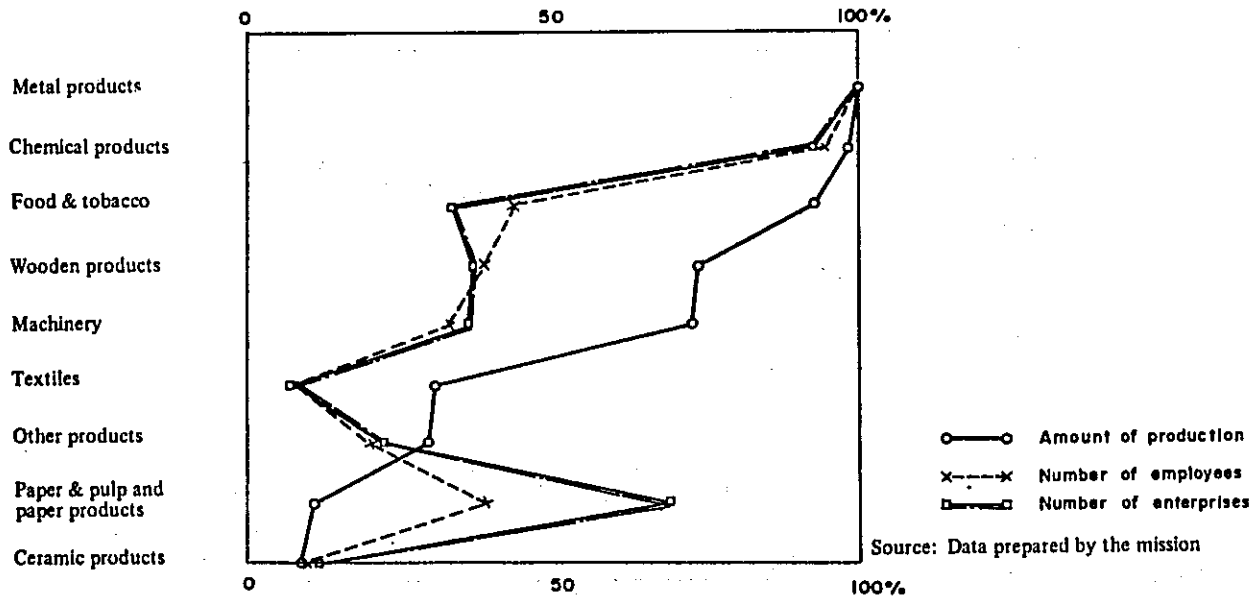
(Source) Data prepared by the mission.

From these tables we can learn the following:

(1) In the district I covering Ujung Pandang City, the 6 industries concerned with the food & tobacco, wooden products, chemical products, metal products and other products are dominant, and each of these industries is the largest in the Province of South Sulawesi. As for the other 3 industries concerned with the textile, paper & pulp and paper products, and ceramic products are ranked second among all districts as far as the amount of production is concerned. In other words, Ujung Pandang City is playing the leading role or the role which is next to the leading role in the industrialization of the Province of South Sulawesi.

(2) The concentration of industries in Ujung Pandang City measured in terms of such factors as the amount of production, number of employees and number of enterprises is as shown in Fig. IV-11. For example, as for the 5 industries concerned with the metal products, chemical products, food & tobacco, wooden products and machines, the enterprises in the district of Ujung Pandang City are responsible for more than 70% of the total production of each industries in South Sulawesi. The largest concentration also seen as to the number of employees and number of enterprises in the district of Ujung Pandang City. Therefore, as far as these five industries are concerned, Ujung Pandang City is playing the leading role in the industrial development of South Sulawesi.

Fig. IV–11 Share of Ujung Pandang City's Industries



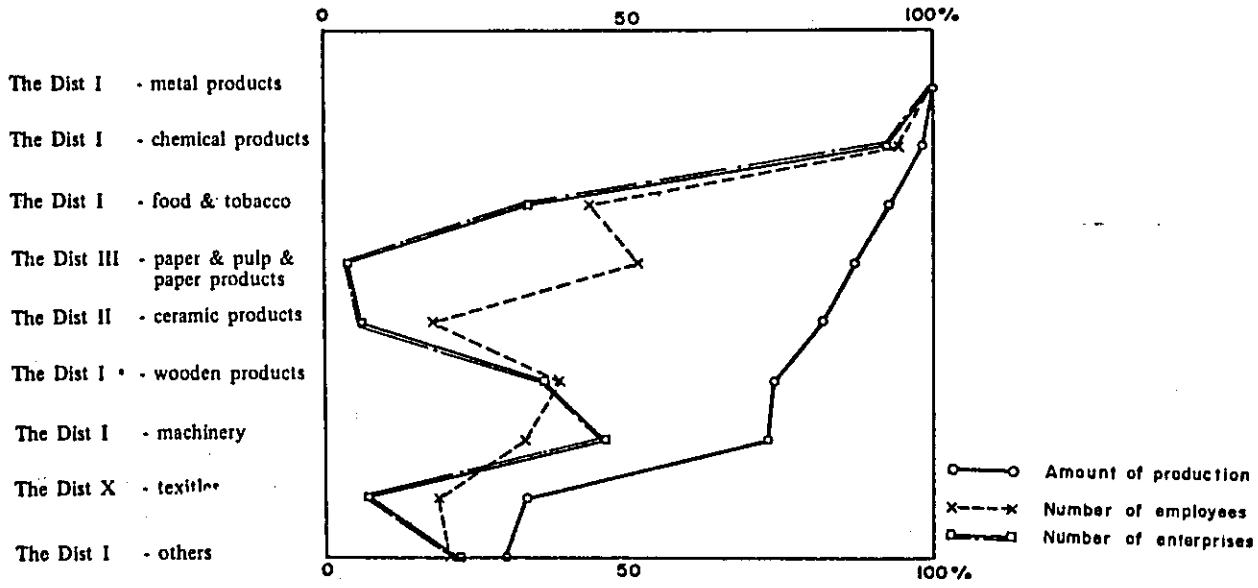
Source: Data prepared by the mission

(3) The district-industries which have shown remarkable developments other than Dist I-industries are the Dist II-ceramic industry, the Dist III-paper & pulp and paper products, the Dist IV-other industry, the Dist VI-textile industry, the Dist VII-food & tobacco, and the Dist X-textile. Of these Dist-industries, those which are ranked first respectively in the Province of South Sulawesi are the Dist II-ceramic industry, the Dist III-paper & pulp and paper products and the Dist X-textile industry.

The shares of these 3 top-ranking industries in three different districts and the 6 top-ranking industries in Ujung Pandang City in the total production of all industries in the Province of South Sulawesi are as shown in Fig. IV-12.

The shares of the textile industry and the industries classified as other industries which are seen in terms of the amount of production remain respectively at the level which is slightly higher than 30%, but the shares of the following seven industries concerned with the metal products, chemical products, food, paper & pulp and paper products, ceramic products and machinery are respectively as high as more than 70% within a single district. And, the total shares of the 9 top-ranking district-industries in the total production, total number of employees and total number of enterprises of all industries in the Province of South Sulawesi are 84.8%, 34.6% and 31.8% respectively.

Fig. IV–12 Shares of 9 top-ranking district-industries



Source: Data prepared by the mission

(4) As seen from the foregoing, the combined share of the 9 top-ranking district-industries in each of the total production, total number of employees and total number of enterprises of all industries in the Province of South Sulawesi are 84.8%, 34.6% and 31.8% respectively. These facts indicate that the production per employee of each of top-ranking district-industry is higher than the other district-industries or that the number of employees per enterprise is higher than those of the other district-industries. The actual status of these factors is as shown in Table IV-25. As seen from this table, the top-ranking district-industries are not particularly outstanding as far as the number of employees per enterprise (dist III-paper & pulp and paper products is an exceptional case), but they are outstanding as to the production per employee, that is, the labor productivity (dist I-other products is an exceptional case).

Fig. IV-13 shows the productivity gap between the top-ranking industries and other district-industries.

The district-industry whose productivity is the highest in the Province of South Sulawesi is the Dist I-metal products then comes the other district-industries in the order of the Dist I-food industry, the Dist III-paper & pulp and paper products, the Dist II-ceramic industry, the Dist I-chemical industry and so forth. The existing great difference in the industrial conditions between the top-ranking district-industries and other district-industries, as seen in terms of the various factors including the productivity, reflects the facts that the Province of South Sulawesi has recently begun to introduce the modern industries and that the indigenous industries are still influential in this province. It can generally be expected that the productivity of such industries as the paper & pulp and paper products, chemical and machinery manufacturing industries will become higher than those of such industries as the metal product and food industries which are primarily the labor-intensive industries as the industrialization makes progress gradually.

Table IV-25 Scales and Productivity Indexes of the Top-ranking District-Industry

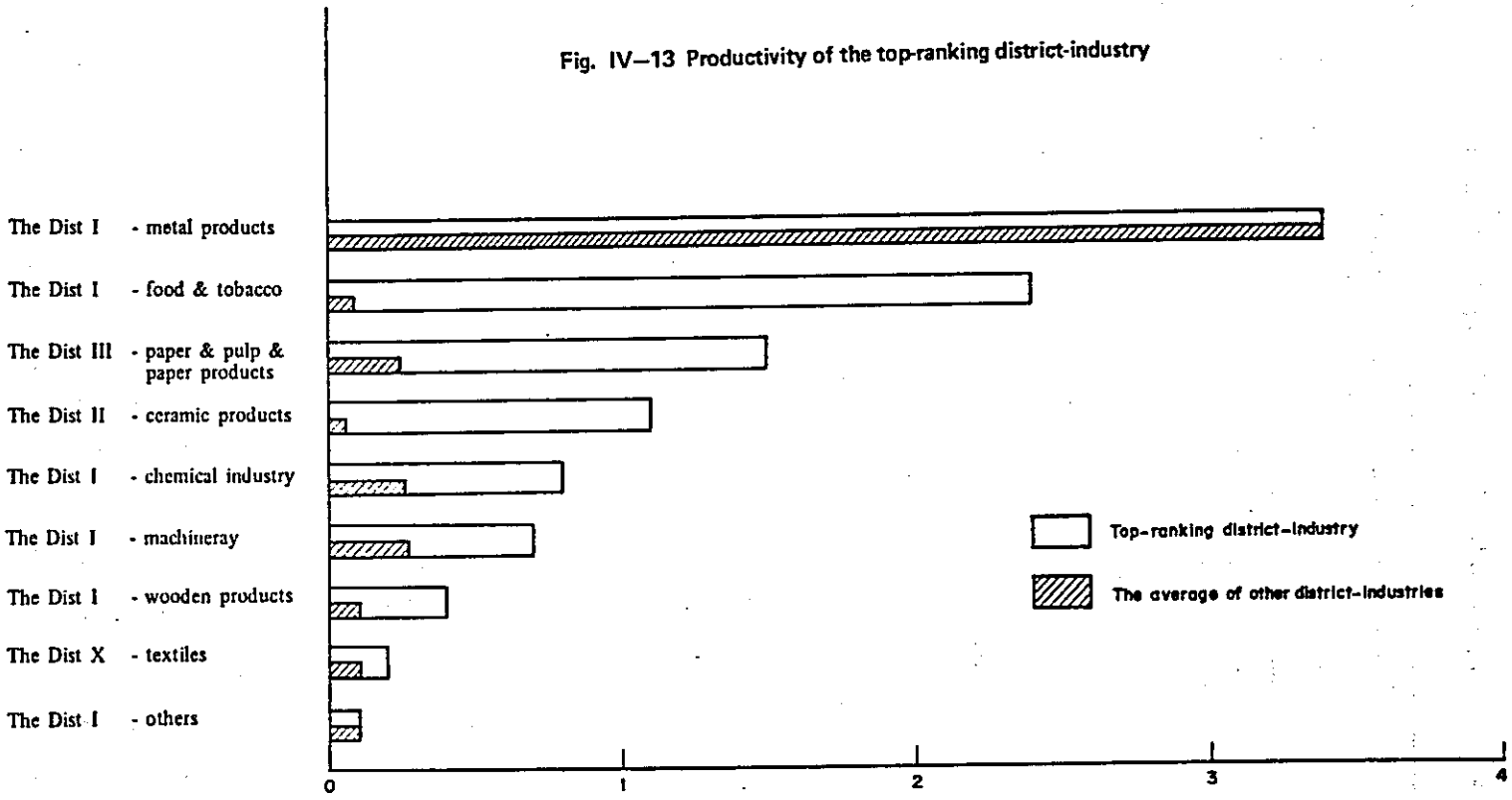
Industrial district \ Classification of industry		Food and tobacco		Textiles		Wooden products		Paper, pulp and paper products		Chemical products		Glass and ceramic products		Metal products		Machinery		Other products		Total	
		S	P	S	P	S	P	S	P	S	P	S	P	S	P	S	P	S	P	S	P
1	I.	19.9	2.4	31.8	0.5	13.6	0.4	14.6	0.2	11.7	0.8	16.3	0.2	117.3	3.3	7.6	0.7	12.1	0.1	15.4	1.1
	II.	12.8	0.01	10.0	0.1	15.0	0.1	13.0	0.1			60.3	1.1			10.0	0.1			20.8	0.6
	III.	38.6	0.1	58.0	3.2	11.0	0.4	389.5	1.5			16.4	0.1			13.0	0.4			26.2	0.5
2	IV.	4.8	0.7	9.4	0.1	7.4	0.1			7.0	0.5	11.7	0.1			10.4	0.1	8.6	0.1	9.0	0.1
	V.	9.3	0.2			10.7	0.1	9.0	0.2			10.0	0.1			3.0	0.2			9.1	0.1
	VI.	29.0	0.1	19.3	0.1	9.0	0.1	11.0	0.1							8.8	0.1	2.6	0.5	16.9	0.1
	VII.	1.4	0.1	14.4	0.0	8.0	0.2					7.8	0.1			5.0	0.1			11.6	0.1
3	VIII.	5.1	0.2	165.0	0.0	4.8	0.2	8.6	0.1	10.0	0.1	88.4	0.1			14.6	0.1	16.0	0.1	29.0	0.1
	IX.	13.7	0.1	28.4	0.1	15.7	0.1	9.0	0.1			18.2	0.0			37.8	0.1			22.7	0.1
	X.	19.6	0.1	73.2	0.2	13.6	0.1	9.0	0.2			19.5	0.1			10.0	0.1			24.7	0.2
4	XI.	8.0	0.1	17.7	0.1	24.3	0.1					15.5	0.1			18.7	0.1	23.9	0.05	18.8	0.1
	XII.	12.5	0.1	10.0	0.1	11.6	0.1	10.0	0.2			11.4	0.1			10.8	0.1	10.4	0.1	11.4	0.1
	Total	15.2	0.7	26.7	0.1	12.7	0.2	25.9	0.9	11.5	0.8	19.6	0.2	117.3	3.3	10.7	0.3	13.0	0.1	17.0	4.6

Note 1 : S denotes scale., P denotes productivity ; unit : Million pupiah

Note 2 : Rectangular frame indicates in top-ranking district-industry

(Source) Data prepared by the mission.

Fig. IV—13 Productivity of the top-ranking district-industry



Source : Data prepared by the mission

4) The outlook of the business environment for the large-scale firms

The large-scale firms located in Ujung Pandang district are as shown in Table IV-26.

Table IV-26 Large-scale Firms in Ujung Pandang district

Name of enterprise	Type of organization	Product item	Production capacity
1. P. N. Cemen Tonasa	Public corporation	Cement	Annual production: 120,000 tons
2. *P. N. Perum Kertas Gowa	Public corporation	Paper	Daily production: 30 tons
3. *P. T. Prima Flour Mill	Organization established by Singapore capitals	Flour	Daily production: 1,000 tons
4. *Proyec Gula Bone	Public corporation	Sugar	Daily production: 150 tons
5. *P. T. Sermani	Joint-venture with Japanese company	Galvanized iron sheet	Daily production: 750 tons
6. *P. T. Serniwa	Joint-venture with Japanese company	Round bar	In test operation
7. Galangan Kapal Makassar	Public corporation	Shipbuilding & repair	Maximumcapacity: 500 dwt.
8. *P. T. Garmak Motors	Joint-venture company	K. D. of small trucks	Daily output: 4 trucks
9. *P. T. Bapengko	Domestic company	Coconut oil	
10. Bone Commercial Co.	Joint-venture company	Frozen prawn	100 tons
11. P. T. Tri Daya Kartika	Joint-venture company	Frozen prawn	200 tons
12. P. T. Serdid	Joint-venture company	Frozen prawn	50 tons
13. Corimex	Joint-venture company	Frozen prawn	200 ton
14. Work Shop	Public corporation	Repair of machine	

(Source) Data prepared by the mission.

In this on-site survey, we have interviewed the representatives of the 7 companies which in the above table are marked with the asterisks in order to learn how the Ujung Pandang district is evaluated by them. The outline of our findings is as follows:

(1) Market for the products

In view of the competition with Jawa, one of the industrially advanced area, Ujung Pandang district is considerably advantageous as far as its relation with the market of East Indonesia is concerned (mainly because of its advantageous position concerning the transportation cost). Many of the enterprises in Ujung Pandang district, however, have been supplying their products to the markets in Jawa and Kalimantan as they have not been able to maintain the ad-

equate rates of operation for their business by supplying their products only to the local markets or the markets in East Indonesian area which are generally small in size. For example, Gowa Paper Mill whose nominal daily output in the beginning was 30 tons, while the break-even point was the daily output of 25 tons, has succeeded in attaining the daily output of 40 tons through their efforts for rationalization, as well as in reducing the production costs drastically as a result of such rationalization. Gowa Paper Mill is now supplying more than 80% of their total production to such markets other than its own as the market in Jawa, but this is rather an exceptional case. Thus, in general, many of the enterprises in Ujung Pandang district have been rather compelled to sell to the other local markets than their own in order to maintain the profitable rate of operation.

Table IV-27 Markets for Major Industries

(Unit: %)

	East Indonesia	Others
Wheat flour	100	-
Coconut oil	40	60
Galvanized iron sheet	95	5
Round bar	70	30
Pulp & paper	20	80
Cement	95	5
Shipbuilding & repair	100	-

(Source) Data prepared by the mission.

(2) Procuration of raw materials

The present conditions of the port of Ujung Pandang as the port to handle the imports of the raw materials and parts from overseas countries are generally satisfactory when viewed in terms of the access to wharfs, loading and unloading capacity and the capacity of customs, so that there will be no urgent problems to be solved at present. However, since relatively few shipping services are available through this port, the facilities to store larger quantities of low materials than the average quantities should be provided.

(3) Labor force

The qualities of labors are generally high. The average wage level in Ujung Pandang district is about 15,000 rupiahs per month which is lower than that in Jakarta but equal to those in East Jawa and Central Jawa. Adequate number of engineers and skilled labors are still not available in the Province of South Sulawesi alone, so that many of them are from Jakarta.

(4) Electric power

The supply of power by PLN is not always stable and so many of the factories have their own independent power plants. Thus, most of the factories in this district are operating using the powers supplied from their own power plants, but some of them are operating using the powers supplied from both their own power plants and the electric power companies.

(5) Supply of industrial water

The supply of industrial water is the most serious problem concerning the industrial infrastructure in this district. The supply of industrial water depends on both the water supply system of the city of Ujung Pandang and the privately owned wells. In some part of the city of Ujung Pandang, the wells of as deep as more than 600m must be bored in order to obtain the fresh water, so that the firms depending on such wells must purchase the city water during the dry season. The city water costs these firms 100 rupiahs for 4,000 liters.

(6) Transportation

The transportation in this district depends mainly on the seaborne transportation. The inland transportation by large trucks is generally not possible except for those within the city of Ujung Pandang and its neighboring districts because the capacities of the bridges in other districts are generally not large enough to withstand the weight of large truck. The sales of the products are usually undertaken by the sales agencies, so that the mission did not have the chance for investigating the distribution system of the products leading to the markets for the final consumers.

(7) Communication facilities

Telex system is not available and the communications with Jakarta by telephone is not satisfactory because the immediate connections of telephone are not readily available, but a drastic improvement of such situation can be expected as the telex system will be installed by the end of this year.

3. Strategy for industrial development in the Ujung Pandang area

Generally speaking, the strategy for industrialization is to be built based on the policy for the industrial development, and should have the purposes of (1) to get rid of the various factors hindering the promotion of the desired industrialization and (2) to develop the potentialities of the area for the industrial development.

The basic objectives which are inherent in the industrial development of Ujung Pandang area and to be fulfilled according to the policy for the industrial development are (1) to make Ujung Pandang area function as the growth pole for the economic growth in East Indonesia, especially in manufacturing sector. (2) to contribute largely to the regional developments through the industrialization and (3) not to give any adverse effect on the orderly development of Ujung Pandang city.

Needless to say, in addition to the basic objectives which are inherent in the industrial development of the Ujung Pandang area, the general objectives for the industrialzation of Indonesia as a whole should also be taken into consideration. Therefore, the potentialities, resources, direction and method for the industrialization of Ujung Pandang area should be considered within the frameworks of the above various objectives based on the policy for the industrial development of this area.

1) Potentiality for and bottleneck to the industrialization

Ujung Pandang area is playing the leading role for the industrial development of the Province of South Sulawesi as mentioned before. Also, Ujung Pandang area seems to be the most developed area even when it is viewed in the scope of whole East Indonesia.

In view of the standards of development expected by both the local government and inhabitants, however, the present level of development of this area seems still far from the adequacy.

The most immediate cause of the delay in the industrial development for the Province of South Sulawesi lies in the fact that the number of modern industrial firms which can contribute most effectively to the promotion of the industrialization is few in this province. On the other hand, such fact that there are only a few modern industries in this province also implies that the business environment of this province has not been considered satisfactory for the introduction of modern industries by both the domestic and foreign investors.

In order to promote the investments in Outer Jawa, the government is providing the incentive system for the investors by which the investors in Outer Jawa territories can be benefited by extending the tax-exemption period by one year under both the Act Regarding Domestic Capital Investment and the Act Regarding Foreign Capital Investment. Therefore, other things being equal, both the domestic and foreign private investments would flow into the Outer Jawa territories. The reality, however, is as shown in both Table IV-28 and Table IV-29, that is, about 70% of those enterprises whose establishments have been permitted under the Dome Domestic Capital Investment Program and about 73% of those enterprises authorized under the Foreign Capital Investment Program are located in Jawa.

Table IV-28 Projects approved by the Domestic Capital Investment Program (1968 - Jan., 1976)

	Number of projects	%
Java	1679	69.6
DKI Java	(659)	(27.3)
West Java	(509)	(21.1)
Central Java	(241)	(10.0)
East Java	(270)	(11.2)
Sumatra	372	15.4
Kalimantan	257	10.6
Sulawesi	68	2.8
Irian Jaya	4	0.2
Miscellaneous Areas	33	1.4
Total	2413	100.0

(Source) Data prepared by the mission from the data of BKMP.

Table IV-29 Projects approved by the Foreign Investment Program (1968 - Jan., 1976)

	Number of projects	%
Java	606	73.2
DKI Java	(379)	(45.8)
West Java	(115)	(13.9)
Central Java	(27)	(3.3)
East Java	(85)	(10.3)
Sumatra	108	13.0
Kalimantan	61	7.4
Sulawesi	22	2.7
Irian Jaya	13	1.6
Miscellaneous Areas	18	2.2
Total	828	100.0

(Source) Data prepared by the mission from the data of BKMP.

As seen from the above tables, in Sulawesi Island, the number of projects authorized by the Domestic Inverstment Program is 68 (2.8% of total number) and the number of projects authorized by the Foreign Investment Program is 22 (2.7% of total number). Thus, the Province of South Sulawesi is one of the Outer Jawa territories in which fewer investments than in the other territories have been made. This seems to be attributable to the facts that the investments in the outer territories of Indonesia tend to aim at the development of the natural resources or the forest resources, and that there have been no other major development projects than those of the prawn resources and nickel resources in South Sulawesi. In the case of manufacturing industry, for instance, the lack of adequate investments in the Province of South Sulawesi may be attributed to the following two reasons: (1) The market for industrial products is not developed sufficiently and (2) inadequate development of the infrastructure of the distribution system which can make possible the approach of the local industries to the larger markets.

(1) Present status of the development of the market

The data showing in detail the levels of the development of the markets in Indonesia is not available, but in order to grasp the outline of the developmental conditions of the individual markets, we have compared the conditions of the markets in South Sulawesi with those in DKI Jakarta which are said to have been best developed in whole Indonesia.

In macroscopic view point, the scale of any given market can be considered to depend on the size of population and the income standard of the people. According to the statistics for the period from 1972 to 1973, DKI Jakarta had the population of about 457 thousand and the GDP of about 260 billion rupiahs, while the same for South Sulawesi were about 519 thousand and about 125 billion rupiahs respectively. When the GRP is viewed as one of the indexes of the purchasing power, the purchasing power of the people of South Sulawesi is 48% of that of the people of DKI Jakarta. Also, the effective demand for the industrial products in the market of South Sulawesi is considered extremely small in view of that the level of per capita income is low in this province and that more than 70% of the total population are engaging in the agriculture in pararell to the home industries so that they can support themselves by the self-sufficing economic system. However, the problems are not lying merely in the fact that the present level of the development of the market in this province is lower than that of the others. For instance, the rate of population growth in DKI Jakarta during the period from 1961 to 1971 was 4.8%, while the same for South Sulawesi has remained at the level of 1.4%.

Such disparity in the growth rate of population can be explained by the fact that the population of DKI Jakarta has increased rapidly because of the heavy influx of population which has been much larger than the natural growth of the population, while the increase in the population of South Sulawesi has remained at a low level because of the outflow of the population contrary to the case of DKI Jakarta. As seen from the foregoing, while the market in DKI Jakarta has started as one which has already been at higher stage of development and continued to grow dynamically, the market in South Sulawesi has continued to remain at a lower stage of development under the effect of a vicious cycle comprising the inadequate development of the industry-low income standard-less job opportunities-outflow

of population into other territories than South Sulawesi-low growth rate of population-low growth rate of market-less incentives for the industrial development projects-inadequate development of industry.

Such difference in the pattern of the development of the markets in different territories seems to have caused largely the concentrations of the investments from both the domestic and foreign sources in such particular territories as Jakarta and its vicinity and western Jawa. If such pattern in the development of market should continue to exist, the introduction of investments into South Sulawesi would be difficult, but such tendency has begun to change largely in recent years. The government's appropriate measures for the development of local territories is expected to become one of the most effective means to free the market of South Sulawesi from the shackles of the vicious cycle, and the number of the manufacturing enterprises looking for their locations in South Sulawesi is increasing gradually.

Table IV-30 Comparison of the market characteristics between South Sulawesi and City of Jakarta

	Area	Population	GRP	GRP/person	Rate of population growth
			(million Rp.)	(Rp.)	(%)
A. Province of South Sulawesi	(800,000 km^2)	5,190,000	125,251	24,133	1.4
B. DKI JAKARTA	(592 km^2)	4,570,000	261,437	57,207	4.8
A/B		1.14	0.48	0.42	

(Source) Data prepared by the mission.
(Note) GRP; Gross Regional Product

(2) Other factors for the industrial development

The environmental conditions of South Sulawesi as the location of the industry other than the market condition such as the conditions of the technical standards, manpower, physical infrastructure and non-physical infrastructure cannot be generalized, but they can be measured by the following terms: (i) specially advantageous conditions, (ii) conditions which are almost equal to those of other various cities and territories in Indonesia and (iii) conditions which are considered inadequate compared to those of other cities and territories.

(i) Specially advantageous conditions

The following are the specially fine conditions or factors for the industrial development and such merits must be utilized most effectively in building the strategy for the industrialization.

1) Large markets can readily be accessible by seaborne transportation route. (Markets in East Indonesia, East Kalimantan, Jawa and other foreign countries can be accessible.)

2) Agriculture is quite active in this province. At present, the export and the interinsular export of the goods in the form of the primary products are being made in considerable amounts and thus the development of the processing industry for export goods is possible by processing the local products for export at the local factories. Also, coupled with the further promotion of the local agriculture, it is possible to develop the industries to provide various goods which are needed for agriculture.

(ii) Conditions which are almost equal to those of other cities and territories

The conditions such as the agglomeration of cities, the number and quality of unskilled labors and supply of electric power in South Sulawesi can be said to be almost equal to those in large local cities in Jawa such as Surabaya and Semarang. The conditions which might pose some problems are the supplies of industrial water, engineers and skilled labors. It seems that such problems had better be solved before they become more realistic as the industrialization of the province makes progress, and in order to do so, the construction of adequate industrial water supply system, the improvement of urban conditions so that the engineers and skilled labors in the advanced industrial districts can be induced to come to Ujung Pandang, the training and education of engineers in Hasanuddin University, Ujung Pandang Vocational Training Center and technical schools should be promoted. Any way, it seems that almost all resources which are required in order that the local industries can perform their production activities will be able to be acquired locally.

(iii) Conditions which are considered inadequate compared to those of other cities and territories

Generally speaking, the development of the infrastructures of local markets is inadequate mainly because of the following reasons:

(a) The highway network which permits the traffic of large trucks is not yet available in the Province of South Sulawesi.

(b) The telecommunication network is not available yet.

(iii The availability of the ocean-going vessels and shipping service is not necessarily adequate in order to approach the markets which are outside of South Sulawesi.

These will be the bottlenecks, to some extent, in expanding the activities for the development of local and out-of-province markets.

2) Relationship between the tasks based on the development policy and the types of industry

The industrial development of Ujung Pandang district must be promoted in conformity with the general industrial development policy of Indonesia, that is, the acceleration of the industrialization, maintenance of social justice, establishment of the functional linkage between different industries and the development of the infrastructure for the industrialization; however, at the same time, such development is required to accomplish the following local tasks: (1) Making Ujung Pandang district to function as the growth pole of East Indonesia, (2) Making the industrialization to contribute effectively to the development of the district as a whole, and (3) Making the industrialization not to affect adversely the orderly development of the city of Ujung Pandang.

The contents of such tasks to be fulfilled along with the promotion of the industrial development are not necessarily manifested in the detailed form; however, they may be summarized as follows in view of the present status of the industrial development of the province, as well as in consideration of the views of BKPM, BAPPENAS and so forth.

(i) Acceleration of the industrialization:

- Development of the market for industrial products through the promotion of the non-manufacturing sectors including the agricultural sector.
- Reinforcement of the linkage between different industries through the production of producers' goods which are needed by various industries.

(ii) Maintenance of social justice:

- Corrections of the unbalances in economic conditions and the control over industries between the foreign capitals, non-puribumi and puribumi.

(iii) Function as the growth pole:

- Ujung Pandang district should function as the center or growth pole for the development of East Indonesia which serves for the general activities of various industries including the production, provision of technical information and distribution of industrial products.

(iv) Linkage with the industries of other districts:

- The industrial development of Ujung Pandang district should be promoted in consideration of the relationships not only with that of East Indonesia but also with those of other districts in the Province of South Sulawesi.

(v) Promotion of Regional development:

- The city of Ujung Pandang which is currently serving as the mere transit point of goods should be transformed into the center of industrialization through the increase of the opportunities for employment and the increase of personal income.

(vi) Development of the infrastructure for industrialization:

- The development of the infrastructure for industrialization should be promoted, but such development should be promoted in consideration of the balances with the tempo of industrialization.

The strategy for the industrial development must be established in consideration of complex combination of various factors comprising not only the economic factors but also the geographical, social and technical factors. In this discussion, however, we classify the scope of industrial development into the following three categories: first, the development of large-scale industries; second, the development of medium-scale industries; and third, the development of small-scale industries according to the terms used in the Second 5-year Development Plan. According to such classification of the industries by their scales, in general understanding, the large-cale industry includes the processing industries such as the petrochemical, fertilizer, iron and steel-making industries and the integrated synthetic fiber industry; the medium-scale industry includes the modernized food processing industry, metal fabricating industry and so on which are to be established by both the domestic and foreign captials; and the small-scale industry includes various home industries and light industries.

Table IV-31 Relationship between the Type of Industry and the Objective of the Development Policy

Objectives \ Type of industry	Large-scale industry	Medium-scale industry	Small-scale industry
Acceleration of the industrialization			
Promotion of the development of non-manufacturing industries sector	O	O	
Promotion of the development of manufacturing industries sector		O	
Social justice			
Industries developed mainly by state-owned enterprises and foreign enterprises	O	O	
Industries developed mainly by non-puribumi capitals		O	O
Industries developed mainly by puribumi capitals		O	O
Characteristic of district as the growth pole			
Characteristic of the district as the center of production		O	
Characteristic of the district as the center of technical development		O	
Characteristic of the district as the center of distribution		O	
Linkage with the industries of other districts			
Territory [1]		O	O
Province of South Sulawesi		O	
East Indonesia territory		O	
Whole territories of Indonesia (Island of Java)	O		
Promotion of the development of local districts			
Increase of employments		O	O
Increase of personal incomes	O	O	
Development of the infrastructures			
Physical infrastructure for production	O	O	
Physical infrastructure for distribution of goods		O	
Non-physical infrastructure for production and distribution of goods	O	O	

(Note) Circle indicates the existence of connection.

(Source) Data prepared by the mission.

The relationships between the developments of these industries and the various tasks to be accomplished according to the general policy of the development are as shown in Table IV-20. It is considered most appropriate, therefore, to promote the development of Ujung Pandang district mainly through the development of the medium-scale industries. The reasons for the above are as follows:

(1) The essential point of the strategy for the industrial development is to promote the trend of industrialization by filling the needs of the local community, and in this point of view, the development of the medium-scale industries can best meet such requirement.

For example, the most of the industries which have already applied for the permissions of locating themselves in Ujung Pandang district are medium-scale industries. Also, the most largest need in this district is the promotion of the employment. There are some opinions that the small-scale industries can better meet such requirement concerning the employment, but small-scale industries seems to cause some problems in a long-term point of view because of their low productivities and their potentialities for the growth in future. In addition, it is generally advantageous for the small-scale industries to locate themselves close to the individual markets and so they are not necessarily required to be located in the city of Ujung Pandang nor considered the types of industries which can contribute largely to the enhancement of the characteristic of Ujung Pandang as the center or the growth pole for the development.

On the other hand, in the cases of the large-scale industries, the types of industries which can enjoy the economy of the scale will be very much limited in the markets of East Indonesia. Thus, even if one or two large plants were constructed in this district, they alone will not be able to fill the need of job opportunities for the local people.

(2) In any industrial development project, it is extremely important to form a long-lasting and autonomous mechanism of the desired industrial development, keeping the dynamic balances with the developments of the physical infrastructure. the non-physical infrastructure such as the technical and management capabilities, as well as with the developments of allied industries. The prerequisites for maintaining the dynamic balance between the main industries and all the factors mentioned above, are as follows: (1) The scales of the development of the main

industries in the given development project should not be too large compared to the levels of the existing physical and non-physical infrastructures and (2) the scale of the main industries should not be too small compared to the existing physical and non-physical infrastructures so that the former can stimulate the further developments of the latters. Therefore, it can be said that the developments of the medium-scale industries are most desirable for the development of South Sulawesi because of the fact that the medium-scale industries have actually contributed to the standardization of the production systems and the promotion of the industrialization in Java, and now have begun to give the similar impact to the development of the city of Ujung Pandang.

(3) Strategy for the industrial development

In consideration of the analyses of the present status of industrial development and the tasks to be accomplished along with the industrial development, the following can be considered as the elements of the strategy for the development of Ujung Pandang district.

(i) Gradual industrialization

The major bottlenecks to the industrial development of Ujung Pandang district lie in the inadequate developments of the markets and also in the inadequate infrastructures of the industries. In order to overcome such difficulties there is a method of industrial development in which the developments of large-scale processing industries aiming at the access to the out-of-district markets in addition to the markets in the district are promoted as the main drive for the industrial development of the district concerned. Such method of development, however, is not necessarily suited for the development of the district such as Ujung Pandang where both the density of population and that of economy are relatively high as the effect of the development by such method is usually very small.

Hence, the method of industrialization to be employed for the development of South Sulawesi should be one which not only can provide the large possible number of local people with the job opportunities directly concerned with the development project, but also promote indirectly the development of the non-manufacturing industries sector by giving stimulations to the developments of the primary and tertiary industries, as well as to those of various infra-

structures. This is why the importance is attached to the development of the medium-scale industries.

If the above development method were employed, it would be possible to avoid an extreme deviation from the local conditions, but the level of the industrialization itself which could not be so high and thus the strategy to promote the gradual development of the industrialization would be required.

One of the alternatives of the long-term development strategy is as described in the following.

In promoting the industrial development of Ujung Pandang district, the switching of the existing indigenous industries to the modern industries must be facilitated, and in order to do so, the industrial agglomeration mainly consisting of the medium-scale industries whose developments are relatively easy as the first phase of the development project. The second phase should serve for the diversification, scale-up and the movement towards the sophistication of the industries, and throughout this phase of development, the functional linkage with the industrial developments in other districts should be established so that the interrelated mechanism of industrial development between the industries in Ujung Pandang district and those in other districts can be established. In the third phase, were a certain number of industrial agglomerations have been established successfully in some of the key districts in East Indonesia along with the developments of a certain number of large-scale processing industries throughout the whole territories of Indonesia, a dynamic mechanism of the industrial development should be established by rearranging scientifically the industrial agglomeration of Ujung Pandang district as part of the industrial development mechanism of whole Indonesia.

(ii) Concentration of the development efforts for making the breakthrough for the development of modern industries

Firstly, it is required to establish the industrial agglomeration mainly consisting of the medium-scale industries whose technical levels and development are relatively easy in the city of Ujung Pandang, the district in which the industrialization is most advanced compared to other districts of East Indonesia. In order to accomplish such goal, it is extremely important to concentrate efforts for the developments of both the physical and non-physical infrastruc-

tures of the industries. The construction of the industrial estate mainly comprising the medium-scale industries is considered the most effective means for bringing the concentration of the development efforts. In order to derive the concentrative development efforts from those who are concerned, the ways of the planning functions, development functions, the authorities and cooperations of and among the central government, the provincial government of South Sulawesi and the municipal government of the city of Ujung Pandang should be, and persuations of, as well as giving incentives to those who are concerned in order to actualize the latent development factors of the local districts should be discussed altoghether.

A considerable length of time period will be required before the completion of the industrial agglomeration of a certain scale based on the industrial estates in which the meidum-scale industries are mainly located. According to the estimate of the provincial government of South Sulawesi, the proposed industrial estate is expected to become full of various industries which will move into the estate from the outside within 5 years, but such estimate seems rather too optimistic in view of the fact that even in the P.T. Plogadong Industrial Estate which is most advanced in whole Indonesia, the industries are still not operating at full rates even after several years from its construction. Therefore, even in the first stage developing period efforts should be used effectively for the promotion of the industrial development in order to prepare for the next stage of the development. The main objects of the development are the improvement of the administrative function for industrial development of the government, the development of the infrastructure for the distribution system, technical education, promotion of the education concerning the management and administrative skills, the development and expansion of the financial institutions to serve for the development of the local trades and industries.

(iii) Promotion of the diversification in kinds of industry and in geographical diversitication of industry, and the promotion of the linkage among different industries in different districts

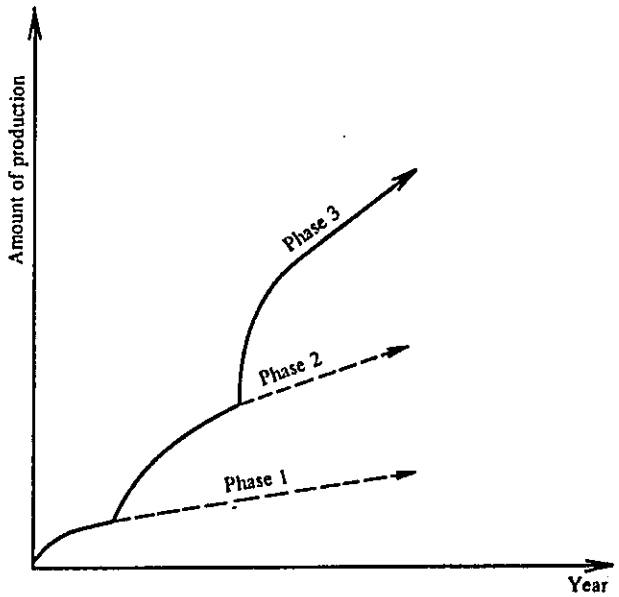
Where the formation of the industrial agglomeration of a certain-scale by medium-scale industries, the primary target in the first phase of the development project, is completed, the second phase of industrial development

should follow immediately.

The primary objective of the second phase is considered lying in making the industrialization to advance further through the promotion of the diversification in kinds of industry and in the geographical diversitication of the industry, as well as through the promotion of the linkage between the differnt industries in different districts. Hence, in order to attain such goal, perhaps, it will become necessary to construct an industrial estate in the area covering the city of Ujung Pandang and its vicinity so that the industries to meet the requirements of the diversification, scale-up and sophistication of the industries can be introduced. Thus, it will porbably become possible to establish a mechanism in which the industrial agglomeration can accelerate the desired industrialization in Ujung Pandang district and this may lead to a further concentration of the industries in this district. Such concentration of industries in one particular district, however, is not necessarily desirable in view of the requirements for the continuous and extensive development of the region. Therefore, in order to avoid being encountered with such problem, the development of the local districts, mainly those constituting the secondary growth poles for industrialization such as Pare-Pare, Watampone and Palopo, should be promoted. Furthermore, in order to facilitate the development of the industry as a whole, the linkage between the industries in Ujung Pandang district and those in other districts mainly through the supplies of the industrial materials should also be taken into consideration.

Fig. IV-14 A long-term concept for the construction of industrial estate in Ujung Pandang district

	Factors for determining location			Scale of industrial estate	Primary objectives of development/ characteristics to be possessed
	Market	Infrastructure	Manpower		
Phase 1	Small	Not developed adequately	Unskilled	Small	. Objectives: Promotion of employment, increase of income, saving of foreign currencies. . Type of industrial estate: Mixed-type comprising the labor-intensive industries, industries which promote the processing of agricultural products and some of the existing industries in Indonesia . Location: One which can readily be accessed or commuted from the urban district
Phase 2	Medium	Improvement	Skilled	Medium	. Objectives: Improvement of productivity (improvement in the quality of employment), increase of income and saving of foreign currencies . Type of industrial estate: One comprising the industries to employ more sophisticated production techniques. . Location: One which is adequately separated from the residential districts.
Phase 3	Large	Adequately.	Skilled technical labor	Large	. Objectives: Establishment of autonomous system for industries. . Type of industrial estate: One comprising capital-intensive industries. . Location: Seaside location which is adequately separated from the residential districts.



Source: Data prepared by the mission.

V SELECTION OF APPROPRIATE INDUSTRIES

V. SELECTION OF APPROPRIATE INDUSTRIES

1. Viewpoint of Analysis

The term "appropriate industries" shall indicate those industries which have such a factor (industrial characteristic) as can contribute to a considerable extent to the attainment of the aims of the industrial estate once they enter the industrial estate and which can exist as enterprise on the premise of the industrial infrastructure which the area or the industrial estate offers.

There is an analogous term "candidate industries", but what we call "appropriate industries" are selected on the basis of criteria which are less severe than those for candidate industries, and the two are in a relationship such that candidate industries are selected from among appropriate industries. In this chapter the operation of selecting appropriate industries is carried out. It is the object of this survey to provide materials for the preparation of alternatives of appropriate industries for the industrial combination as will be made in Chapter VI. In other words, the operation conducted in this chapter is a preliminary operation for the operation of Chapter VI.

The reason why such a roundabout procedure is taken is as follows. The industrial development of Indonesia, even viewed from the nationwide level, is still in a primitive stage except only a few industries such as the textile industry and the industry of metallic products. In particular, Ujung Pandang area is on a level of development which is considerally below the national average. Therefore, such a way of approach as heuristically preparing alternatives of appropriate industries for the industrial combination, for example, preparing such alternatives by mixing those industries which are dependent upon one another, is likely to become unrealistic. Further, have a triggering effect the Ujung Pandang industrial estate is expected to fulfill the role as a priming upon the industrial development of East Indonesia rather than responding to the already existing pressure for development. In view of the policy that the Ujung Pandang area should be growth pole for industrialization in East Indonesia, it is considered that of importance is to select appropriate industries with as less omissions as possible and to aim at an industrial combination as a result of investigating the greatest possibility on the basis of such selection.

From the viewpoint mentioned above, the present survey adopts a deductive methos such that a list of industries which is as comprehensive as possible is screened according to several criteria for selection to leave appropriate industries.

On a concrete operational level, the "Industrial Statistics, Survey of Manufacturing Industries, 1973", which covers indonesian industries most comprehensively on a statistical base, is used as the evaluating material. Also with respect to values of indicators specific to a particular industry which are indicative of industrial characteristics, Indonesian figures have been used as far as possible, but, in unavoidable cases, Japanese examples and figures have been used.

Consequently, this analysis includes some limitations. For example, the industrial code used in the Industrial Statistics is of five digits of ISIC. As a reflection of the actual state of the industrial development of Indonesia, however the chemical and the machine industries are classified so roughly that, in some cases, the use of such code as it is for analysis of industries does not always make the contents concrete. Moreover, with respect to figures indicative of industrial characteristics such as the rate of dependence on the labor of high technical level, unit per area of industrial water and the number of employees per hectare, there is no statistical data of survey in Indonesia, and so Japanese figures, etc. have been used, for which reason it is considered that there is a certain difference from the actual conditions.

2. Method of Selecting Appropriate Industries

Fig. V-1 shows the flow of selecting operation of the appropriate industry conducted in this chapter.

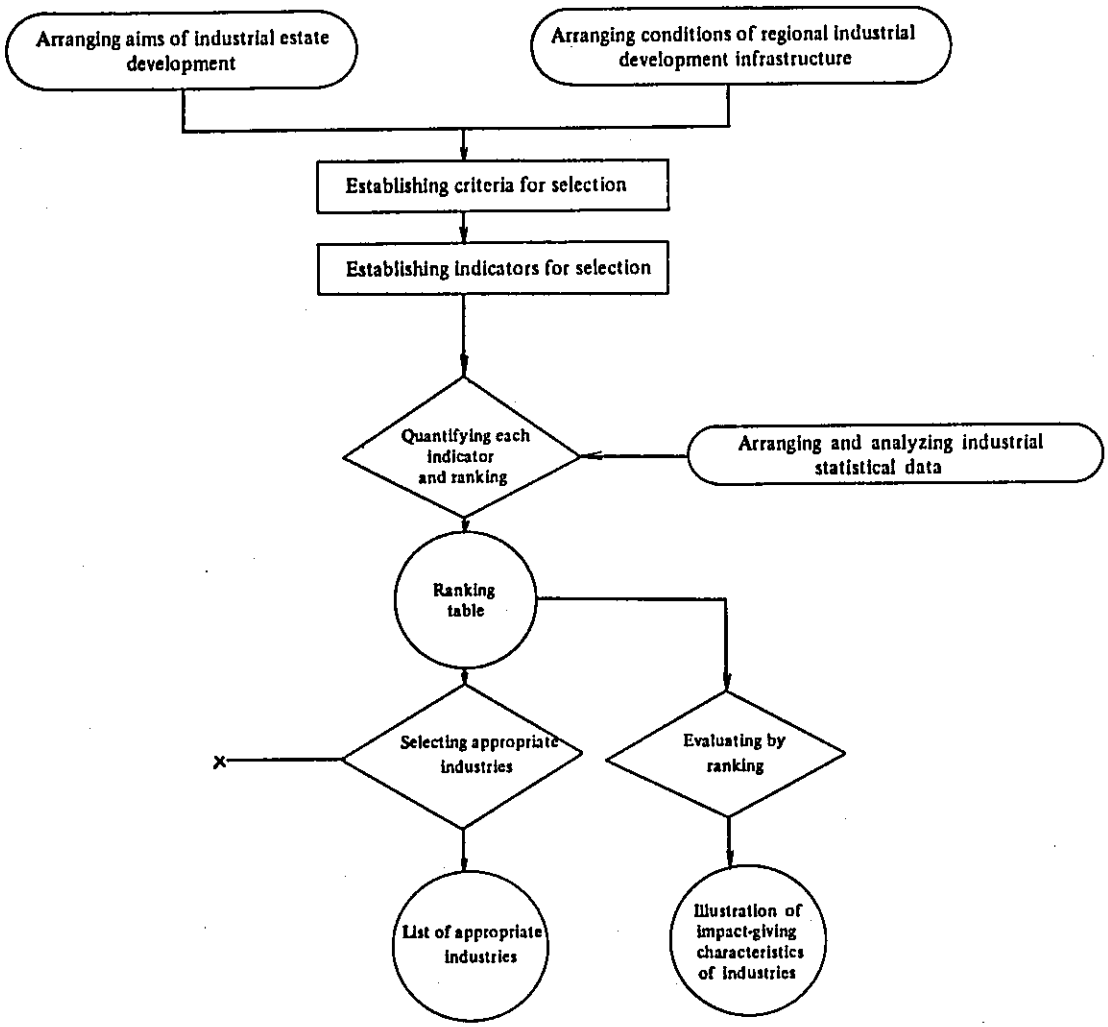
The content of the operation is classified broadly as follows: ① An arrangement is made with respect to the aims of developing the Ujung Pandang industrial estate, and also the conditions of the industrial development infrastructure of the Ujung Pandang area are made clear. These aims and conditions are made given conditions of selecting appropriate industries. ② Criteria and indicators for the selection of appropriate industries are derived from these given conditions. ③ Value of indicators specific to a particular industry are quantitatively determined, corresponding to these criteria and indexes. ④ Should value specific to a particular industry be made clear, it can be applied to decide on the ranking among industries with respect to each indicator. Then a ranking table of all industries and value is obtained that can be used as the most comprehensive evaluating material. ⑤ With

this ranking table as the material, attention is paid to high-rank industries and at the same time judgment is formed, and thus appropriate industries are selected. Now there outputs a list of appropriate industries which is the object of this chapter. The main job of this chapter is now completed, and the list of appropriate industries as the material for study is delivered to the job of studying alternatives of desirable industries for the industrial combination.

Since the aforementioned operations tend to be somewhat complicated, there is provided a sub job in which, using the ranking table as an evaluation material, simplification is made according to the five-stage evaluation method and on the basis of such simplification impact, giving characteristics of industries are shown.

Detailed explanations are given below on principal items of operation.

Fig. V–1 Flow Chart of Appropriate Industry Selecting Work



(Source) Prepared by the mission

3. Establishing Criteria and Indicators for Selection of Appropriate Industries

Major aims of the Ujung Pandang industrial estate establishing plan are as follows:

① Promoting employment

② Increasing income

③ Saving or acquisition of foreign currencies

④ Promoting industrialization

⑤ Contributing an ordely land use plan

Among them, aims which could be attained satisfactorily by introducing pertinent industries in this industrial estate are considered to be ① , ② and ③ . ④ and 5 are considered to be aims of a different dimension, not directly related to the problem of location of individual industries. Between the aims ①, ② , ③ and the preferred industries we can find a comparatively direct relationship. The preferred industries in view of promoting employment are labor-intensive industries; those in view of increasing income are industries having a high labor productivity; and those in view of saving or acquiring foreign currencies are import substitution industries, manufacturing industries for export and industries using a large amount of locally produced raw materials. For these aims from which image of industries to be preferred becomes clear, it is possible to establish criteria for selection. That is, they are criterion for employment, criterion for income improvement and criterion for acquiring and saving foreign currency.

With respect to the conditions of industrial development infrastructure in the Ujung Pandang industrial estate, it is as referred to in Chapter IV. The following two condition, however, are considered to cause impeding the introduction of some industries: ① Scale and development level of regional market, and ② some industrial development infrastructure (labor of a high technical level, supply of industrial water). That is, it is possible to establish such criteria for selection as the possibility of location viewed from market condition standpoint and also the possibility of location viewed from industrial development infrastructure.

From the viewpoints referred to above, the following five criteria for selection may be regarded as useful in evaluation industries and pertinently distinguishing between appropriate industries and inappropriate industries:

a. Criterion for employment

b. Criterion for income improvement

c. Criterion for acquiring or saving foreign currency

d. Criterion for the possibility of location viewed from the aspect of market condition

e. Criterion for the possibility of location viewed from the aspect of industrial development infrastructure

However, the five criteria for selection enumerated above are not very far from giving orientation for selection of industries. From these criteria it becomes clear what type of industries should be preferred, but it will easily be understood that they do not serve as a tool for the selection of industries. In order to have these criteria for selection serve as a tool for the purpose, it is necessary to bring the criteria to an operational level, where objective and quantitative statistical data can be dealt with. We designate such criteria made practical expediently as "indicators".

As a result of studies made from various viewpoints, we have established such indicators as are set out in Fig. V-2.

(1) Indicators corresponding to the criterion for employment are the following three: number of employees per enterprise, number of employees per ha, and the degree of absorption of unskilled labor. The number of employees per ha is the most important indicator for the object of the analysis. It is not an overstatement to say that if Indonesian statistical data on such indicator are available, other indicators may not be necessary. However, with respect to the indicator, i.e. the number of employees per ha, we could not but depend on Japanese examples. For this reason, the number of employees per enterprise which is the original data in Indonesia has also been used as indicator. The degree of absorption of unskilled labor is based on corroborative studies in developing countries. The labor force in the Ujung Pandang area consists mainly of unskilled labor. From this fact, if there should exist industries having the same number of employees per ha, the degree of absorption of unskilled labor can be used as an evaluating material for deciding which of the two should be preferred.

(2) The criterion for income has two aspects, one being increasing corporate income and the other increasing wages. Like the criterion for employment, there is a limitation such that the indicator best suited for the criterion for

income, that is, the amount of value added per ha and wages per ha are not available from the original data in Indonesia. Therefore, there have been adopted three indicators, they are wage per employee and value added per enterprise which are derived from the original data, and wage per ha which is based on estimation like in the case of criterion for employment.

(3) With respect to the criterion for acquiring or saving foreign currency, there has been established an indicator which corresponds to only the criterion for saving foreign currency. This is based on our judgment stated below. That is, in the present situation where the export of industrial products is not carried yet on a full scale, there is such a problem in analytical technique as an indicator corresponding to the criterion for acquiring foreign currency cannot be established. In addition, those industries which will enter the Ujung Pandang industrial estate should give priority to satisfying the regional needs by supplying products to the regional market.

To correspond to the criterion for saving foreign currency, we have established four indicators; they are foreign currency saving amount (import amount x value added ratio), import amount, import ratio, and the degree of using domestic ally produced raw materials.

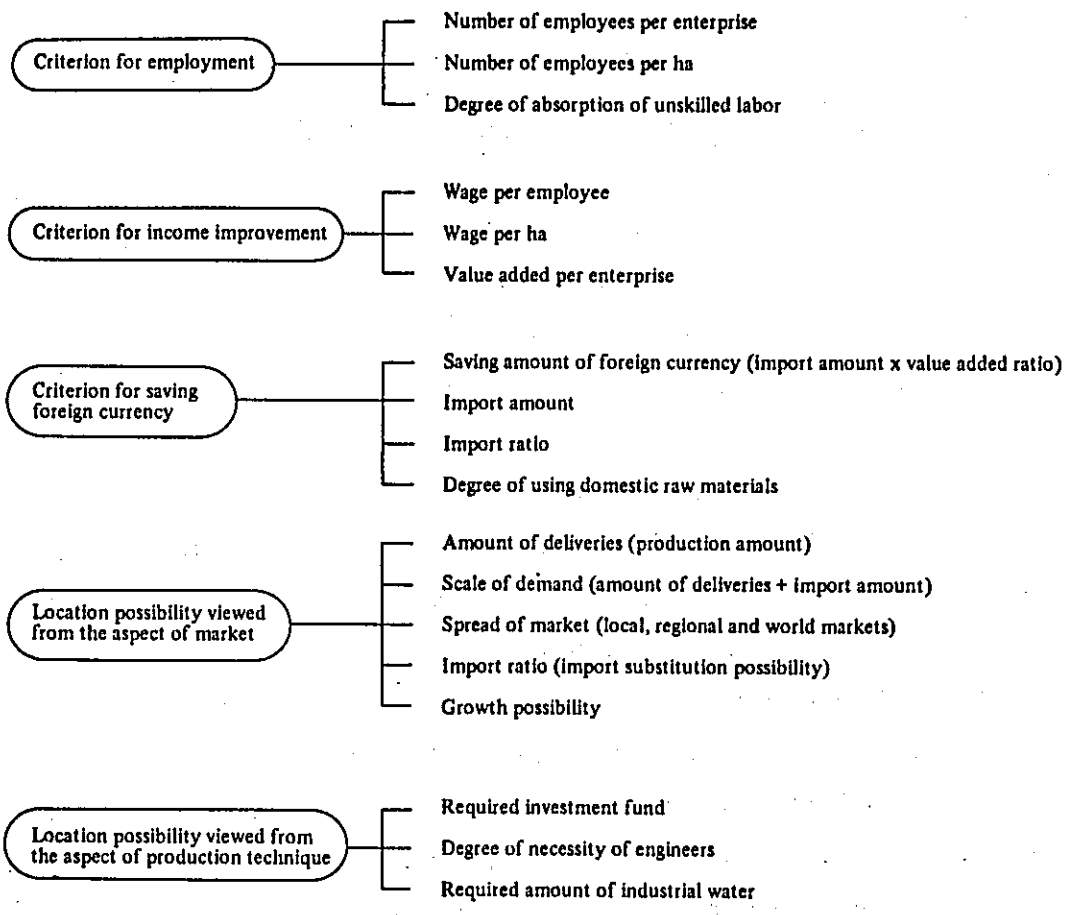
(4) As the criterion for the possibility of location viewed from the aspect of market condition, the most desirable one is the estimation of production of, and demand for, individual industrial products in the East Indonesian region. However, since such estimation work is not available, it is necessary to prepare an indicator as a substitute therefor. Due to limitation on as available statistical data are limited, we hereby presumed that industrial products having a large market development possibility (market increment from the present time to a certain time in the future) in Indonesia will exhibit the same tendency also in East Indonesia. And we have established as indicators Indonesian original data constituting the market development possibility, the amount of deliveries, apparent consumption, import substitution rate, production growth rate (note), and the market characteristics of industries (three-type classification involving local market orientated industries, regional market orientated industries and world market orientated industries).

(Note)

Production growth rate has been judged on the basis of the anticipated growth rate of the industrial field in the second five-year plan.

(5) As indicators corresponding to the criterion for location possibility viewed from the aspect of industrial development infrastructure, we have established the following three indicators, the amount of fund required for establishing enterprises, the degree of necessity of technical labor, and units per area of industrial water. With respect to the amount of fund required for establishing enterprises, analysis was made of about 600 foreign investment projects in Indonesia during the period between January, 1967 and December, 1974. Some Japanese cases have also been referred to. With respect to the degree of necessity of technical labor and unit per area of industrial water, Japanese examples have been applied.

Fig. V–2 Criteria for Selection and Indicator of Appropriate Industries



(Source) Prepared by the mission

4. Ranking of Industries and Selection of Appropriate Industries

Among the industrial statistics in Indonesia, the one which systematically covers the widest range of industries is the "Industrial Statistics, Survey of Manufacturing Industries 1973" (Vols. I & II). Vol. I describes such items as the number of enterprises, number of employees, wages, input amount, output amount, value added amount, and amount of purchased equipment and fixtures. Vol. II describes the details of raw materials and fuels used for the industry. These statistics employ ISIC codes and aims at 5-digit classification. However, except some industries such as those of foods, textiles and metallic products, industries have not yet fully developed enough to enable preparation of statistics based on 5-digit classification. Actually, therefore, 5-digit, 4-digit and 3-digit classifications are mixed together. The number of industries covered by such statistics is 120 maximum, of which, however, 20 industries are insufficient in their statistics; consequently, total 100 industries are covered.

With respect to each of these 100 industries, an input of the number of employees per enterprise, number of employees per ha, degree of absorption of unskilled labor, wage per employee, wages per ha, foreign currency saving amount, import amount, import ratio, degree of using domestic raw materials, amount of deliveries, consumption, spread of market, growth possibility, investment fund requirement, rate of dependence on labor of a high technical level, and unit per area of industrial water, has been made. (See Table V-1.)

Next, we have carried out a ranking job based on the input values referred to above. Ranking has been done with all the industries from rank 1st to rank 100th, including those in which input data themselves adopt 5-stage estimation (the degree of absorption of unskilled labor, investment fund requirement, and the rate of dependence on technical labor) and those of 3-stage indication (spread of market, local market orientated industries = 1.00, regional market orientated industries = 3.00, world market orientated industries = 5.00). With respect to 15 of the 18 indicators, those having larger numerical values are ranked higher, but with respect to the investment fund requirement, rate of dependence on technical labor and unit per area of industrial water, those having smaller numerical values are ranked higher. Because, in the case of these three indicators, there exists a relationship such that industries requiring less investment fund are easier to be established,

industries having a lower rate of dependence on technical labor are more likely to be set up, and also industries using less amount of industrial water are more likely to be established.

The reason why the job of ranking 1st through 100th has been done is that it was intended to check a careless miss which might occur in the course of the ranking operation. So far as the operation of selecting appropriate industries required in this survey is concerned, such ranking job tends to become rather complicated. Therefore, for the purpose of simplifying the indication, we have made a 5-stage evaluation on each evaluating indicator. The rank was divided into five groups consisting of 1st to 20th, 21st to 40th, 41st to 60th, 61st to 80th, and 81st to 100th, and evaluation was made for each group. The result is as indicated in Table V-3.

As will be apparent from the foregoing operation, we have made studies on industries as comprehensively as possible. However, the ultimate object of the studies is the selection of appropriate industries. Therefore, with the foregoing evaluation of industries made as the evaluating material and also in consideration of the local conditions, selection of appropriate industries is made below.

By the way, the appropriate industry selecting job encounters the following dilemma.

For the purpose of achieving the aim of establishing the industrial estate as satisfactorily as possible, it is necessary that the criteria for selection should be applied severely. However, from the standpoint of management of the industrial estate public corporation, it will be rather desirable that the criteria for selection are not very severe. It is presumed that the severer the selection criteria, the smaller the number of industries capable of entering the industrial estate. On the other hand, it is considered that the management of the industrial estate public corporation should be made basically by the rent from enterprises introduced or proceeds from selling sites.

Due to the presence of such a dilemma, it is necessary to apply well-balanced selection criteria, viz., not too severe, but not too loose. However, from the viewpoint such that the appropriate industries having more possibilities should be provided in preparing the alternatives of desirable industries for the industrial combination as will be dealt with in the following chapter, the criteria for selection were made fairly lenient and, as a result, 59 industries out of 100 industries were selected

as appropriate industries (see Table V-4). It might be more pertinent to say that specially problematic industries have been excluded, rather than to say that appropriate industries have been selected. With respect to excluded industries, that is, 41 inappropriate industries, the points in which the criteria for selection could not be satisfied (those ranked lowest in the 5-stage ranking) and special circumstances under which industries cannot, or are undesirable to, be introduced in the industrial estate, were tabulated into Table V-5.

Table V-1 Input Data of Indicators

(1)

	Code No.	Name of Industries	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	31110	Slaughtering, preserving of meat	60	80	4	73	5.8	32.5	244.8	716.7	64.1	10.5	11.2	2	64.1	15	90	3	3	4.0
2	31120	Dairy products	14	67	3	136	9.1	18.0	2255.8	7808.6	-	33.4	41.2	3	90.0	15	90	3	3	8.0
3	31130	Canning & preserving of fruits & vegetable	214	130	3	98	12.7	43.9	601.2	1695.7	-	0.9	2.6	1	90.0	10	90	4	4	6.0
4	31140	Processing & preserving of fish & other sea products	32	153	3	12	1.8	2.3	242.7	871.5	-	1.7	2.5	1	90.0	15	90	30	5	7.7
5	31151	Coconut oil	52	40	4	89	3.6	56.3	0.0	0.0	0.0	93.9	93.9	1	-	5	100	3	2	0.0
6	31159	Vegetable & animal oil and fat	87	40	4	156	6.2	108.2	167.6	644.1	15.9	39.9	40.6	1	-	5	100	5	2	23.8
7	31161	Rice milling	9	74	5	34	2.5	1.8	49366.0	31716.0	-	36.2	168.0	1	-	5	100	5	3	0.1
8	31162	Cleaning and polishing of rice	4	74	5	21	1.5	0.5	9573.9	21549.3	-	1.4	23.0	1	-	5	100	5	3	0.1
9	31163	Peeling and cleaning of coffee	89	84	4	61	5.1	152.2	5.9	18.3	0.3	54.5	54.5	3	-	10	100	5	3	0.0
10	31164	Wheat flour	709	62	5	331	20.5	2565.3	2235.6	10782.5	-	37.1	47.9	1	-	15	0	1	3	18.6
11	31169	Grain mill products	19	47	5	28	1.3	2.6	74.6	220.4	-	0.8	1.0	1	80.0	10	80	3	3	5.8
12	31171	Macaroni, noodle	22	141	4	26	3.7	2.1	17.0	52.3	20.7	2.5	2.5	2	30.0	15	30	5	4	2.2
13	31179	Bakery products	20	25	4	38	0.9	2.5	72.1	241.1	44.6	5.2	5.4	1	50.0	15	50	4	2	2.6
14	31181	Sugar factories refineries	366	16	3	92	1.5	137.7	885.2	2194.9	31.3	67.9	70.1	3	-	15	100	1	1	82.4
15	31190	Chocolate & sugar confectioneries	31	173	3	55	9.4	8.7	15.8	52.3	12.4	4.2	4.2	2	60.0	10	60	3	5	5.3
16	31210	Tapioca flour, sago	18	25	4	20	0.5	1.6	0.0	0.0	0.0	2.8	2.8	1	-	5	100	5	5	0.0
17	31230	Ice cubes	29	88	5	140	12.3	16.9	0.0	0.0	0.0	6.8	6.8	1	-	15	100	5	3	25.8
18	31241	Soya bean sauce	18	48	4	29	1.4	1.4	26.7	91.7	-	0.7	0.8	1	-	5	100	5	3	3.8
19	31242	Tahu and tempe	11	140	4	58	8.1	3.5	0.0	0.0	0.0	1.9	1.9	1	-	5	100	5	4	14.4
20	31250	Krukup, emping & karak	25	25	4	15	0.4	2.7	0.0	0.0	0.0	2.2	2.2	1	90.0	5	90	5	1	4.3
21	31260	Coffee powder & fried	9	84	4	26	2.2	0.8	12.3	31.5	-	0.2	0.2	3	-	15	100	4	3	12.1
22	31280	Cattle fodder	26	44	4	97	4.3	44.5	21.4	70.1	18.9	3.6	3.7	3	-	15	100	4	2	9.3
23	31290	Other food products	19	100	3	40	4.0	3.1	0.0	0.0	0.0	2.4	2.4	2	-	10	100	4	4	0.0
24	31310	Alcohol, spiritus, liqueurs	44	28	3	99	2.8	17.0	107.9	322.5	-	1.3	1.6	3	-	5	100	2	1	13.6
25	31320	Wine	27	28	5	60	1.7	3.5	69.1	180.1	-	0.2	0.3	3	90.0	5	90	4	1	0.3
26	31330	Malt liqueurs & malt	761	36	5	407	14.7	2347.9	389.3	527.5	76.6	6.4	6.9	1	-	10	100	2	2	6.8
27	31340	Soft drink, carbonated waters	15	50	5	114	5.7	12.0	158.3	300.9	65.7	4.3	4.6	1	90.0	15	90	3	3	4.3
28	31410	Drying & processing tobacco	56	100	3	22	2.2	3.2	418.4	1252.5	-	10.2	11.4	3	-	10	100	2	2	0.0
29	31420	Cloves cigarettes	249	100	3	39	3.9	113.4	68.2	180.1	1.8	98.3	98.5	3	-	10	100	2	4	0.0
30	31430	Cigarretes manufacturing	295	100	3	231	23.1	1134.3	8.3	11.6	0.3	39.3	39.3	3	-	10	100	2	4	0.0
31	31490	Other tobacco products	156	100	3	27	2.7	16.4	153.6	356.9	-	1.1	1.5	3	-	10	100	2	2	0.0
32	32111	Yarn threads	297	59	3	178	10.4	440.9	1.5	4.6	0.04	106.8	106.8	2	60.0	16	60	1	3	7.4
33	32112	Weaving mills	57	83	3	56	4.7	14.3	563.1	1499.8	14.3	103.2	104.7	3	50.0	7	50	4	5	2.6
34	32113	Bleaching and dyeing	47	96	3	70	6.7	9.5	3903.1	12940.9	-	4.0	17.0	2	-	7	80	3	4	11.5
35	32114	Batics	26	81	4	45	3.6	5.0	260.1	808.4	49.3	15.6	16.4	2	49.3	3	90	4	5	0.0
36	32115	Jute weaving	1930	73	3	64	4.7	431.9	12.8	22.8	4.9	4.6	4.6	2	4.9	3	100	2	5	4.9
37	32130	Knitting mills	73	244	3	55	13.4	10.2	1681.4	4893.3	-	4.8	9.7	2	-	7	100	4	4	2.2
38	32140	Carpet and rags	138	54	4	36	1.9	5.6	275.4	405.0	-	0.0	0.4	3	-	5	90	2	5	1.2
39	32150	Cordage rope and twine	47	88	4	54	4.8	8.6	300.7	671.9	-	0.3	1.0	2	-	5	100	4	4	0.7
40	32210	Wearing apparels	16	244	4	63	15.4	3.8	299.7	429.5	-	0.8	1.2	3	-	5	100	4	5	0.7
41	32290	Wearing apparels not elsewhere classified	14	244	4	58	14.1	2.1	265.7	684.3	-	0.1	0.8	3	-	5	100	4	5	0.7
42	32310	Leather tanneries & leather finishing	31	74	4	93	6.9	20.9	2.5	7.5	2.0	3.7	3.7	2	2.0	50	100	3	3	4.1
43	32330	Products of leather & substitutes	13	156	3	49	7.6	1.6	60.5	139.4	-	0.1	0.2	2	-	50	90	5	4	0.2
44	32400	Footwear	81	196	5	96	18.8	35.4	165.4	319.4	78.4	3.8	4.1	2	78.4	7	100	5	3	1.3
45	33111	Saw mills & other wood mills	22	40	5	89	3.6	7.4	12.1	32.4	1.2	26.9	26.9	1	1.2	18	100	5	5	0.2

	Code No.	Name of Industries	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
46	33112	Wooden building materials	13	58	1	52	3.0	1.7	498.6	1136.3	-	0.4	1.6	3	-	23	100	3	3	0.2
47	33120	Wooden boxes & containers	10	93	4	58	5.4	1.9	103.3	251.9	-	0.2	0.4	2	-	18	100	5	5	0.2
48	33130	Bamboo, rottan, willow pleats	11	160	4	67	10.7	1.7	0.0	0.0	0.0	0.2	0.2	2	0.0	13	100	5	5	0.1
49	33140	Handicraft & wood carving	16	101	3	43	4.4	0.9	13.9	43.2	-	0.0	0.0	2	-	13	100	5	3	0.8
50	33190	Wood & cork not elsewhere classified	12	101	4	47	4.7	0.7	36.4	91.3	-	0.0	0.1	3	-	13	100	5	3	0.0
51	33210	Furniture & fixtures primarily of wood	18	98	3	60	5.9	22.3	1101.1	1234.2	95.5	11.7	12.9	2	95.5	23	100	3	2	0.4
52	34111	Paper (all kind)	171	28	3	177	5.0	152.7	10120.7	18602.4	-	8.7	27.3	2	-	34	50	1	2	39.6
53	34112	Paperboard, fibreboard etc.	23	25	3	54	1.4	2.4	3340.5	6315.9	-	0.3	6.5	2	-	34	80	3	3	32.9
54	34120	Containers, boxes of paper and paperboard	90	69	4	257	17.8	130.7	145.7	495.1	73.8	6.2	6.7	2	73.8	34	20	4	4	0.7
55	34190	Pulp, paper and paperboard articles	16	30	3	36	1.1	1.1	1203 6	1833.9	-	0.1	1.8	2	-	34	20	4	2	0.6
56	34200	Printing, publishing	29	461	1	74	34.3	4.2	672.8	1244.6	-	5.2	6.5	1	-	45	90	4	2	3.6
57	35110	Basic chemicals except fertilizer	63	20	3	225	4.5	101.9	22270.5	31616.8	-	2.7	34.4	2	-	23	40	2	3	0.0
58	35120	Fertilizer	56	15	3	168	2.5	51.0	10743.7	26279.0	-	7.7	34.0	2	-	18	100	1	3	96.6
59	35130	Resins, plastic materials & synthetic fibres	61	27	4	57	1.5	15.5	8262.0	22815.0	-	2.0	24.8	2	-	28	60	2	1	51.5
60	35210	Paints, varnishes, lacquers	51	67	1	128	8.6	25.2	1316.5	3518.9	-	3.5	7.1	2	-	23	0	5	1	3.3
61	35221	Drugs & medicine except native medicines	100	66	2	184	12.1	74.0	7315.3	12752.1	-	15.7	28.5	2	-	18	10	4	1	6.5
62	35222	Native medicine	34	267	4	73	19.6	6.1	0.0	0.0	0.0	0.5	0.5	2	0.0	18	100	5	1	1.0
63	35231	Soap detergent, cleaning preparations	26	65	3	179	11.6	21.7	231.8	831.4	53.7	14.3	15.1	2	53.7	18	80	4	1	7.6
64	35232	Matches	771	109	4	57	6.3	90.1	91.6	210.8	-	1.2	1.5	1	-	18	60	4	4	0.7
65	35233	Cosmetics, tooth paste & other toilet preparations	62	143	4	217	31.1	33.3	1457.4	4188.6	-	3.3	7.4	2	-	18	80	5	1	2.7
66	35290	Other chemical product	41	61	2	60	3.7	11.9	635.8	1248.3	-	2.5	3.7	2	-	18	90	5	1	0.0
67	35510	Tyre & tubes	74	73	3	187	13.6	79.0	2026.7	4731.4	-	15.3	20.0	2	-	15	90	1	3	10.2
68	35590	Rubber products not elsewhere classified	42	146	3	49	7.1	12.1	331.8	930.0	-	4.1	5.0	2	-	15	90	5	4	2.6
69	35600	Plastic wares	25	68	3	52	3.5	3.9	690.8	1779.1	-	3.5	5.3	2	-	30	20	4	3	0.7
70	36110	Ceramic and porcelain	67	76	4	150	11.4	38.0	449.1	739.5	-	1.2	1.9	1	-	27	90	4	2	0.7
71	36200	Glass and glass products	95	76	2	97	7.4	42.2	2667.6	4663.8	-	3.9	8.6	2	-	15	90	2	4	9.2
72	36310	Cement	1063	18	2	326	5.9	1967.5	7942.0	13597.5	-	10.1	23.7	1	-	18	100	1	3	11.5
73	36320	Goods made from cement	18	31	5	76	2.4	5.7	818.7	1903.6	-	5.2	7.1	2	-	20	50	3	3	0.4
74	36330	Lime	23	18	5	35	0.6	2.0	5.7	15.4	8.3	1.8	1.8	1	8.3	15	100	5	3	2.1
75	36410	Bricks	12	32	3	33	2.7	0.6	352.5	567.7	-	0.6	1.1	1	-	15	100	3	3	0.03
76	36420	Roofing tiles	27	51	4	55	2.8	2.0	661.7	1246.7	-	1.9	3.2	1	-	15	100	3	3	0.4
77	36900	Other non metallic mineral products	24	51	3	56	2.9	6.7	527.0	1117.2	-	0.8	1.9	2	-	15	100	4	3	0.0
78	38111	Agricultural and hand tool	32	161	3	46	7.4	2.8	2189.2	4229.7	-	0.4	4.7	3	-	5	90	5	4	4.8
79	38112	Cutlery, nail, bolts & similar products	22	103	2	78	8.0	9.4	90.6	256.5	90.3	2.6	2.8	2	90.3	10	80	3	5	0.0
80	38120	Furniture & fixtures primarily of metal	9	86	4	90	7.7	3.5	212.5	528.3	-	0.9	1.4	2	-	15	60	4	2	1.0
81	38130	Structural metal products	29	78	4	140	10.9	28.1	4873.8	15059.1	-	15.1	30.2	3	-	20	0	3	3	2.4
82	38140	All kind of containers made of metal	49	86	4	100	8.6	12.1	1744.5	4821.5	-	4.4	9.2	1	-	20	0	4	4	1.0
83	38190	Metal products not elsewhere classified	28	137	3	59	8.1	12.3	3132.7	6819.7	-	9.5	16.4	1	-	15	0	4	3	0.0
84	38200	Machineries & repair	84	125	1	87	10.9	26.0	76398.0	142064.4	-	7.5	149.5	3	-	18	0	3	3	0.0
85	38311	Storage batteries	22	118	4	63	7.4	11.8	271.9	754.5	-	1.1	1.8	2	-	12	0	4	3	5.1
86	38312	Dry cell batteries	165	141	4	105	14.8	68.7	383.0	772.3	-	2.5	3.3	2	-	25	20	4	3	1.4
87	38320	Radio, T. V., casette and other communication equipment and apparatus	367	195	1	119	23.2	203.9	7070.6	17530.8	-	16.2	33.7	2	-	25	20	2	3	3.8
88	38330	Electrical apparatus and supplies	56	202	3	238	48.1	107.8	4519.8	10952.3	-	2.9	13.8	2	-	18	10	2	4	2.0
89	38340	Repair of electrical appliances	8	179	2	48	8.5	1.1	0.0	0.0	0.0	0.003	0.003	2	0.0	18	30	5	3	0.0

	Code No.	Name of Industries	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
90	38411	Ship building & canoe	109	226	2	244	55.2	59.1	2290.0	3858.3	-	5.1	8.9	1	-	30	10	2	4	0.0
91	38412	Repair and painting of ships	40	226	3	101	22.8	6.2	0.0	0.0	0.0	0.2	0.2	1	0.0	30	80	3	3	1.0
92	38430	Motor vehicles, assembling & manufacturing	135	81	3	187	15.1	63.4	50986.5	71337.2	-	3.9	75.2	1	-	15	10	2	3	16.6
93	38440	Motor cycles & bicycles assembling and manufacturing	43	132	4	128	16.9	82.4	3685.4	15863.8	-	21.3	37.1	2	-	15	20	1	3	1.3
94	38490	Manufacturing & assembling of transport equipment not elsewhere classified	14	87	2	55	4.8	3.1	984.2	1586.5	-	0.1	1.7	2	-	15	10	2	1	0.0
95	38500	Scientific, measuring, controlling, optical & photographic equipment	44	188	1	37	6.9	3.9	4421.7	11447.4	-	0.04	11.5	2	-	10	0	3	3	1.5
96	39010	Jewellery and related articles	26	234	1	53	12.5	5.5	1023.4	1835.5	-	0.7	2.6	3	-	8	100	4	3	0.6
97	39020	Musical instruments	22	182	1	44	8.1	2.9	27.9	48.6	-	0.01	0.06	2	-	8	100	5	3	2.0
98	39030	Sporting and athletic goods	43	110	2	50	5.5	6.6	288.4	839.5	-	0.3	1.2	2	-	8	100	5	5	1.4
99	39060	Stationeries	24	157	3	20	3.2	1.1	197.3	556.1	-	0.01	0.6	2	-	20	100	4	2	2.4
100	39090	Industries not elsewhere classified	29	136	3	57	7.8	29 29.2	0.0	0.0	0.0	3.4	3.4	2	0.0	8	60	5	3	0.0

(Source) Prepared by the mission

(Note)

The numerals 1 through 18 appearing at the top of Table V–1 indicate the following

1..... Number of employees per enterprise (unit: person)
2..... Number of employees per ha (unit: person)
3..... Degree of absorption of unskilled labor (unit: 5-stage indication)
4..... Wage per employee (unit: 1,000 Rps.)
5..... Wage per ha (unit: 1 million Rps.)
6..... Value added per enterprise (unit: 1 million Rps.)
7..... Foreign currency saving amount (import amount x value added ration (unit: 1,000 US$)
8..... Import amount (unit: 1,000 US$)
9..... Import ratio (unit: %)
10..... Amount of deliveries (production amount) (unit: 1 million Rps.)
11..... Scale of demand (amount of deliveries + import amount) (unit: 1 million Rps.)
12..... Spread of market (local, regional and world markets)
13..... Import ratio (import substitution possibility) (unit: %)
14..... Expected growth rate (unit: % per annum)
15..... Degree of using domestically produced raw materials (unit: %)
16..... Required investment fund (5-stage indication)
17..... Degree of necessity of engineers (5-stage indication)
18..... Required amount of industrial water (unit: $m^3/100m^2$)

(Source) Prepared by the mission.

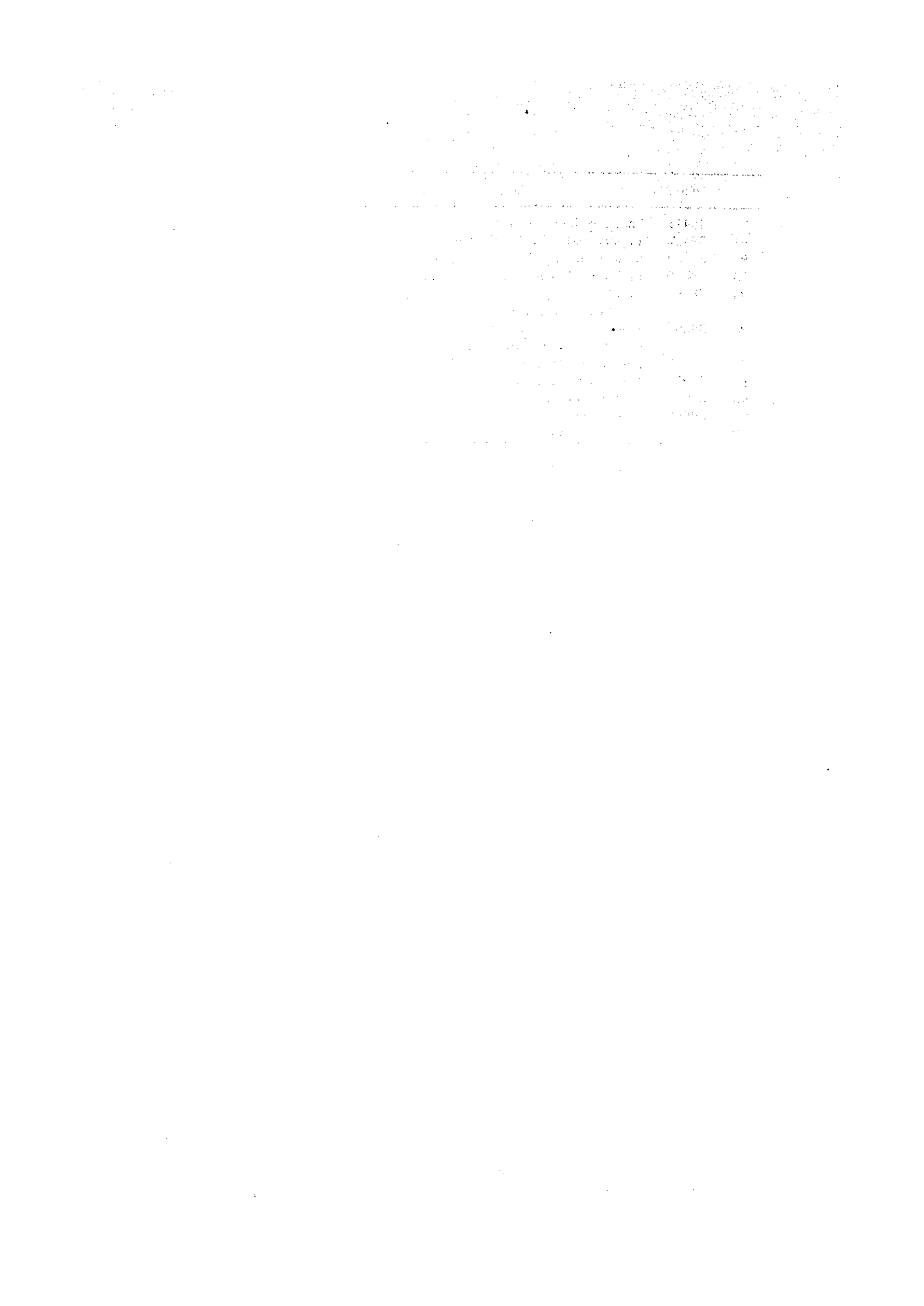


Table V-2 Ranking of Industries (1)

	Code No.	Name of Industries	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	31110	Slaughtering, preserving of meat	31	56	29	44	53	31	55	52	72	53	21	34	46	72	48	67	53	68
2	31120	Dairy products	88	67	65	21	31	39	21	18	60	53	11	11	11	60	48	67	53	83
3	31130	Canning & preserving of fruits & vegetable	11	29	65	30	20	26	39	34	27	53	71	63	86	27	69	43	23	77
4	31140	Processing & preserving of fish & other sea products	49	20	65	100	88	81	56	45	49	53	64	65	86	49	48	1	7	82
5	31151	Coconut oil	36	83	28	38	73	23	95	95	95	23	4	6	86	95	91	62	81	11
6	31159	Vegetable & animal oil and fat	22	83	29	17	50	23	61	55	79	23	7	12	86	79	91	15	81	94
7	31161	Rice milling	98	61	6	88	83	87	3	2	17	23	2	1	86	17	91	15	53	24
8	31162	Cleaning and polishing of rice	100	61	6	96	90	100	7	7	9	23	65	24	86	9	91	15	53	24
9	31163	Peeling and cleaning of coffee	21	50	29	50	57	9	86	85	87	23	6	9	11	87	69	15	53	11
10	31164	Wheat flour	5	71	6	2	8	1	22	17	56	96	9	10	86	56	48	96	53	93
11	31169	Grain mill products	76	80	6	91	95	78	70	70	57	65	75	85	86	57	69	67	53	76
12	31171	Macaroni, noodle	74	23	29	93	70	83	79	78	71	80	57	66	46	77	48	15	23	56
13	31179	Bakery products	75	93	29	73	97	79	71	69	75	76	33	47	86	75	48	43	81	60
14	31181	Sugar factories refineries	7	99	65	35	92	10	33	29	76	23	5	8	11	86	48	96	94	99
15	31190	Chocolate & sugar confectioneries	51	15	65	66	30	54	80	78	81	71	39	53	46	81	69	67	7	75
16	31210	Tapioca flour, sago	80	93	29	98	99	90	95	95	95	23	52	62	86	95	91	15	7	11
17	31230	Ice cubes	55	45	6	19	22	41	95	95	95	23	28	43	86	95	48	15	53	95
18	31241	Soya bean sauce	78	79	29	90	93	92	77	75	65	23	76	86	86	65	91	15	53	66
19	31242	Tahu and tempe	93	25	29	56	35	70	95	95	95	23	61	70	86	95	91	15	23	91
20	31250	Krukup, emping & karak	65	93	29	99	100	77	95	95	95	53	59	68	86	95	90	15	94	71
21	31260	Coffee powder & fried	97	50	29	94	86	97	83	83	62	23	87	94	11	62	48	43	53	89
22	31280	Cattle fodder	60	81	29	32	66	25	78	77	78	23	46	56	11	78	48	43	81	85
23	31290	Other food products	77	39	29	81	67	74	95	95	95	23	58	67	46	95	69	43	23	11
24	31310	Alcohol, spiritus, liqueurs	41	89	65	29	79	40	66	64	58	23	66	76	11	58	91	84	94	90
25	31320	Wine	59	89	65	53	89	69	22	72	33	53	88	92	11	33	91	43	94	29
26	31330	Malt liqueurs & malt	4	85	6	1	16	2	45	59	69	23	29	42	86	69	69	84	81	79
27	31340	Soft drink, carbonated waters	85	78	6	25	54	48	63	66	71	53	38	52	86	71	48	67	53	70
28	31410	Drying & processing tobacco	35	39	65	95	85	72	44	37	64	23	22	33	11	64	69	84	81	11
29	31420	Cloves cigarettes	10	39	65	82	68	12	73	72	83	23	3	5	11	85	69	84	23	11
30	31430	Cigarretes manufacturing	9	39	65	7	6	4	85	87	88	23	8	13	11	88	69	84	23	11
31	31490	Other tobacco products	14	39	65	92	81	42	64	63	53	23	69	78	11	53	69	84	81	11
32	32111	Yarn threads	8	83	65	15	29	5	89	89	89	71	1	3	46	89	36	96	53	80
33	32112	Weaving mills	32	52	65	62	63	44	40	36	80	76	2	4	11	80	81	43	7	61
34	32113	Bleaching and dyeing	40	43	65	45	48	52	15	13	19	65	41	26	46	19	81	67	23	83
35	32114	Batics	61	54	29	78	71	64	54	48	74	53	16	27	46	74	98	43	7	11

	Code No.	Name of Industries	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
36	32115	Jute weaving	1	63	65	47	62	6	82	84	83	23	36	51	46	83	99	84	7	73
37	32130	Knitting mills	26	4	65	64	19	51	26	21	37	23	35	35	46	37	81	43	23	57
38	32140	Carpet and rags	15	75	29	86	87	62	51	62	5	53	95	91	11	5	91	84	7	47
39	32150	Cordage rope and twine	39	45	29	68	60	55	49	54	26	23	83	84	46	26	91	43	23	36
40	32210	Wearing apparels	82	4	29	48	13	68	58	61	48	23	73	81	11	48	91	43	7	40
41	32290	Wearing apparels not elsewhere classified	86	4	29	57	17	82	53	53	14	23	90	87	11	14	91	43	7	40
42	32310	Leather tanneries & leather finishing	52	61	29	34	47	38	88	88	84	23	45	57	46	84	1	67	53	69
43	32330	Products of leather & substitutes	90	19	65	73	41	91	74	74	24	1	92	95	46	24	1	15	23	26
44	32400	Footwear	24	10	6	33	10	29	62	65	68	23	44	54	46	68	81	15	53	49
45	33111	Saw mills & other wood mills	72	83	6	37	72	56	84	82	86	23	12	21	86	86	29	15	7	25
46	33112	Wooden building materials	89	74	96	70	76	88	42	42	20	23	81	77	11	20	16	67	53	27
47	33120	Wooden boxes & containers	95	44	29	55	56	86	67	68	30	23	86	90	65	30	29	15	7	28
48	33130	Bamboo, rottan, willow pleats	94	17	29	46	28	89	95	95	95	23	84	93	46	95	61	15	7	22
49	33140	Handicraft & wood carving	84	35	65	80	65	96	81	81	13	23	99	99	46	13	61	15	53	42
50	33190	Wood & cork not elsewhere classified	91	35	29	76	61	98	75	76	21	23	94	97	11	21	61	15	53	11
51	33210	Furniture & fixtures primarily of wood	79	42	65	52	51	36	30	41	66	23	20	31	46	66	16	67	81	30
52	34111	Paper (all kind)	12	89	65	14	58	8	6	8	25	76	25	20	46	25	5	96	81	97
53	34112	Paperboard, fibreboard etc.	78	93	65	67	94	80	17	20	4	65	85	45	46	4	5	67	53	96
54	34120	Containers, boxes of paper and paperboard	20	65	19	4	11	11	65	60	70	84	30	44	46	70	5	43	23	38
55	34190	Pulp, paper and paperboard articles	83	87	65	85	96	94	29	32	2	84	96	72	46	2	5	43	81	33
56	34200	Printing, publishing	53	1	96	42	3	65	36	40	59	53	31	46	86	59	3	43	81	65
57	35110	Basic chemicals except fertilizer	28	96	65	8	64	15	4	4	11	79	53	15	46	11	16	84	53	11
58	35120	Fertilizer	43	100	64	16	82	24	5	5	18	23	26	16	46	18	29	96	53	100
59	35130	Resins, plastic materials & synthetic fibres	30	91	29	60	91	43	8	6	10	71	60	22	46	10	11	84	94	98
60	35210	Paints, varnishes, lacquers	37	67	96	22	33	35	28	28	36	96	48	41	46	36	16	15	94	64
61	35221	Drugs & medicine except native medicines	18	69	88	12	23	19	10	14	40	90	15	19	46	50	29	43	94	78
62	35222	Native medicine	48	2	29	43	9	60	95	95	95	23	79	89	46	95	29	15	94	45
63	35231	Soap detergent, cleaning preparations	63	70	65	13	24	37	57	47	73	65	19	29	46	73	29	43	94	81
64	35232	Matches	3	33	29	58	49	16	68	71	63	71	67	79	86	63	29	43	33	41
65	35233	Cosmetics, tooth paste & other toilet preparations	29	23	29	9	4	30	27	26	31	65	50	49	46	31	29	25	94	63
66	35290	Other chemical product	46	72	88	51	69	49	48	48	51	53	55	55	46	51	29	25	94	11
67	35510	Tyre & tubes	25	63	65	10	28	28	34	23	55	53	27	35	46	55	48	96	53	86
68	35590	Rubber products not elsewhere classified	45	21	65	74	45	47	48	44	61	53	50	49	46	61	48	15	23	62
69	35600	Plastic wares	64	66	65	71	74	66	35	33	50	84	47	48	46	50	9	43	53	38
70	36110	Ceramic and porcelain	27	58	29	18	25	28	43	51	46	53	68	69	86	46	12	43	81	35

(3)

	Code No.	Name of Industries	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
71	36200	Glass and glass products	19	58	88	31	44	27	19	24	32	53	42	38	46	32	48	84	23	84
72	36310	Cement	2	97	88	3	52	3	9	12	29	23	23	23	86	29	29	96	53	87
73	36320	Goods made from cement	81	86	6	41	84	61	34	30	52	76	32	40	46	52	20	67	53	32
74	36330	Lime	69	97	6	87	94	84	87	86	82	23	63	73	86	82	48	15	53	55
75	36410	Bricks	92	53	65	83	80	99	47	56	38	23	78	83	86	38	48	67	53	21
76	36420	Roofing tiles	58	76	29	65	78	85	37	39	45	23	62	60	86	45	48	67	53	31
77	36900	Other non metallic mineral products	67	76	65	61	77	67	41	43	28	23	74	71	46	28	48	43	53	11
78	38111	Agricultural and hand tool	50	16	65	77	43	76	23	25	12	53	80	50	11	12	91	15	23	72
79	38112	Cutlery, nail, bolts & similar products	71	44	88	40	38	53	69	67	67	65	54	61	46	67	69	67	7	11
80	38120	Furniture & fixtures primarily of metal	96	48	29	36	40	71	59	58	47	71	72	80	46	47	48	43	81	44
81	38130	Structural metal products	56	57	29	20	26	33	12	11	39	96	18	18	11	39	20	67	53	59
82	38140	All kind of containers made of metal	38	48	29	28	32	46	25	22	34	96	37	36	89	34	20	43	23	46
83	38190	Metal products not elsewhere classified	57	26	65	54	37	45	18	19	44	96	24	28	86	44	48	43	52	11
84	38200	Machineries & repair	23	30	96	39	27	34	1	1	7	96	27	2	11	7	19	67	53	11
85	38311	Storage batteries	70	31	29	49	42	50	52	50	43	96	70	74	46	43	63	43	53	74
86	38312	Dry cell batteries	13	23	29	26	15	20	46	49	54	84	56	59	46	54	13	43	53	51
87	38320	Radio, T. V., casette and other communication equipment and apparatus	6	11	96	24	5	7	11	9	35	84	14	17	46	35	13	84	53	67
88	38330	Electrical apparatus and supplies	34	9	65	6	2	14	13	16	16	90	51	30	46	16	29	84	23	54
89	38340	Repair of electrical appliances	99	14	88	75	34	95	95	95	95	80	100	100	46	95	29	15	53	11
90	38411	Ship building & canoe	17	7	84	5	1	12	20	27	41	90	34	37	86	41	9	84	23	11
91	38412	Repair and painting of ships	47	7	65	27	7	59	95	95	95	65	89	96	86	95	9	67	53	43
92	38430	Motor vehicles, assembling & manufacturing	16	54	65	11	14	21	2	3	8	90	43	7	86	8	48	84	53	92
93	38440	Motor cycles & bicycles assembling and manufacturing	44	28	29	23	12	17	16	10	42	84	13	14	46	42	48	96	53	49
94	38490	Manufacturing & assembling of transport equipment not elsewhere classified	87	47	88	63	59	73	32	35	6	90	91	65	46	6	48	84	94	11
95	38500	Scientific, measuring, controlling, optical & photographic equipment	42	12	96	84	46	67	14	15	1	96	93	32	46	1	69	67	53	52
96	39010	Jewellery and related articles	62	6	96	69	21	63	31	31	22	23	77	64	11	22	77	43	53	34
97	39020	Musical instruments	73	13	96	79	36	75	76	80	15	22	97	98	46	15	76	15	53	53
98	39030	Sporting and athletic goods	43	32	88	72	55	58	50	46	23	23	72	72	46	23	77	15	7	51
99	39060	Stationeries	66	18	65	97	75	93	60	57	3	23	98	88	46	3	20	43	81	58
100	39090	Industries not elsewhere classified	54	27	65	59	39	32	95	95	95	71	49	58	46	95	77	15	53	11

(Source) Prepared by the mission.

Table V-3 Ranking of Industries (5-stage evaluation)

	Code No.	Name of Industries	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	31110	Slaughtering, preserving of meat	B	C	B	C	C	B	C	C	D	C	B	B	C	D	C	D	C	D
2	31120	Dairy products	E	D	D	B	B	B	B	A	D	C	A	A	A	D	C	D	C	E
3	31130	Canning & preserving of fruits & vegetable	A	B	D	B	A	B	B	B	B	C	D	D	E	B	D	C	B	D
4	31140	Processing & preserving of fish & other sea products	C	A	D	E	E	E	C	C	C	C	D	D	E	C	C	A	A	E
5	31151	Coconut oil	B	E	B	B	D	B	E	E	E	B	A	A	E	E	B	D	E	A
6	31159	Vegetable & animal oil and fat	B	E	B	A	C	B	D	C	D	B	A	A	E	D	E	A	E	E
7	31161	Rice milling	E	D	A	E	E	E	A	A	A	B	A	A	E	A	E	A	C	B
8	31162	Cleaning and polishing of rice	E	D	A	E	E	E	A	A	A	B	D	B	E	A	E	A	C	B
9	31163	Peeling and cleaning of coffee	B	C	B	C	C	A	E	E	E	B	A	A	A	E	D	A	C	A
10	31164	Wheat flour	A	D	A	A	A	A	B	A	C	E	A	A	E	C	C	E	C	E
11	31169	Grain mill products	D	D	A	E	E	D	D	D	C	D	D	E	E	C	D	D	C	D
12	31171	Macaroni, noodle	D	B	B	E	D	E	D	D	D	D	C	D	C	D	C	A	B	C
13	31179	Bakery products	D	E	B	D	E	D	D	D	D	D	B	C	E	B	D	C	C	E	C
14	31181	Sugar factories refineries	A	E	D	B	E	A	B	B	D	B	A	A	A	E	C	E	E	E
15	31190	Chocolate & sugar confectioneries	C	A	D	D	B	C	D	D	E	D	B	C	C	E	D	D	A	D
16	31210	Tapioca flour, sago	D	E	B	E	E	E	E	E	E	B	C	D	E	E	E	A	A	A
17	31230	Ice cubes	C	C	A	A	B	C	E	E	E	B	B	C	E	E	C	A	C	E
18	31241	Soya bean sauce	D	D	B	E	E	E	D	D	D	B	D	E	E	D	F	A	C	D
19	31242	Tahu and tempe	E	B	B	C	B	D	E	E	E	B	D	D	E	E	E	A	B	E
20	31250	Krukup, emping & karak	D	E	B	E	E	D	E	E	E	C	C	D	E	E	E	A	E	D
21	31260	Coffee powder & fried	E	C	B	E	E	E	E	E	D	B	E	E	A	D	C	C	C	E
22	31280	Cattle fodder	C	E	B	B	D	B	D	D	D	B	C	C	A	D	C	C	E	E
23	31290	Other food products	D	B	B	E	D	D	E	E	E	B	C	D	C	E	D	C	B	A
24	31310	Alcohol, spiritus, liqueurs	C	E	D	B	D	B	D	D	C	B	D	D	A	C	E	E	E	E
25	31320	Wine	C	E	D	C	E	D	D	D	B	C	E	E	A	B	E	C	E	B
26	31330	Malt liqueurs & malt	A	E	A	A	A	A	C	C	D	B	B	C	E	D	D	E	E	D
27	31340	Soft drink, carbonated waters	E	D	A	B	C	C	D	D	D	C	D	C	E	D	C	D	C	D
28	31410	Drying & processing tobacco	B	B	D	E	E	D	C	B	D	B	B	B	A	D	D	E	E	A
29	31420	Cloves cigarettes	A	B	D	E	D	A	D	D	E	B	A	A	A	E	D	E	B	A
30	31430	Cigarretes manufacturing	A	B	D	A	A	A	E	E	E	B	A	A	A	E	D	E	B	A
31	31490	Other tobacco products	A	B	D	E	E	C	B	B	C	B	D	D	A	C	D	E	E	A
32	32111	Yarn threads	A	E	D	A	B	A	E	E	E	D	A	A	C	E	B	E	C	D
33	32112	Weaving mills	B	C	D	D	D	C	B	B	D	D	A	A	A	D	E	C	A	D
34	32113	Bleaching and dyeing	B	C	D	C	C	C	A	A	A	D	C	B	C	A	E	D	B	E
35	32114	Batics	D	C	B	D	D	D	C	C	D	C	A	B	C	D	E	C	A	A
36	32115	Jute weaving	A	D	D	C	D	A	E	E	E	B	B	C	C	E	E	E	A	D
37	32130	Knitting mills	B	A	D	D	A	C	B	B	B	B	B	B	C	B	E	C	B	C
38	32140	Carpet and rags	A	D	B	E	E	D	C	D	A	C	E	E	A	A	E	E	A	C
39	32150	Cordage rope and twine	B	C	B	D	C	C	C	C	B	B	E	E	C	B	E	C	B	B
40	32210	Wearing apparels	E	A	B	C	A	D	C	D	C	B	D	E	A	C	E	C	A	B
41	32290	Wearing apparels not elsewhere classified	E	A	B	C	A	E	C	C	A	B	E	E	A	A	E	C	A	B
42	32310	Leather tanneries & leather finishing	C	D	B	B	C	B	E	E	E	B	C	C	C	E	A	D	C	D
43	32330	Products of leather & substitutes	E	A	D	D	C	E	D	D	B	A	E	E	C	B	A	A	B	B
44	32400	Footwear	B	A	A	B	A	B	D	D	D	B	C	C	C	D	E	A	C	C
45	33111	Saw mills & other wood mills	D	E	A	B	D	C	E	E	E	B	A	B	E	E	B	A	A	B
46	33112	Wooden building materials	E	D	E	D	D	E	C	C	A	B	E	D	A	A	A	D	C	B
47	33120	Wooden boxes & containers	E	C	B	C	C	E	D	D	B	B	E	E	D	B	B	A	A	B
48	33130	Bamboo, rottan, willow pleats	E	A	B	C	B	E	E	E	E	B	E	E	C	E	D	A	A	B
49	33140	Handicraft & wood carving	E	B	D	D	D	E	E	E	A	B	E	E	C	A	D	A	C	C
50	33190	Wood & cork not elsewhere classified	E	B	B	D	D	E	D	D	B	B	E	E	A	B	D	A	C	A

	Code No.	Name of Industries	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
51	33210	Furniture & fixtures primarily of wood	D	C	D	C	C	B	B	C	D	B	A	B	C	D	A	D	E	B
52	34111	Paper (all kind)	A	E	D	A	C	A	A	A	B	D	B	A	C	B	A	E	E	E
53	34112	Paperboard, fibreboard etc.	D	E	D	D	E	D	A	A	A	B	E	C	C	A	A	D	C	E
54	34120	Containers, boxes of paper and paperboard	A	D	A	A	A	A	D	C	D	E	B	C	C	D	A	C	B	B
55	34190	Pulp, paper and paperboard articles	E	E	D	E	E	E	B	B	A	E	E	D	C	A	A	C	E	B
56	34200	Printing, publishing	C	A	E	C	A	D	B	B	C	C	B	C	E	C	A	C	E	D
57	35110	Basic chemicals except fertilizer	B	E	D	A	D	A	A	A	A	D	C	E	C	A	A	E	C	A
58	35120	Fertilizer	C	E	D	A	E	B	A	A	A	B	B	A	C	A	B	E	C	E
59	35130	Resins, plastic materials & synthetic fibres	B	E	B	C	E	C	A	A	A	D	C	B	C	E	E	A	A	A
60	35210	Paints, varnishes, lacquers	B	D	E	B	B	B	B	B	B	E	C	C	C	B	A	A	E	D
61	35221	Drugs & medicine except native medicines	A	D	E	A	B	A	A	A	B	E	A	A	C	C	B	C	E	D
62	35222	Native medicine	C	A	B	C	A	C	E	E	E	B	D	E	C	E	B	A	E	C
63	35231	Soap detergent, cleaning preparations	D	D	D	A	B	B	C	C	D	D	A	B	C	D	B	C	E	E
64	35232	Matches	A	B	B	C	C	A	D	D	D	D	D	D	E	D	B	C	B	C
65	35233	Cosmetics, tooth paste & other toilet preparations	B	B	B	A	A	B	B	B	B	D	C	C	C	B	B	B	E	D
66	35290	Other chemical product	C	D	E	C	D	C	C	C	C	C	C	C	C	C	B	B	E	A
67	35510	Tyre & tubes	B	D	D	A	B	B	B	B	C	C	B	B	C	C	C	E	C	E
68	35590	Rubber products not elsewhere classified	C	B	D	D	C	C	C	C	D	C	C	C	C	D	C	A	B	D
69	35600	Plastic wares	D	D	D	D	D	D	B	B	C	E	C	C	C	C	A	C	C	B
70	36110	Ceramic and porcelain	B	C	B	A	B	B	C	C	C	C	D	D	E	C	A	C	E	B
71	36200	Glass and glass products	A	C	E	B	C	B	A	B	B	C	C	B	C	B	C	E	B	E
72	36310	Cement	D	E	E	A	C	A	A	A	B	B	B	B	E	B	B	E	C	E
73	36320	Goods made from cement	E	E	A	C	E	D	B	B	C	D	B	B	C	C	A	D	C	B
74	36330	Lime	D	E	A	E	E	E	E	E	E,	B	D	D	E	E	C	A	C	C
75	36410	Bricks	E	C	D	E	D	E	C	C	B	B	D	E	E	B	C	D	C	B
76	36420	Roofing tiles	C	D	B	D	D	E	B	B	C	B	D	C	E	C	C	D	C	B
77	36900	Other non metallic mineral products	D	D	D	D	D	D	C	C	B	B	D	D	C	D	C	C	C	A
78	38111	Agricultural and hand tool	C	A	D	D	C	D	B	B	A	C	D	C	A	A	E	A	B	D
79	38112	Cutlery, nail, bolts & similar products	D	C	E	B	B	C	D	D	D	D	C	D	C	D	D	D	A	A
80	38120	Furniture & fixtures primarily of metal	E	C	B	B	B	D	C	C	C	D	D	D	C	C	C	C	E	C
81	38130	Structural metal products	C	C	B	A	B	B	A	A	B	E	A	A	A	B	A	D	C	C
82	38140	All kind of containers made of metal	B	C	B	B	B	C	B	B	B	E	B	B	E	B	A	C	B	C
83	38190	Metal products not elsewhere classified	C	B	D	C	B	C	A	A	C	E	B	B	E	C	C	C	C	A
84	38200	Machineries & repair	B	B	E	B	B	B	A	A	A	E	B	A	A	A	A	D	C	A
85	38311	Storage batteries	D	B	B	C	C	C	C	C	C	E	D	D	C	C	D	C	C	D
86	38312	Dry cell batteries	A	B	B	B	A	A	C	C	C	E	C	C	C	C	A	C	C	C
87	38320	Radio, T. V., casette and other communication equipment and apparatus	A	A	E	B	A	A	A	A	B	E	A	A	C	B	A	E	C	D
88	38330	Electrical apparatus and supplies	B	A	D	A	A	A	A	A	A	E	C	B	C	A	B	E	B	C
89	38340	Repair of electrical appliances	E	A	E	D	B	E	E	E	E	D	E	E	C	E	B	A	C	A
90	38411	Ship building & canoe	A	A	E	A	A	A	A	B	C	E	B	B	E	C	A	E	B	A
91	38412	Repair and painting of ships	C	A	D	B	A	C	E	E	E	D	E	E	E	E	A	D	C	C
92	38430	Motor vehicles, assembling & manufacturing	A	C	D	A	A	B	A	A	A	E	C	A	E	A	C	E	C	E
93	38440	Motor cycles & bicycles assembling and manufacturing	C	B	B	B	A	A	A	A	C	E	A	A	C	C	C	E	C	C
94	38490	Manufacturing & assembling of transport equipment not elsewhere classified	E	C	E	D	C	D	B	B	A	E	E	D	C	A	C	E	E	A
95	38500	Scientific, measuring, controlling, optical & photographic equipment	C	A	E	E	C	D	A	A	A	E	E	B	C	A	D	D	C	C
96	39010	Jewellery and related articles	D	A	E	D	B	D	B	B	B	B	D	D	A	B	D	E	E	B
97	39020	Musical instruments	D	A	E	D	B	D	D	D	A	B	E	E	C	A	D	A	C	C
98	39030	Sporting and athletic goods	C	B	E	D	C	C	C	C	B	B	D	D	C	D	D	A	A	C
99	39060	Stationeries	D	A	D	E	D	E	C	C	A	B	E	E	C	A	A	C	E	C
100	39090	Industries not elsewhere classified	C	B	D	C	B	B	E	E	E	D	C	C	C	E	D	A	C	A

(Source) Prepared by the mission

(Note) A: rank 1st to 20th, B: 21st to 40th, C: 41st to 60th,
D: 61st to 80th, E: 81st to 100th

Table V-4 List of Appropriate Industries

Rank	ISIC Code No.	Name of Industries	Rank	ISIC Code No.	Name of Industries
1	31110	Slaughtering, preserving of meat	31	34120	Containers, boxes of paper & paperboard
2	31130	Canning & preserving of fruits & vegetables	32	34200	Printing, publishing
3	31140	Processing & preserving of fish & sea products	33	35210	Paints, varnishes, lacquers
4	31151	Coconut oil	34	35221	Drugs & medicines except native medicine
5	31159	Vegetable & animal oil and fat	35	35232	Matches
6	31161	Rice milling	36	35233	Cosmetics, tooth paste & other toilet preparations
7	31162	Cleaning & polishing of rice	37	35600	Plastic wares
8	31163	Peeling and cleaning of coffee	38	36110	Ceramic and porcelain
9	31171	Macaroni, noodle	39	36320	Goods made from cement
10	31179	Bakery products	40	36330	Lime
11	31230	Ice cubes	41	36410	Bricks
12	31260	Coffee powder & fried	42	36420	Roofing tiles
13	31280	Cattle food	43	36900	Other non metallic
14	31330	Malt liqueurs & malt	44	38111	Agricultural and hand tool
15	31340	Soft drink, carbonated water	45	38112	Cutlery, nail, bolts and similar products
16	31420	Cloves cigarettes	46	38130	Structural metal products
17	31430	Cigarettes manufacturing	47	38140	All kind of container made of metal
18	31490	Other tobacco products	48	38190	Metal products not elsewhere classified
19	32111	Yarn threads	49	38200	Machineries & repair
20	32112	Weaving mills	50	38311	Storage batteries
21	32113	Bleaching and dyeing	51	38312	Dry cell batteries
22	32130	Knitting mills	52	38320	Radio, T. V., casette, communication equip.
23	32210	Wearing apparels	53	38330	Electrical apparatus and supplies
24	32290	Wearing apparels not elsewhere classified	54	38340	Repair of electrical appliances
25	32330	Products of leather & substitutes	55	38411	Ship building & canoe
26	32400	Footwear	56	38412	Repair and painting of ships
27	33111	Saw mills & other wood mills	57	38440	Motor cycle & bicycle assembling & mfg.
28	33112	Wooden building materials	58	38490	Assembling & mfg. of other transport equip.
29	33120	Wooden boxes & containers	59	39060	Stationeries
30	33210	Furniture & fixture primary of wood			

(Source) Prepared by the mission.

Table V-5 Problems of Inappropriate Industries

Code No.	Name of Industries	Criterion for employment	Criterion for income	Criterion for market	Large investment	Large dependency on technical labor	Large amount of industrial water used	Remarks (Others)
31120	Dairy products	○			○			It is difficult to get supply of raw milk at the site.
31164	Wheat flour							A large factory already exists near the site.
31169	Grain mill products	○	○	○				
31181	Sugar factories, refineries	○			○			Raw material location is desirable.
31190	Chocolate and sugar confectioneries							
31210	Tapioca flow, sago							
31241	Soya bean sauce	○	○	○				As a whole, criteria for selection area not satisfied.
31242	Tahu and tempe			○			○	
31250	Krukup, emping & karak	○	○	○		○		
31290	Other food products							
31310	Alcohol, spiritus, liqueurs	○				○		
31320	Wine	○		○		○		
31410	Drying and processing tobacco							Raw material location is desirable.
32114	Batics							Indigenous product in particular area
32115	Jute weaving				○			Raw material can't be supplied.
32140	Carpet and rags		○	○				
32150	Cordage rope and twine			○				
32310	Leather tanneries & finishing			○				
33130	Bamboo, rottan, willow pleats			○				
33140	Handicraft & wood carving			○				
33190	Wood & cork not elsewhere classified			○				
34111	Paper (all kind)	○					○	Paper mill in Gowa meets regional demand.
34112	Paperboard, fibreboard etc.	○	○				○	
34190	Pulp, paper and paperboard articles	○						
35110	Basic chemical except fertilizer	○			○		○	
35120	Fertilizer	○			○		○	
35130	Prastic materials & synthetic fibres	○			○		○	
35222	Native medicine			○				
35231	Soap detergent, cleaning proparations	○				○	○	
35290	Other chemical products	○				○		
35510	Tyre & tubes	○			○		○	
35590	Rubber products not elsewhere classified							
36200	Glass and glass products				○			
36310	Cement	○			○			Cement factory in Tonasa meets regional demand.
38120	Furniture and fixtures primarily of metal					○		
38430	Motor vehicles, assembling & manufacturing					○		Existing factory in Ujung Pandang
38500	Scientific, measuring, controlling, optical & photographic equipment			○	○			meets regional demand
39010	Jewellery and related articles							
39020	Musical instruments			○				
39030	Sporting and athletic goods			○				
39090	Industries not elsewhere classified							

(Source) Prepared by the mission

5. Impact-Giving Characteristic of Appropriate Industries

The appropriate industry selecting job has been completed in the preceding section, but here we refer to the impact characteristic for the aim of developing. The Udjuing Pandang industrial estate or location possibility which has clarified in the course of such job. For simplification purpose, we adopt the 5-stage ranking and refer to the following six indicators: employment per hectare, wage per employee, import substitution possibility, easiness of raw material supply, amount of deliveries, investment fund requirement.

It is possible to form groups which would give the best impact with respect to each of the six indicators, and such groups are as follows:

I group ..... Group of industries which maximizes employment per hectare

II group ..... Group of industries which maximizes wage per employee

III group ..... Group of industries which is considered to have the greatest import substitution effect

IV group ..... Group of industries which is considered to be the easiest in using domestically produced raw materials

V group ..... Group of industries which is considered to be the easiest in point of location when viewed from the aspect of market conditions

VI group ..... Group of industries which is considered to be the easiest in point of location when viewed from the aspect of investment fund requrement

With respect to the 100 industries, we pick out them into the groups, I to VI, and consideration is given below as to what impact-giving characteristics each group of industries has for the six aims of development of the estate or easiness of location.

We have picked out group I, that is, 20 industries which maximize employment per ha, and checked how this group of industries is positioned with respect to other aims of development or indicator of location possibility. The results are as shown in Table V-6. From this table it is seen that this group of industries occupies a position at which a fairly good impact is given for the easiness of using domestic raw materials or easiness of location viewed from the investment fund requirement, but that this group occupies a fairly bad position in point of wage per employee, import substitution property and amount of deliveries.

Also with respect to the groups, II to IV, it is possible to check in the same procedure the degree of impact for each indicator. The results are as set out in Fig. V-3.

From this figure, it becomes apparent that a certain group of industries brings about a good impact for one aim, but has little effect for other aims. Conversely speaking, each individual aim of development of the industrial estate is proper, but there exists a trade-off relationship among the aims of development.

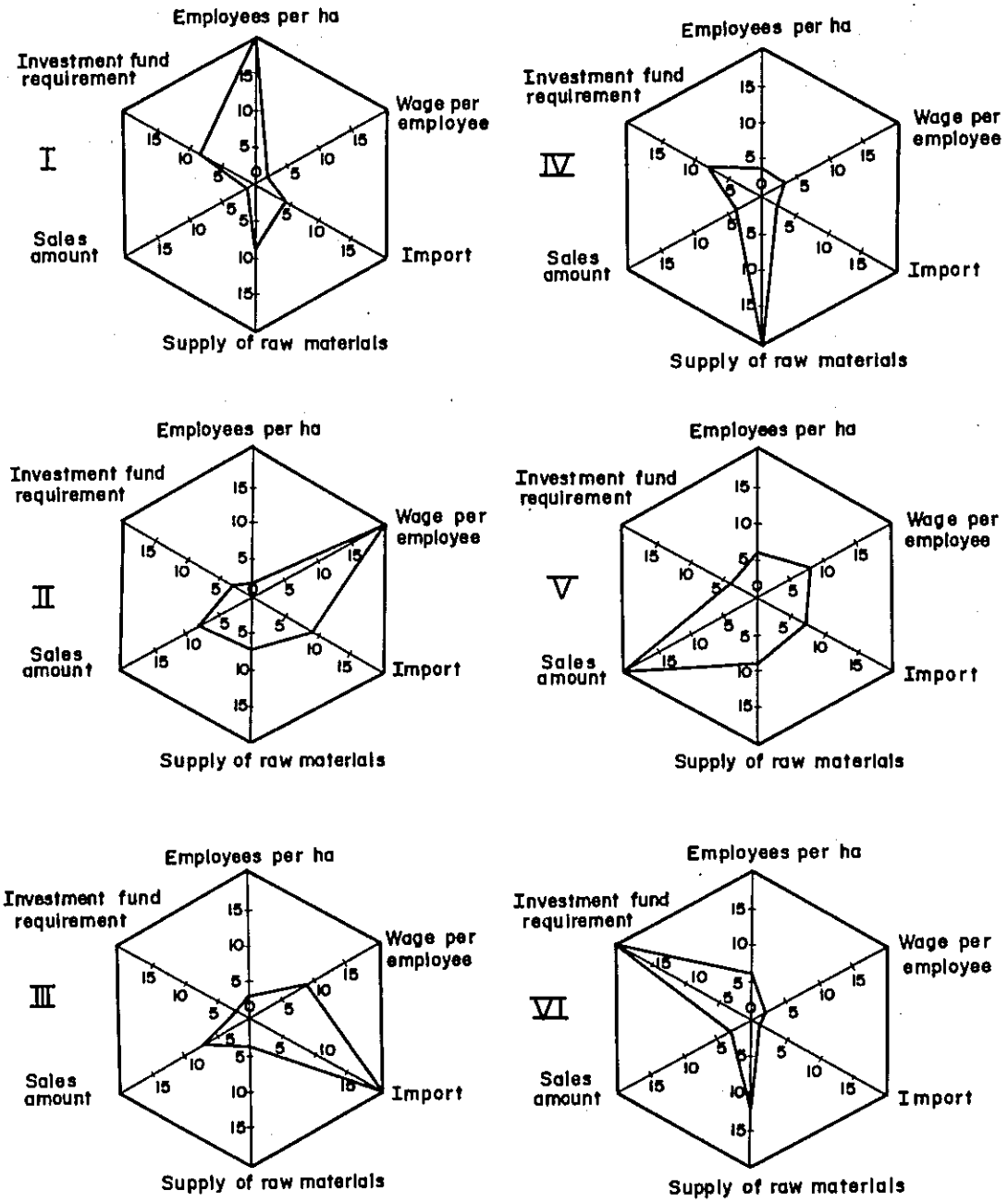
Next, the same operation has been applied to the selected 59 appropriate industries and their impact-giving characteristic pattern compared with the original pattern. The results are as indicated in Fig. V-4. It will be seen from this figure that the pattern is basically not changed, but that it is swollen as a whole and the impact for the other indicators is much more improved than those selected from among 100 industries. Thus, the risk of the selection of industries is diminished, and this is one of the significances in selecting appropriate industries.

Table V-6 Impact of Industries having a Large Employment Effect upon other Indicators

Rank	Code No.	Name of Industries	Number of employees per ha.	Wage per employee	Import	Sales amount	Domestic supply of raw materials	Investment fund requirement
1	31140	Processing & preserving of fish & other sea food	A	E	C	D	B	A
2	31190	Chocolate & sugar confectioneries	A	D	D	B	C	C
3	32130	Knitting mills	A	D	B	B	A	B
4	32210	Wearing apparels	A	C	C	E	A	B
5	32290	Wearing apparels not elsewhere classified	A	C	C	E	A	B
6	32330	Products of leather & substitutes	A	D	D	E	B	A
7	32400	Footwear	A	B	D	C	A	A
8	33130	Bamboo, rottan, willow pleats	A	C	E	E	A	A
9	34200	Printing, publishing	A	C	B	B	B	B
10	35222	Native medicine	A	C	E	D	A	A
11	38111	Agricultural and hand tool	A	D	B	D	B	A
12	38320	Radio, T. V., casette, communication equipment	A	B	A	A	D	D
13	38330	Electrical apparatus and supplies	A	A	A	C	D	D
14	38340	Repair of electrical appliances	A	D	E	E	C	A
15	38411	Ship building & canoe	A	A	B	B	C	D
16	38412	Repair and painting of ships	A	B	E	E	B	C
17	38500	Scientific, measuring, control, optical & photographic equipment	A	E	A	E	E	C
18	39010	Jewellery and related articles	A	D	B	D	A	B
19	39020	Musical instruments	A	D	D	E	A	A
20	39060	Stationeries	A	E	C	E	A	B
		Twenty industries Total	A 20	A 2	A 3	A 1	A 9	A 8
			B 0	B 3	B 5	B 4	B 5	B 6
			C 0	C 5	C 3	C 2	C 3	C 3
			D 0	D 7	D 5	D 5	D 2	D 3
			E 0	E 3	E 4	E 8	E 1	E 0

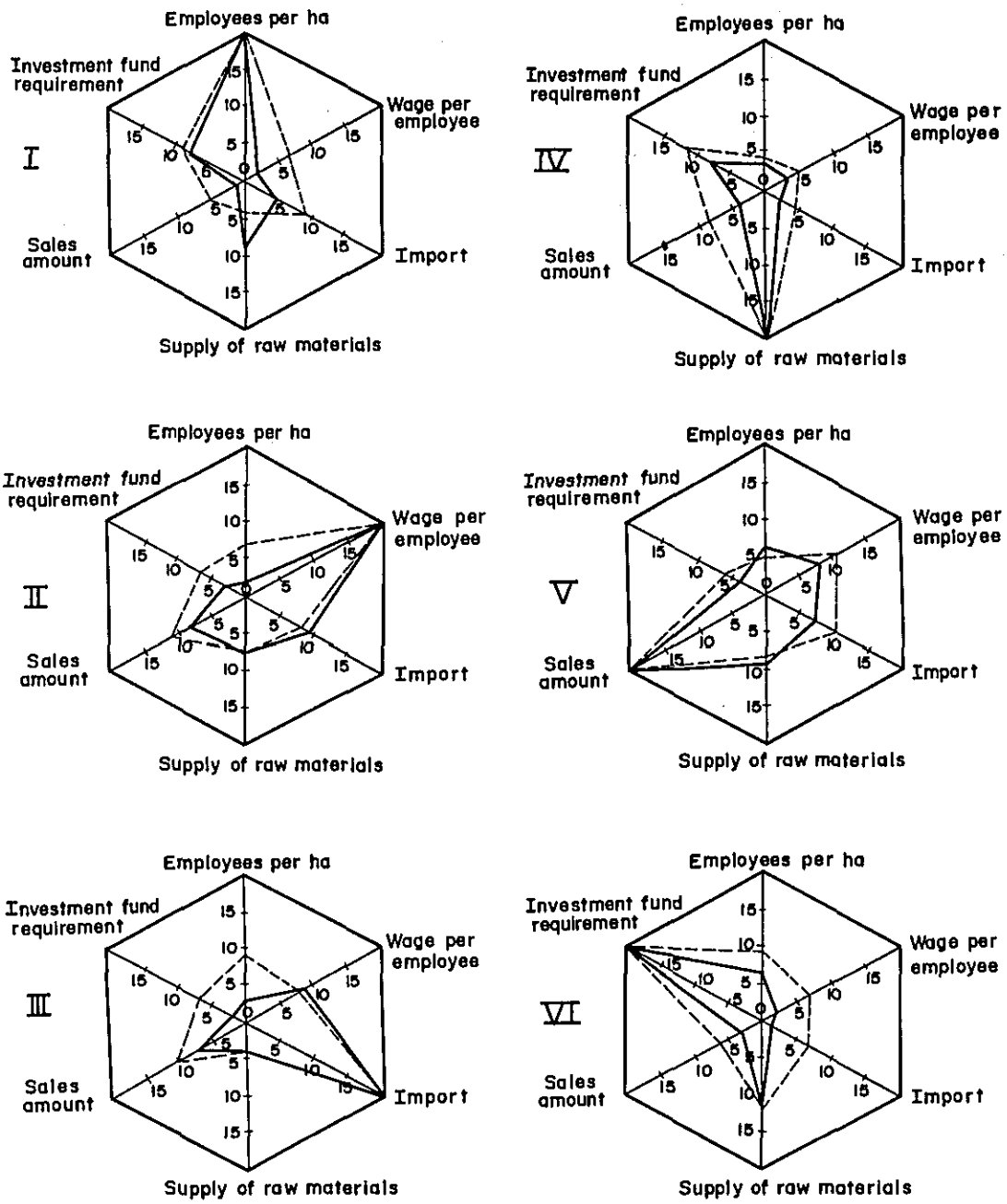
(Source) Prepared by the mission

Fig. V–3 Impact-Giving Characteristics of All Industries
(Graduations indicate the number of A-ranking cases)



Source: Prepared by the mission

Fig. V–4 Impact-Giving Characteristics of Appropriate Industries (Graduations indicate the number of A-ranking caes)



Source: Prepared by the mission

VI STUDY ON DESIRABLE INDUSTRIES FOR THE INDUSTRIAL COMBINATION

VI STUDY ON DESIRABLE INDUSTRIES FOR THE INDUSTRIAL COMBINATION

The targets of the industrial estate development project will be attained by introducing industries which have the characteristics that meet such targets. Therefore, among a series of items of the industrial estate development project, the decision of the industries which must be introduced to the industrial estate with priority is very important.

In this chapter, studies are made as to what industries are to be introduced in the first phase of the Ujung Pandang industrial estate project in what combination.

Ideally, desirable industries for the industrial estate must satisfy the following two conditions: ① They must meet the targets of the industrial estate development; ② Desirable industries must keep each other for development and be capable of forming an organic industrial group. However, in view of the present situation of the Ujung Pandang industrial estate development project and the level of industrialization of at area, it may be a little difficult to bring desirable industries up to an ideal level at once for the following reasons:

1) The industrial estate development aims at an all-round development in various acquisition aspects such as ① increase of employment, ② increase of income, ③ saving and of foreign currencies, ④ promotion of industrialization, and ⑤ planned development of cities. However, when industries are introduced according to these targets, there arise some trade-offs between targets. For example, industries which will help increase employment will not much help increase income (see Chapter V-5).

Therefore, when individual targets and target mix are to be attained, an appropriate method of selecting proposed industries is to combine in a pertinent ratio groups of the industries having different effects such as greater employment opportunities and large import/export substitution.

Before the ratio of combination of these different industries is determined, the relative weights of individual development targets must be determined. At present, we can only guess that the government relatively puts priority on the target of increasing employment. To determine the relative weight of targets or to place priority accordingly will be a subject for future study.

2) When we plan introduction of industries as a means for regional development, it is necessary to consider the introduction not so much of a single industry as a group of industries having an interdependent relationship. Reasons for this may be summarized into the following two points:

① Fundamentally speaking, industrial production activity is rarely realized by a single industry. Usually, various industries have mutual connections in the transactions of raw materials or products. Whether or not the introduction of an industry in the area concerned can be a driving force for the development of regional economy depends not only on the scale of agglomeration of the industry itself but also on the scale and scope of agglomeration of other industries which will be developed directly or indirectly.

② The introduction of industries in an area concerned aims not only at a temporary development, but also at the establishment of the industrial and technological foundation which permanently supports the expansion of regional economy. The regional industrial foundation is not established by a group of independent industries which are not connected with each other, but by a group of industries which can technologically complement each other. Therefore, proposed industries for the Ujung Pandang industrial estate must preferably form an industrial group having the above-mentioned characteristics. However, such an industrial group cannot be established at a stretch unless there are ample factors for industrialization such as capital, technique, skilled labor, management know-how, and market.

Therefore, we have considered it necessary to present a draft of desirable industries as a base for your study put determine the relative weights of the on targets or to characterize the industrial estate. With this in mind we have prepared several realistic alternative plans and are making a sensitivity analysis of selection of industries for the industrial estate development target. It is hoped that these alternative plans will be discussed with the government agencies concerned of the Republic of Indonesia at the stage of feasibility study, and then they will be brushed to work out the final list of desirable industries.

1. Priority Industries for the Ujung Pandang Industrial Estate

Alternatives of desirable industries should be worked out for the purpose of forming an industrial group that have a comparatively loose interdependent relationship. The fifty-nine promising industries which have been sellected in Chapter V and the ranking among these industries are taken into account. However, because of the necessity to prepare alternatives, criteria for selection different from those in Chapter V have been adopted (because of importance attached to local conditions) and classification of industries are amended (for further subdivision.)

The local conditions are importance in the following points:

(1) Industries considered promising by the Government of South Sulawesi Province

In reply to the question raised by the mission, the government of South Sulawesi Province mentioned the following 19 industries as promising for the province: cement, paper making, iron & steel products, steel pipes, cold storage, livestock feeds, ice manufacture, maize oil, spinning, asbestos products, sugar manufacture, petrochemicals, repair work (for automobiles, bicycles, etc.). maritime industry (shipbuilding and ship repairing), small-size tractors for agricultural use, agricultural machines, frozen meat, plastics processing, and markisa juice (a fruit juice indigenous to South Sulawesi). Of these industries, the following eight, steel pipes, livestock feeds, maize oil, spinning, small-size tractors for agricultural use, agricultural machines, frozen meat, and plastic processing, are completely new for South Sulawesi. With respect to asbestos products, an application for establishing a factory has been filed.

Of the 19 industries, the five industries, cement, paper making, cold storage, sugar manufacture and refining, and petrochemicals, are considered unsuitable for the industrial estate. The other suitable industries should be introduced with priority.

(2) Important Industries in Consideration of Prohibition of Investment in Light Industries from in Java

With a view to accomplishing self-supply and also to protecting indigenous capitals and the established joint ventures, the Indonesian government prohibits new inroads of foreign capitals in about 40 industries under the ordinance of the

Industrial Ministry. Of these industries, investment is allowed by the decision by the competent office of the Industrial Ministry in such industries as ① glutamic condiments, ② nails and iron wires, ③ biscuits, confectionery and breads, ④ candy, ⑤ soft drinks, ⑥ ice manufacture, ⑦ can manufacture, ⑧ instant noodles, spaghetti, etc. and ⑨ wigs, provided that 75% of the products are exported and that investment is made in areas other than Java. Investment in textile and medical industries in Java is also prohibited.

These industries investment in which is required in outer Java should be introduced with priority.

(3) Industries for which there are needs but production is not conducted in the area concerned

Necessary information is unavailable on whether or not the production system is indigenous and of what scale the market is, but some information is available on actual results of production. Industries for which there are considerable regional needs but production is not conducted in the region - shoes, beach sandals, matches, and medicines are considered to fall under such category - should be introduced with priority.

With the three points mentioned above taken into account, industries which should be introduced with priority in the Ujung Pandang industrial estate are listed in Table VI-1.

Table VI-1 Industries which should be introduced with priority in the Ujung Pandang Industrial Estate

	Code No.	Appropriate Industries	Not produced yet		Promising Industries (Provincial Government)	Industries for which production is permitted in Outer Java (Ministry of Industry)
			Ujung Pandang	South Sulawesi		
1	31110	Slaughtering, preserving of meat				
2	31130	Canning & preserving of fruits & vegetable	○	○		
3	31140	Processing & preserving of fish & sea products				
4	31151	Coconut oil				
5	31159	Vegetable & animal oil and fat			maize oil	
6	31161	Rice milling				
7	31162	Cleaning & polishing of rice	○	○		
8	31163	Peeling and cleaning of coffee	○			
9	31171	Macaroni, noodle				
10	31179	Bakery products				bread
11	31230	Ice cubes			ice manufacture	ice manufacture
12	31260	Coffee powder & fried				
13	31280	Cattle food			livestock feed	
14	31330	Malt liquers & malt	○	○		
15	31340	Soft drink, carbonated water		○	markisa juice	soft drinks
16	31420	Cloves cigarettes	○	○		
17	31430	Cigarettes manufacturing				
18	31490	Other tobacco products				
19	32111	Yarn threads	○	○	spinning	
20	32112	Weaving mills				
21	32113	Bleaching and dyeing				
22	32130	Knitting mills		○		
23	32210	Wearing apparels				
24	32290	Wearing apparels not elsewhere classified				
25	32330	Products of leather & substitutes	○			
26	32400	Footwear	○	○		
27	33111	Saw mills & other wood mills				
28	33112	Wooden building materials				
29	33120	Wooden boxes & containers		○		
30	33210	Furniture & fixture primary of wood				
31	34120	Containers, boxes of paper & paperboard	○	○		
32	34200	Printing, publishing				
33	35210	Paints, varnishes, lacquers	○	○		
34	35221	Drugs & medicines except native medicine	○	○		medicine
35	35232	Matches	○	○		
36	35233	Cosmetics, tooth paste & other toilet preparations		○		
37	35600	Plastic wares		○	plastic molding	
38	36110	Ceramic and porcelain	○			
39	36320	Goods made from cement			asbestos products	
40	36330	Lime				
41	36410	Bricks				
42	36420	Roofing tiles				
43	36900	Other non metallic				
44	48111	Agricultural and hand tool				
45	38112	Cutlery, nail, bolts and similar products				nail, iron wires
46	38130	Structural metal products	○	○	steel pipe	
47	38140	All kind of container made of metal				
48	38190	Metal products not elsewhere classified				
49	38200	Machineries & repair			repair work	
50	38311	Storage batteries			agricultural machines	
51	38312	Dry cell batteries	○	○		
52	38320	Radio, T. V., casette, communication equip.		○		
53	38330	Electrical apparatus and supplies	○	○		
54	38340	Repair of electrical appliances	○	○		
55	38411	Ship building & canoe			maritime industry	
56	38412	Repair and painting of ships				
57	38440	Motor cycle & bicycle assembling & mfg.		○		
58	38490	Assembling & mfg. of other transport equip.		○		
59	39060	Stationeries				

(Source) Prepared by the mission

2. Alternatives for Desirable Industries for Industrial Combination

1) Alternative I

Alternative I selects industries which have a high proximity to regional market (of products and raw materials). When an alternative is formed from such a market oriented view-point, generally it is difficult to pursue the the merit as an industrial group, but it has an advantage of directly relating the industries to the regional market by the development of non-industrial sector through supply of products (or of raw materials). The industries having a high proximity to regional market in the Ujung Pandang area, include the following: (1) agriculture, forestry and fishery-related industries, (2) civil engineering and construction-related industries, and (3) personal consumption-related industries.

(1) Agriculture, Forestry and Fishery-Related Industries

South Sulawesi is one of the typical rice-producing districts in Indonesia. The area also produces other agricultural products such as maize, casaba, and peanut. Further more, coastal fishery, fresh water fishery and forestry are developed to a certain extent. The present Second 5-Year Development Plan and the Third 5-Year Development Plan aim at promotion of sugar cane, maize and livestock-farming.

Agriculture is South Sulawesi's greatest sector in terms of economy and population. The introduction and upbringing of industries related to agriculture, forestry and fishery should be made in a positive manner because only after the development of agriculture, the development of the province will begin to favor the people of the whole area.

Industries whose market is the agriculture forestry and fishery sector are those which help increase rice production, that is, chemical products related to New BIMAS Project such as nitrogen-based fertilizers and agricultural chemicals, and agricultural and irrigation machines such as sprayers (both motor-driven and manual), dusters (both motor-driven and manual), rice-hulling machines, rice-cleaning machines, small-size diesel engines, irrigation pumps, and small-size agricultural tractors. The nitrogen-based fertilizer industry is disqualified for introduction in to the Ujung Pandang industrial estate. All the other industries have the possibility for the introduction.

Since domestic production and knock-down assembly have already been conducted in Java and it is disadvantageous to transport them from Java, introduction and upbringing of these industries should be promoted in a positive manner.

Promotion and moderniation of fisheries are achieved mainly by equipping fishing boats with motor. As modernization of ships progresses, there will arise considerable demand for diesel engines for small-size fishing boats and outboart motors. Because domestic production (knock-down) of marine diesel engines has not been started, and South Sulawesi is a fishing center, upbringing of such industry is worth studying.

In connection with the measure for promoting livestock-farming, livestock feed is also considered promising. There are some industries which use agricultural, forestrical and marine products as the raw materials and process them. Frozen meat, maize oil and markisa juice are considered specially promising. Furthermore, it will be necessary to make a study of the possibility of production of canned meat and canned marine products. Clients of these processed agricultural and marine products are very likely to be overseas markets, and so it is necessary to make a careful study of the international competitiveness of these industries.

(2) Civil Engineering and Construction-Related Industries

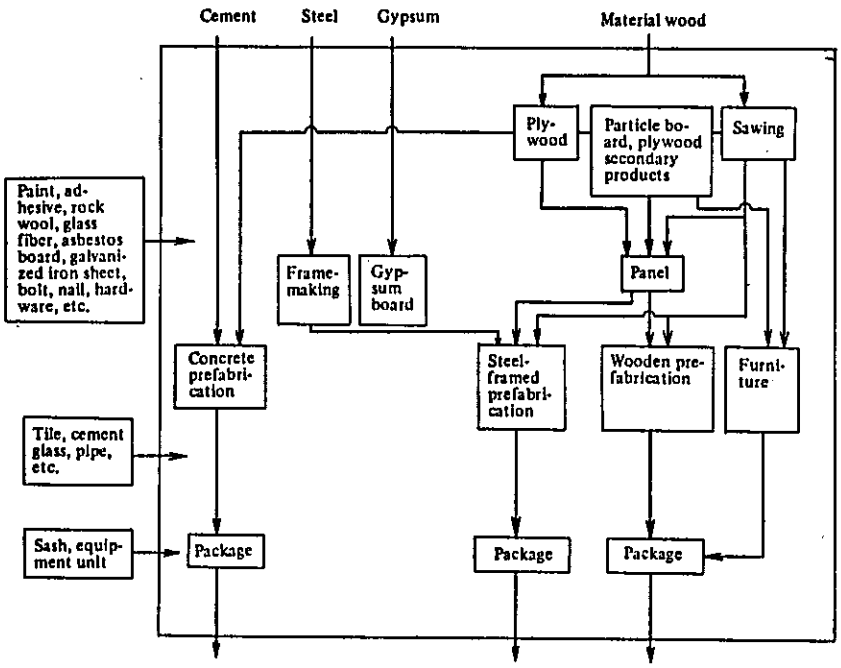
In general, the infrastructure of South Sulawesi leaves much room for improvement, and so a considerable part of the government's development effort will be directed to the improvement of the infrastructure. Further more, the needs for infrastructural development is considered high throughout the whole area of East Indonesia. The development of infrastructure will be accompanied by an increasing demand for cement and bar steels, but the number of industries which are allowed to enter the industrial estate in connection with infrastructural development will be unexpectedly small. With respect to bar steel, P.T. Selniwa has a production capacity enough to meet the demand of East Indonesia for at least several years ahead.

In Ujung Pandang city, an increase in population will cause an increasing demand for housing, and at the same time re-development will be started for the Makassar district upon which population is now concentrated. Also, it is likely that the housing program consisting primarily of Kampon improvement, site and

service and low-cost housing now under way in the vicinity of Jakarta will be introduced in Ujung Pandang city. Simple low-cost architectures will become a prefabricated housing or those built by the Two By Four construction method. In this case, systematization of the housing industry will greatly advance and also it will become possible to realize and industrial group which supplies materials to such housing industry. For the construction of low-cost houses, it is indispensable to position both the housing construction site and the material supplying factory in proximity to each other to reduce distribution cost. This is not specially restricted to prefabricated houses. Since freight charges of Hume pipes, concrete piles, slates, roof tiles and bricks are high, a large merit ought to be obtained by setting up factories supplying these materials withing the city of Ujung Pandang.

A flow of prefabricated housing materials is illustrated in Fig. VI-1

Fig. VI–1 Flow of Prefabricated Housing Materials



(Source) NRI

(3) Personal Consumption-Related Industries

We consider that the most important factors giving impact to personal consumption-related industries are an increase in population of Ujung Pandang city, as well as a rise in income of inhabitants. At present, we cannot but con-

sider that the income level in Ujung Pandang is low and consumer expenditure pattern is characterized high by Engel's Coefficient is high and less margin in expenditure, with the following composition: food expenses 59%, housing expenses 14%, clothing expenses 11% and others 16%. However, in view of the consumer expenditure pattern by income brackets and also of the probable income rise in future, we may inferred that the weight of food expenses will go down to a considerable extent and that of housing and other expenses will go up. The weight of clothing expenses will also go up, but to a small extent (see Chapter III-1).

Taking account of the scale of the present market and the required production of each industry, it is presumed that, for the time being, such industries as soft drinks, ice manufacture, clothing, footwear, daily necessaries, medicines, and bicycles, are considered to be desirable industries. In the future, however, there will be an increasing possibility for industries manufacturing such durable consumer goods as radios, TV sets and motorcycles.

Desirable industries are picked out of agro-allied industries, those related to civil engineering and construction, and those related to personal consumption related industries are listed in Table VI-2.

Table VI-2 List of Desirable Industries in Alternative I

1)	Agricultural chemicals	
2)	Sprayers, dusters (motor driven or manual)	
3)	Rice-hulling machines	
4)	Rice-cleaning machines	
5)	Small-sized diesel engines	
6)	Irrigation pumps	
7)	Small-sized tractors	
8)	Small-sized marine engines	*
9)	Livestock feeds	
10)	Maize oil	
11)	Markisa juice	
12)	Frozen meat	
13)	Canned meat	*
14)	Canned marine products	*
15)	Canned vegetables	
16)	Steel pipes	
17)	Hume concrete pipe	
18)	Asbestos slate	
19)	Gypsum board	
20)	Plywood	*
21)	Prefabricated housing	*
22)	Synthetic resin molding	□
23)	Paints	
24)	Adhesives	
25)	Roof tiles	
26)	Bricks	
27)	Tiles	
28)	Ceramic pipes	
29)	PVC pipe	
30)	Furniture	□
31)	Soft drinks	
32)	Ice manufacture	□
33)	Clothing	□
34)	Shoes & sandals	
35)	Daily necessaries	
36)	Medicines	□
37)	Bicycles	
38)	Radios & TV sets	*
39)	Other household electric appliances	*
40)	Assembly of motorcycle	*

(Source) Prepared by the mission.

(Note) * Denotes that the realization is relatively difficult.
Denotes that plural enterprises can be introduced.

The number of desirable industries is 40 in all, which are broken down as follows: agro-allied industries 15, those related to civil engineering and construction 15, and those related to personal consumption 10. In some industries (synthetic resin processing, furniture, ice manufacture, clothing, daily necessaries, and medicines), it is likely that plural enterprises can coexist, but, generaly speaking, an enterprise in each industry will meet the local demand.

Table VI-3 shows the area and the number of employees to be required, assuming that all of these desirable industries are settled in the Ujung Pandang industrial estate.

Table VI-3 Estimated Land Requirement and Employment in Alternative I

	Estimated number of entering enterprises	Estimated land requirement	Estimated number of employees
Agro-allied industries	11	15 ha	1,550 persons
Civil engineering and construction-related industries	17	35	4,100
Individual consumption - related industries	20	25	5,800
Total:	48	75	11,450

Source) Prepared by the mission

We made out this alternative with an approach from a market-oriented viewpoint, and mutual interdependence for development among industries can be attained to some extent by the formation of the two groups having an industrial-mix-like factor, that is, the agricultural machine industry group and the housing-related goods manufacturing industry group.

2) Alternative II

Alternative II is a proposal in which it is aimed at to construct an industrial group which can be favored with a large merit by means of co-existence such as

that typically shown in the petrochemical complex. Enterprises which have an extremely strong interdependence in the production process (for example, enterprises producing intermediate goods and enterprises producing final products by use of such intermediate goods as material) or those which use common raw materials are introduced as an industrial group. By the introduction of these enterprises, the following two effects can be brought about, viz., 1) this industrial estate can possess a remarkable characteristic as above, and 2) each industry introduced may eventually have a stronger international competitiveness by ① ensuring a stable supply of raw materials and ② reducing transportation cost.

Examples of such an industrial group which may be introduced are food processing complex and wood processing complex. In the textile industry it is also possible to form such an industrial group, though the character is a little different.

Reference is made below to each industrial group.

① Food Processing Complex

As the industrial group which should be introduced to form the nucleus of the food processing complex, there are two groups as shown in Fig. VI-2. One is an industrial group which produces meat products (ham, bacon, sausage), canned foods (beef, chicken, fish meat) and animal fat products, using cattle, horse, domestic fowl, and fish as raw materials. The other is as industrial group producing products whose raw material is flour, such as chemical seasoning (Monosodium glutamate), bread, confectionery, macaroni, spaghetti, and noodles. With these two industrial groups as the nucleus, there are introduced around them industries using livestock hides and bones such as leather products manufacturing industry and bone works manufacturing industry, and industries for coping with a future increase in population such as rice-cleaning industry and edible oil manufacturing industry, and feed manufacturing industry which utilizes by-products obtained at the time of preparing such foods (offals, animal fat cakes, fish meal, bone meal, rice-bran, chaff, oil cake, etc.). By so doing, there is formed a food processing industrial group having a unity as a whole. Regarding flour, a sufficient quantity can be produced in a modern flour mill which is located near the Ujung Pandang port and so flour is supplied from this flour mill, that is, flour mill is not introduced in the industrial estate.

② Wood Processing Complex

As shown in Fig. VI-3, the wood precessing complex is built by introducing first the lumbering industry, veneer manufacturing industry and plywood manufacturing industry as the nucleus of the complex, and there after by building the following industries around them. That is, the architectural wood works manufacturing industry, furniture manufacturing industry and wooden container manufacturing industry (box, cask, wooden refrigerator, etc.) which use the products of these nucleus industries as intermediate goods, indigenous, wood-carved products manufacturing industry, as well as the industry which produces improved lumbers such as fiber board and particle board by utilization of chips, a by-product obtained at the time of producing wooden products. Through introduction of these industries around the nucleus industries, it is aimed at to establish a wood processing industrial group having an organic correlation as a whole.

③ Textile industry

In the textile industry, it is also possible to form an industrial group which closely resembles that of food processing industries and that of wood processing industries. The nucleus is the spinning industry.

As shown in the flow of textile goods production of Fig. VI-4, industries using spun yarns as the raw material such as woven cloth industry, knitting industry, fishing net industry, and rope & cord industry, can be favored with such merits as a stable supply of the raw material and reduction in transportation cost if they are located in the vicinity of spinning mill. Therefore, these industries along with the spinning industry, are put together into a single industrial group and this industrial group is introduced in the industrial estate. This industrial group includes dyeing industry and sewing industry.

Fig. VI-2 Food Processing Complex

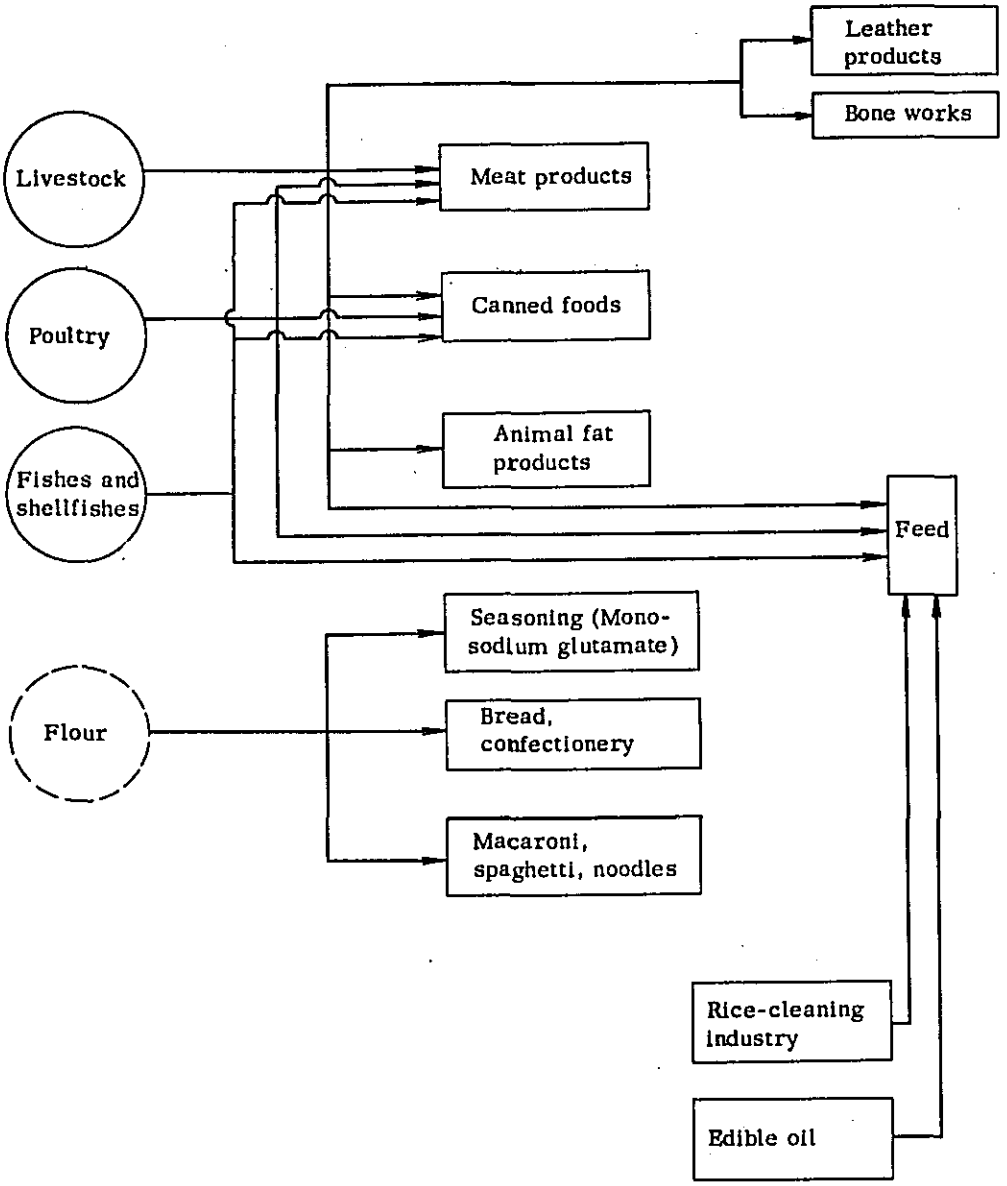


Fig. VI-3 Wood Processing Complex

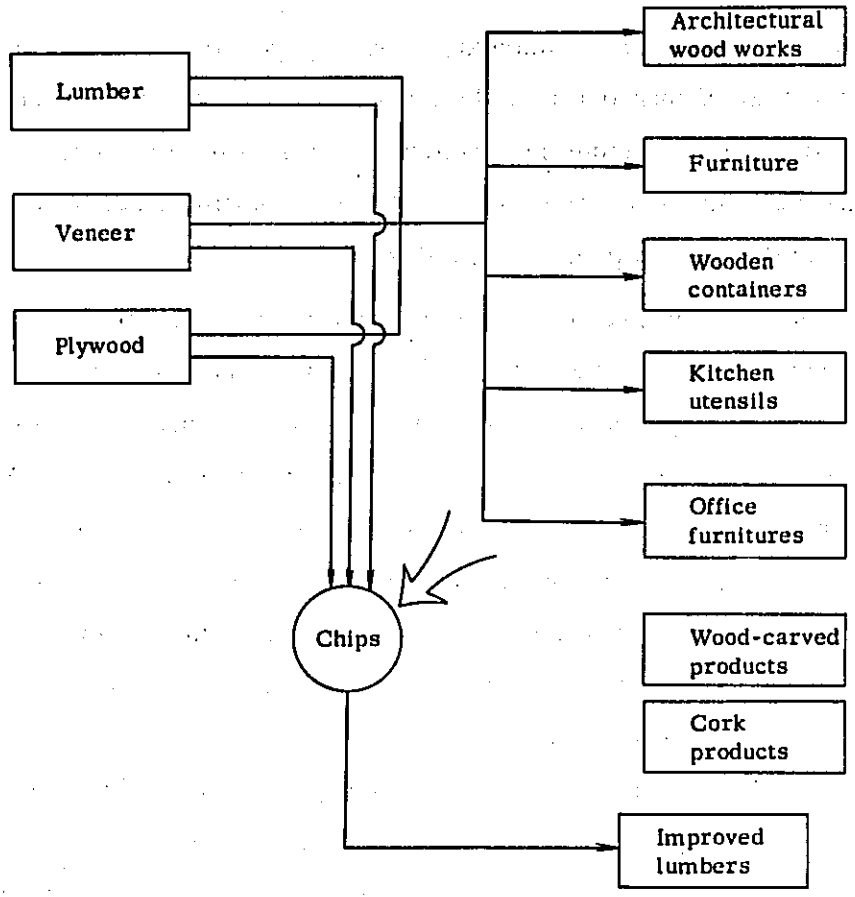
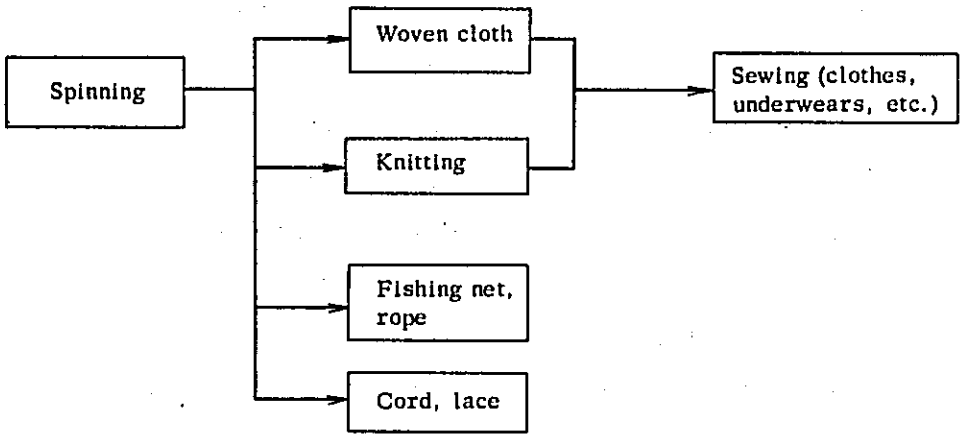


Fig. VI-4 Textile Industry



3) Alternative III

Because of the advanced standardization of production system, there is a long-range strategy of introducing industries comparatively easy to be established first, and their promoting industries which supply raw materials to those industries. Typical industries for such a process are (1) the metallic products manufacturing industry and (2) the plastic processing industry.

(1) Regarding metallic products, a galvanized iron sheet mill (P.T. SERMANI) and a round bar mill (P.T. SERNIWA) are already in operation in Ujung Pandang city. For the future regional development, however, it will be necessary to manufacture various other kinds of secondary products of iron and steel. What are considered promising for the time being are small-diameter steel pipes, bolts, nuts, iron wires, nails, water pipes, and cans. Furthermore in line with a progress in petroleum and natural gas development in East Indonesia, it will become possible to produce pipes for transportation. By introducing these secondary iron & steel product manufacturing industries in the industrial estate, engineers and skilled workers will be trained in a certain period of time. When needs arise in the future for developing the same kinds of industries at less developed areas in East Indonesia, more rapid and steady industrial development will be possible by dispatching these engineers and skilled workers to such areas. From a long-term standpoint, it will also be possible to establish the steel manufacturing industry through the prosperity of the secondary iron & steel product industry in the whole East Indonesia.

(2) Plastic products are used in a wide variety of fields such as packaging materials, daily necessities, househole articles, and architectural and industrial products. And a considerably high growth rate exceeding an annual rate of 20% is expected (see Chapter IV), but the plastic processing industry has not yet been introduced in the Ujung Pandang area.

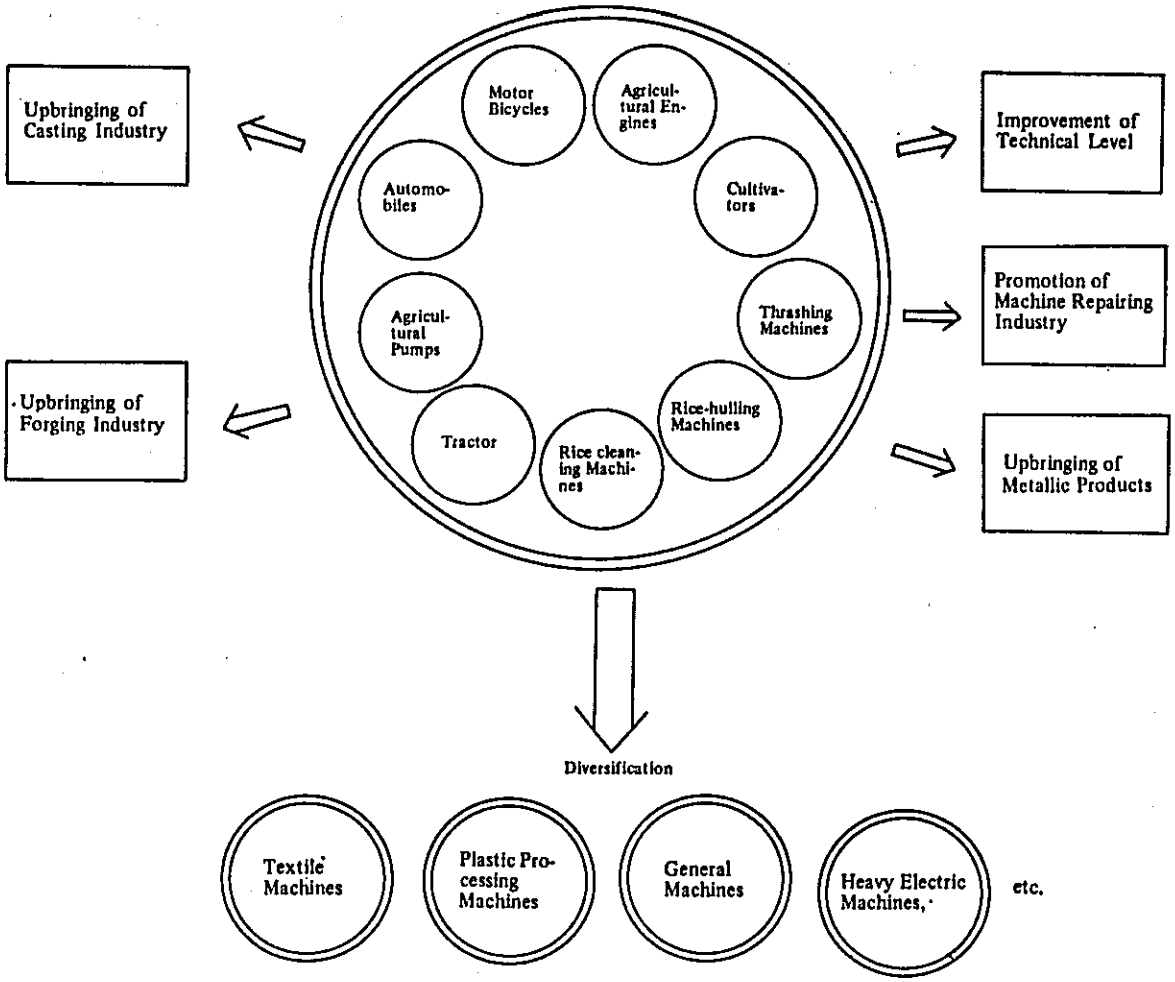
In the Ujung Pandang area, there is presumably a large demand for packing materials such as bags for agricultural products, e.g. rice, sugar, tapioca and copra, and bags for cement. In addition, it is presumed that there is also a considerable demand for industrial products using sheets such as handbags, school bags, furniture lining cloth and table-cloth, and also for household moldings such as buckets and bottles. These plastic processing industries have already achieved

a great development in Java, and the production technique itself is not so difficult. In view of these facts, there is apparently a large possiblility of expansion of such industries in the Ujung Pandang area. It is also a great advantage that these industries can exist both on a small scale and a medium scale. Under the circumstances, it will be strategic to introduce positively plastic processing industries first in order to exploit the market and have them develop in a similar pattern to that of the metal industry.

4) Alternative IV

Alternative IV is a proposal aiming at upbringing machine industries and thereby taking in advance the future of industrialization in Indonesia. That is, it is aimed at that at the beginning knock-down production is to be made of those machines that have a comparatively analogous structure such as agricultural machines (engines for agricultural use, cultivators, etc.) and motor bicycles as shown in Fig. VI-5, then the rate of local-supply is to be raised gradually while improvement of technical level, promotion of machine repairing industry and upbringing of metallic products manufacturing industry are made. It is aimed at that eventually casting and forging industries are to be established and a complete domestic production of these machines be achieved. It is also proposed that, once the production of agricultural machines and motor bicycles has reached a certain level, diversification of production items is to be made as far as textile machines, plastic processing machines, general machines and heavy electric machines whereby in the future the industrial estate is brought up to a big machine supply center in Indonesia.

Fig. VI-5 Agricultural Machines & Motor Bicycles Manufacturing Industries



5) Alternative V

We have so far examined the introduction of medium-sized modern industries, because the role of the Ujung Pandang industrial estate is expected to be fulfilled mainly through establishment and development of medium-sized industries. However, there is another role to promote modernization of indigenous industries. In the Ujung Pandang area, there are many indigenous industries established at the town area. The existence of some of these indigenous industries is considered undesirable from the viewpoint of urban development. It is one direction to relocate such industries to the industrial estate. However, when such a step is taken, it is desirable not only to offer the factory site but also to take positive measures promotion of their modernization. Measures for modernization will cover a wide range of fields, including management, marketing, quality control and technological innovations. For more efficient modernization, indigenous industries to be intro-

duced into the industrial estate should have a substantial number of enterprises respectively. Ceramics and farm implement seem to be suitable for the introduction. The structure of the enterprises in these indigenous industries will be greatly improved through guidances for management and technical trainiry programs aimed at promoting small enterprises. This will also lead to the training of managers and engineers, which will play an important role in the promotion of the regional industrialization in the future.

From different viewpoints we have examined candidate industries to be introduced into the Ujung Pandang industrial estate. Alternatives I, II and V are proposals placing emphasis on a comparatively near future. On the other hand, in Alternatives III and IV, emphasis is laid on a longer-term future.

In the light of the present situation in which the target of developing the Ujung Pandang industrial estate is a mix of various objectives, it is fairly meaningless to make comparison of these alternatives by discussing their merits and demerits. It would be proper to make a study first in the direction of mixing Alternatives I, II and V. Further more, Alternatives III and IV should also be taken into consideration in a long-term and strategic viewpoint.

3. Sensitivity Analysis on Selection of Industries for Target Achievement

Here we take up industrial estate developing objects which are easily quantitatively grasped such as creation of employment and raising value added, and make studies on what and how many industries should be introduced in the industrial estate in order to maximize these objects, or on to what extent two or more objects can be compatible with each other.

1) Limitation of Formulation and Analysis of Problems

There is a limitation in inputs such as land, electric power, water supply, and skilled labor force; therefore, when deciding the combination of industries and the scale of introduction for maximizing objects within such constraint conditions, it is convenient to use the Linear Programming (LP) method.* LP is composed of three elements, that is, non-negative variables, objective functions expressed by their linear combination, and constraint conditions.

Here we take up, as variable (x), the 59 appropriate industries which have been selected in the preceding chapter, and the annual sales (unit: billion Rps) of

i-th industry in the industrial estate is taken to be x_i. As the objective function, three cases are considered, they are the total number of direct employment in the whole industrial estate ($P_L(x)$), total annual amount of wages paid to these employees ($P_W(x)$) and total amount of annually-yielded values added ($P_A(x)$). In all of these, linearity by the variable is assured. For example, if the average number of employees per the sales of one billion Rps of i-th industry is c_i,

$$P_L(x) = C_1 X_1 + C_2 X_2 + \cdots\cdots Cn\,Xn = \Sigma\, Ci\, Xi$$

The following are considered as constraint conditions:

① Factory Land Area

The gross area of the industrial estate was taken to be 200 ha and the ratio of factory land to be 50%, that is, 100 ha in net. And the land area to be alloted for each industry was taken to be 5 ha maximum.

② Electric Power

When considering that a special power generation equipment is to be provided in the industrial estate, electric power is not necessary to be a constraint condition, but, as an aim, 35 million kWh was presumed. (In the result, only one-third or less was used in all the cases).

③ Water Supply

Since the water circumstances of Ujung Pandang is fairly severe, 5,000 m^3/day (57.8 1/sec) was presumed. Also, a study was made on the case in which water supply was removed from the constraint conditions.

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* The Linear Programming method is a method in which, under the constraint condition of a simultaneous linear inequality concerning several continuous variables which take positive or zero value, a certain linear expression (objective function) concerning such variables is maximized (or minimized). Its standard form is expressed as follows:

Objective function, $P(X) = C_1 X_1 + C_2 X_2 + \cdots\cdots + Cn\,Xn = C \cdot X$

is maximized under the constraint condition

$$\left.\begin{array}{l} \alpha_{11} X_1 + \alpha_{12} X_2 + \cdots\cdots + \alpha_{1n} Xn \leqq b_1 \\ \alpha_{21} X_1 + \alpha_{22} X_2 + \cdots\cdots + \alpha_{2n} Xn \leqq b_2 \\ \cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots \\ \alpha_{m1} X_1 + \alpha_{m2} X_2 + \cdots\cdots + \alpha_{mn} Xn \leqq bm \end{array}\right\} \quad \text{namely, } A\,X \leqq Ib$$

$$X_1, X_2, \cdots\cdots Xn \geqq o \qquad \text{namely, } X \geqq o$$

④ Skilled Labor Force

A study was made on both cases of 5,000 persons and 15,000 persons. The "skilled labor force" as referred to herein is not a skilled labor in a strict sense, but it means those laborers who have experience in production labor in the manufacturing sector.

⑤ Road Traffic Volume

By imaging the present national road (Jl. GOWA JAYA), 6,000t/day (including both generating and attructing traffics) was presumed.

Now, the formulation of the problems to be solved in this section has been completed. However, this analysis involves two difficult points. One relates to insufficiency and reliability of data. As inputs for this analysis, there must be prepared all of the number of employees, wage, value added, land area, power consumption, demand for water supply, skilled labor force, and generating and attructing traffic volumes, per the sales of one billion Rps for each industry. With respect to the above-mentioned economic indicators, to our regret, the number of those on which actual result data in Indonesia are obtainable is small. Therefore, with respect to those without data, we have used examples in other developing countries; and when it was difficult to obtain even such examples, we have used numerical values in Japan after making some amendments.

The second problem is a matter of methodology. That is, the computer derives optimum solution under given conditions and, as a matter of course, without taking into consideration any matters except given conditions. Consequently, it is possible that when a computer receives an instruction to the effect that employment should be maximized, the computer will allot a vast land to a labor intensive industry such as noodle-making industry indifferently to the market size of the product.

Notwithstanding these problems, we dared to make this analysis. This is because we have considered that the results of the calculation have the following meanings:

① Since a theoretical upper-limit value of the objective function is obtainable, the calculation result can be used as a criterion for comparison in the case where a feasible alternative of desirable industries has been prepared.

② With respect to the characteristics of desirable industries (e.g. a labor intensive type and a much power consuming type), comprehensive and concrete informations can be obtained.

③ With respect to the trade-off between objective functions, it is possible to grasp a quantitative relationship.

The results of the calculation are given below, but, under the aforementioned limitation attention should be paid to a relative relationship without persisting in the absolute value of output.

2) Combination of Industries which maximizes Objective Functions

The following descriptions are now provided on the combination of industries which maximizes the objective functions of three standard cases, the value of objective functions are restraint conditions which served as a checking factor.

(1) Combination which maximizes Employment

In the case where the objective function is the employment ($P_L(x)$), the number of employees in the industrial estate is 52,586. In this case, the amount of wages is 3,521.3 million Rps and the total amount of value added is 10,966 million Rps. Observation of the state of restraint conditions shows that area, water supply and skilled labor force are at their limits, but electric power and traffic are on 35% and 12% levels of the respective limits.

	Restraint Conditions				
	Area (ha)	Electric power (1000kWh)	Water supply (m^3/day)	Traffic (t/year)	Skilled labor (person)
Upper limit	100	35,000	5,000	1,095.0	15,000
Amount of use	100	12,572	5,000	126.9	15,000
Amount of use / Upper limit (%)	100	32	100	12	100

The combination of industries for maximizing employment is as follows:

Best Industries (13 industries)

Processing of fish and shellfishes, macaroni & buckwheat noodles, tobacco

products, clothes, other clothes, leather products, shoes & footwears, cosmetics & dentifrices, plastic products, roof tiles, farm machines and implements & handicraft, ship repair & painting, stationery

Second Best Industries (6 industries)

Printing & publishing, spinning, sawing, medicines, matches, metallic products for architectural use

(2) Combination which maximizes Wages

In the case the objective function is wages ($P_W(x)$), the total amount of wages paid to the employees of the industrial estate is 4, 224. 1 million Rps. In this case, the number of employees is 47, 022 and the total amount of value added is 13, 686 million Rps.

Observation of the state of restraint conditions shows that area, water supply supply and skilled labor force are at their limits, but electric power and traffic are on 41% and 11% levels of the respective limits.

	Restraint Conditions				
	Area (ha)	Electric power (1000kWh)	Water supply (m^3/day)	Traffic (t/year)	Skilled labor (person)
Upper limit	100	35, 000	5, 000	1, 095. 0	15, 000
Amount of use	100	14, 329	5, 000	116. 6	15, 000
Amount of Use / Upper limit (%)	100	41	100	11	100

The combination of industries for maximizing wages is as follows.

Best Industries (13 industries)

Clothes, other clothes, leather products, shoes & footwears, furniture, printing & publishing, paints & lacquers, machines & repair, dry cell battery, radio & TV set, shipbuilding & canoe, ship repair & painting

Second Best Industries (6 industries)

Rice washing, spinning, sawing, medicines, metallic products for architectural use, metallic cans

(3) Combination which maximizes Value Added

In the case where the objective function is the value added ($P_V(x)$), the

amount of value added of the industrial estate is 14,542 million Rps. In this case, the number of employees is 41,230 and the amount of wages is 3,775.8 million Rps. Observation of the state of restraint conditions shows that area, water supply and skilled labor force are at their limits, but electric power and traffic are on 46% and 18% levels of the respective limits.

		Restraint Condition				
		Area (ha)	Electric power (1000kWh)	Water supply (m^3/day)	Traffic (t/year)	Skilled labor (person)
Upper limit		100	35,000	5,000	1,095.0	15,000
Amount of use		100	15,642	5,000	193.3	15,000
Amount of Use / Upper limit	(%)	100	46	100	18	100

The combination of industries for maximizing the value added is as follows:

Best Industries (13 industries)

Rice-cleaning, hulling of coffee beans, livestock feed, beers, clothes, shoes & footwears, printing & publishing, cosmetics & dentifrices, paints & lacquers, dry cell battery, radio & TV set, repair of electric appliances, ship-building & canoe

Second Best Industries (6 industries)

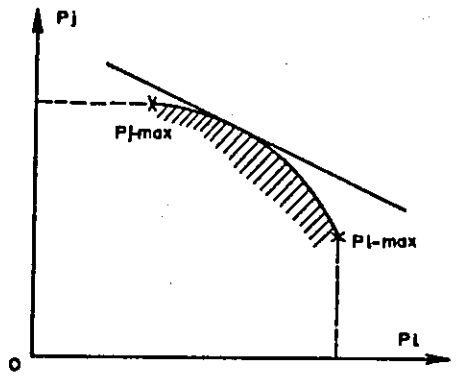
Rice washing, spinning, sawing, paper containers, metallic products for architectural use

3) Trade-Off between Objective Functions

The three objective functions which we have taken up this time, that is, employment, wages and value added, are not of the character such that if any one of them is large, the others may be low. That is, it is desired if possible that all the three functions be simultaneously large. It is apparent, however, that in the optimum solution for maximizing employment, wages are not maximized, and that in the optimum solution for maximizing wages, employment is not maximized. Now, it becomes a problem whether there exists any feasible solution which is intermediate between the two and which affords the values of both objective func-

tions near the maximum values. That is, the problem is whether there is the most desirable compromise.

Fig. VI-6 Elasticity between Objective Functions



A clue of this can be found by obtaining a frontier* of the case in which the space formed by a feasible solution has been mapped on a plane with two objective functions as the axes, and then by studying the elasticity (Eij) of one objective function (Pi) relative to the other objective function (Pj), $Eij = \frac{Pj/Pj}{Pi/Pi}$ The elasticity, Eij, indicates how much the other objective function (e.g. wages) can be increased when the value of one objective function (e.g. employment) has been sacrificed by 1%.

* This frontier can be approximated in the following manner. That is, when the optimum solution for an objective function Pi is (Pi(x) = Pi·max), Pj(xi) is obtained and further the bisection point between this and Pj·max, e_1 = (Pj(xi) + Pj·max)/2, is obtained. Then, Pj(x)$\geqq e_1$ is added to the expression of constraint conditions to obtain the maximum value e_2 of Pi, and now the point (e_2, e_1) is positioned on frontier. Then, the middle point between this point and Pj·max is obtained. In this way, as points on frontier are obtained successively, the contour of frontier becomes clear. It is demonstrated that this frontier is a convex curve.

Frontiers of (employment vs wages) and (employment vs value added) are obtained as in Figs. VI-7 and VI-8, respectively.

If, when each objective function is at its maximum, the values of the other objective functions are obtained, and if these values are expressed in terms of ratio to the maximum value of 100, the results are as set out in Table VI-4.

Fig. VI–7 Trade-Off between Employment and Wages

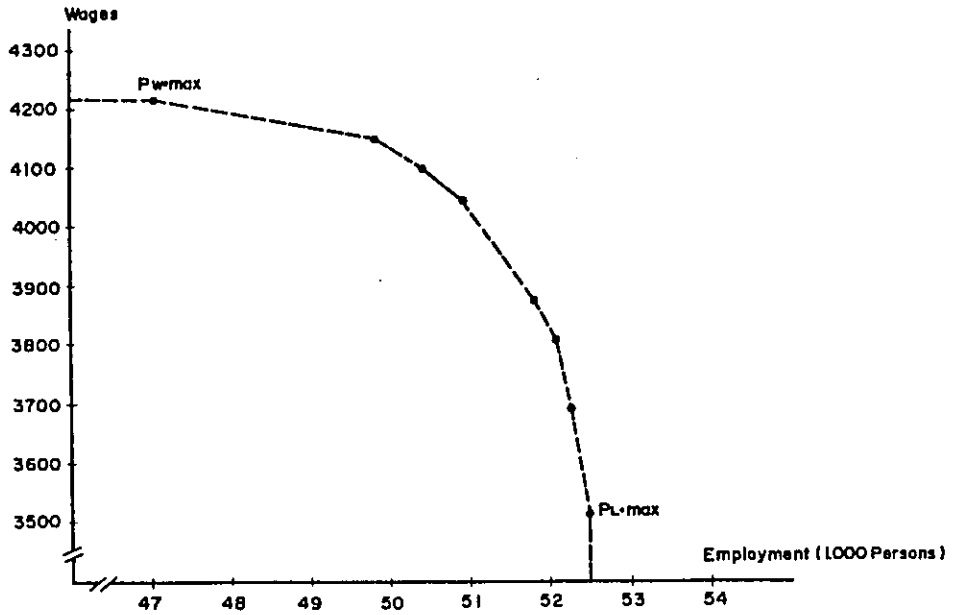


Fig. VI–8 Trade-Off between Employment and Value Added

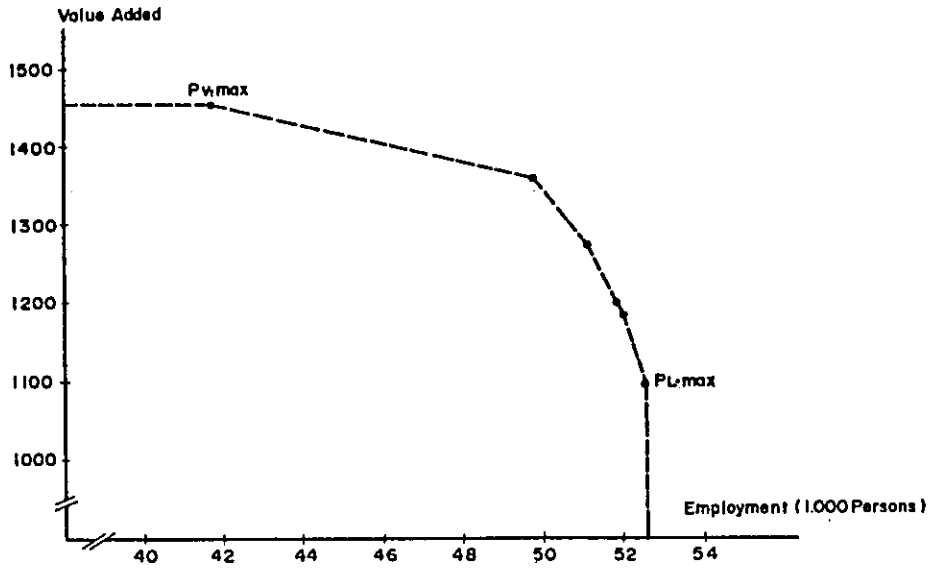


Table VI-4 Ratio of the value in other cases to the maximum value of objective function

	Employment	Wages	Value Added
Case of maximum employment (P_L)	100.0	83.4	75.4
Case of maximum wages (P_W)	89.4	100.0	94.1
Case of maximum value added (P_A)	78.4	89.4	100.0

(Source) prepared by the mission

The results of the analysis show the following:

① Near the maximum point of employment, the elasticity of other objective functions relative to employment is large, and by sacrificing employment by 1%, wages can be increased to 16% and value added to 7%.

② As the maximum point of wages and value added is approached, such elasticity rapidly approaches zero.

③ This is also the case with the elasticity of employment relative to other objective functions.

④ A look at Table VI-4 shows that wages and value added are of a similar character, and this indicates a tendency such that industries having a high value added ratio afford high wages.

⑤ The values shown in Table VI-4 is of the case in which one objective function has been maximized. However, if a compromise is to be made, there exists a feasible solution in which, in case the maximum value of such objective function is 100, employment, wages and value added are 97, 94 and 88, or 97, 96 and 87 respectively. This suggests that plural objective functions can simultaneously be raised to a considerable extent by changing combination of desirable industries.

VII SELECTION OF APPROPRIATE SITE FOR INDUSTRIAL ESTATE

VII SELECTION OF APPROPRIATE SITE FOR INDUSTRIAL ESTATE

In studying an appropriate site for the industrial estate, two methods of approach are considered, one being an urban planning type approach in which the direction of expansion of cities is taken into account and importance is attached to the future utilization of land such as business area and residential area and also to the interaction among major facilities such as harbors, airports, and universities, and the other being a micro-approach in which studies are made on the present geographical features and use of land and importance is attached to a geographical unity and land reclamation cost of usable spaces.

Our opinion based on the former approach is shown in 3-2) of Chapter III, and in this chapter, the latter approach will be adopted for selection of appropriate sites for the industrial estate.

1. Study of the locations for industrial estates and the merits of such study

1) Industrialization and construction site of industrial estate

In constructing the proposed industrial estate, where it should be located within urban area of Ujung Pandang is largely related with the strategy of the industrialization. We have already divided the industrialization process into three phases as part of the strategy for the development as already discussed in Section 2 of Chapter IV.

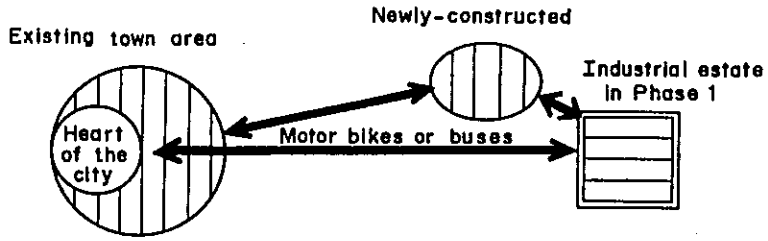
Phase 1 - Establishment of the industrial agglomeration mainly comprising the medium-scale industries whose developments are relatively easy.

Phase 2 - Diversification, scale-up and sophistication of the industries, as well as the establishment of the functional linkage with the industrial developments in other districts.

Phase 3 - Establishment of a dynamic mechanism of the industrial development by re-arranging scientifically the total industrial system comprising the industrial agglomerations in East Indonesia, the large process industries to be introduced in the various places throughout whole Indonesia and the industrial agglomeration in Ujung Pandang.

(1) Determination of the location of the industrial estate in Phase 1

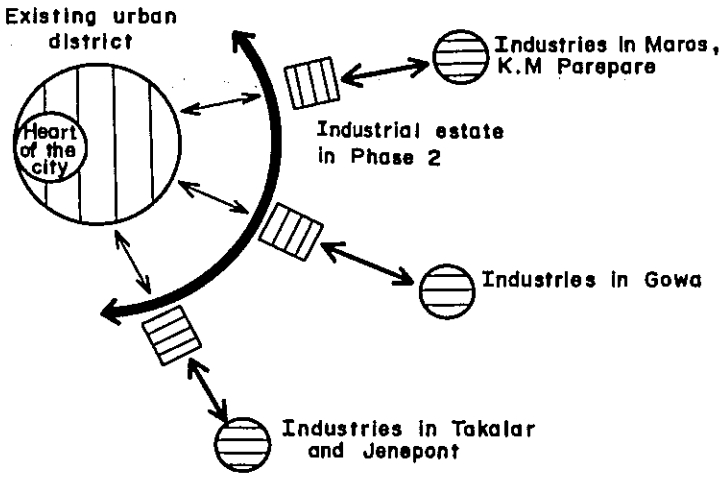
In this phase of industrial development, the industries which are expected to play leading roles are the medium-scale modern industries concerned with the food processing, metal processing and so forth which are to be established by both the domestic and foreign capitals and the average size of the land required for the location of each of these industries is 0.5 to 3.0 hectares. Such industrial estate will also accomodate the locations for the small-scale industries such as the light industries and cottage industries which wish to move into it from the urban district where they are located currently. In this phase of development program, the industrial estate to be established is estimated to require the area of 150 to 250 hectares and the small part of industrial estate will probably be developed in combination with the residential area. In this phase of development, however, the progress of the construction of the facilities in the industrial estate will not be sufficient to fill all needs and so the industries located in the estate will have to depend on the existing facilities located in the urban district. Also, since many of the employees of the industries are considered to have their residences in the urban district, the proposed industrial estate is desired to be located in a place where can readily be accessed from the heart of city or the urban district by the existing traffic routes.



(2) Location of the industrial estate in Phase 2

In this phase, the types of industries introduced will be diversified comprising the various industries such as the chemical, electric machine, conveyance equipments, general machine industries and so forth, and the area required for locating each individual factory or plant will be 1.0 to 5.0 hectares. Also, the Phase 2 is characterized by that in this phase, the machine-making and tool-

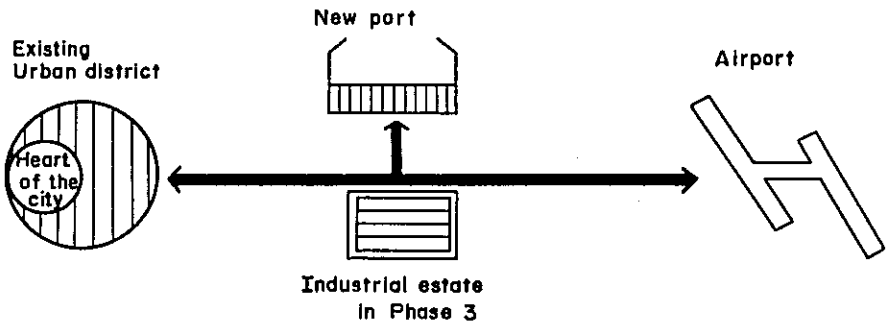
making factories which are expected to back up the textile industry in Wajo, paper & pulp industry in Gowa, and the ceramic industries in Maros, Gowa and Takalar, as well as the industries which undertake the higher or more sophisticated processings of the products manufactured by the other factories in the other districts will be developed. Therefore, the industrial estate in this phase of development program is desired to be located in a place along the main highway running between Ujung Pandang district and other districts where the functional connections between different factories or plants can be maintained.



(3) Location of the industrial estate in Phase 3

In this phase, the agglomerations of the indigenous industries and modern industries each of which is suited for the local conditions will be formed in the districts such as Menado and Sorong besides Ujung Pandang district. On the other hand, when the industialization has reached the stage which permits the introductions of the large processing industries such as the iron and steel-making industry, petrochemical industry and fertilizer-manufacturing industry which aim at the larger markets than those in Ujung Pandang and South Sulawesi such as the national market of Indonesia and foreign market, the industrial development of Ujung Pandang district will have to be promoted in consideration of such factors. For example, the construction of the kind of industrial estate with an appropriate port for handling the incoming and outgoing flow of the goods and an airport for the passenger traffic will become necessary and such industrial estate will be located in a place which can readily be accessed from any one of the heart of city, port and airport. At this stage of the industrial development, the construction of another port will become necessary because of the innovation in cargo handling

facilities and increase in the quantity of the cargoes to be handled and also the expansion of Hasanuddin airport will become necessary due to the increase in the traffic of the passengers. In addition, the renewal of the existing business district in the heart of city will also be required.



2) Merits of the development of the industrial estate

Where the city of Ujung Pandang is expected to grow into a large city with the population of one million, the arbitrary locations of the factories or plants within its city district will inevitably give adverse affects on the living environment of the city in view of the proposed urban planning of the city of Ujung Pandang.

Now, enumerated below are the reasons why the development of the industrial estate is necessary in view of the factors for determining the locations of the industries.

a) Necessity of the adaptation to the natural environment can be localized so that the burden concerning the conservation of natural environment can be lightened.

b) Troubles of making individual contracts for the purchase of land can be saved when the land is acquired by the blanket purchase contract.

c) Infrastructures including the roads, sewage disposal system and so forth can be provided adequately.

d) Conditions of the construction site can be known before starting the construction work as the soil and geographical surveys of the site have been made in advance.

e) Stable supply of the industrial water of uniform quality can be maintained

at all times.

f) Depending on the types of industries, the joint purchases of raw materials and fuels, and the joint supply of steam are possible.

g) Cost of transportation can be reduced by constructing the common distribution facilities.

h) Where the scale of theindustrial is large, its own transportation facilities, for example, such as the port and port facilities can be constructed.

i) Linkage between related industries can be reinforced.

j) Labor enviroment can be improved through the joint efforts of the groups of enterprises having common interests.

k) A joint anti-pollution measures can be taken by the groups of enterprises depending on the kinds of the pollutions.

In view of the types of industries to be introduced into the proposed industrial estate, the following merits can be derived from the construction of the industrial estate in the district concerned.

(1) Grouping of industries by the patterns of the consumption of the industrial water and energies.

(2) Blanket purchase of the raw materials.

(3) Grouping of the labor-intensive industries.

(4) Grouping of the industries which require the construction of the facilities for the transportation and distribution of their products.

(5) Grouping of the industries by the kinds of pollutions for which they are responsible.

2. Study of the determinant factors in selecting the site or location of the Industrial Estate

(1) Standards in determining the location of the industrial estate in the urban district of Ujung Pandang

The following can be considered as the basic conditions for determining the location of the industrial estate in the urban district of Ujung Pandang:

(i) Productivity per unit of land to be used and ground-levelling cost.

(ii) Traffic conditions.

(iii) Durability of the soil to support the foundations of the structures.

(iv) Degree of difficulty in acquiring the land needed.

The traffic conditions are almost equal throughout the urban district of Ujung Pandang. As for the durability of the soil to support the foundations of the structure and the difficulty in acquiring the land, no detailed data are available so far and this makes it difficult to study these factors. Thus, in the following, we are going to discuss the factors for determining the location of the industrial estate mainly through the study of the productivity per unit of land to be used and the cost of ground levelling.

As the hopeful candidate sites of the industrial estate in the urban district of Ujung Pandang, the swamp, paddy and cultivated land can be considered, but the sites in the urbanized districts and villages, rivers, fishponds, planned development sites (See Fig. VII-1) and the sites which have experienced the floods (See Fig. VII-2) should be excluded.

Assuming that the index for the preparation cost of the site from the cultivated land be 100, the indexes for those of the other candidate lands will come out as follows:

(i) Cultivated land 100

(ii) Paddy 130

(iii) Swamp ..... Preparation cost for the construction site will be considerably high though it varies depending on the content of the preparation work. (For example, the cost varies whether the work requires the removal of the stumps or not.)

(iv) Soil containing sand stones..... 270

Thus, we can consider the paddy and cultivated land as the candidate lands for the construction site.

Also, where the productivity of the paddy is assumed to be 100, the indexes for those of the other lands are as follows:

(i) Paddy for paddy-rice 100

(ii) Cultivated land for dry-field rice 40

" soybeans 29

" peanuts 58

" maize 14

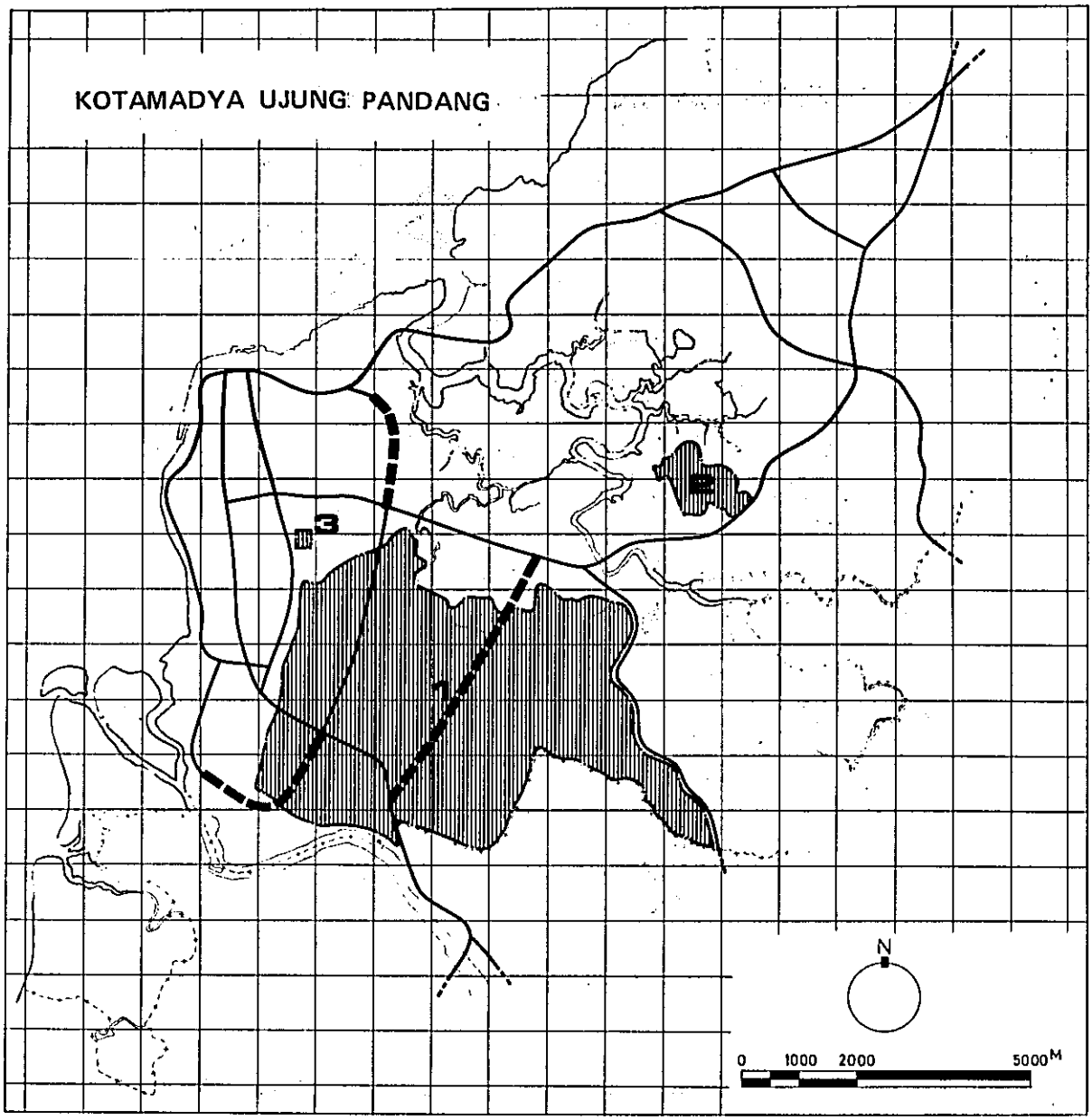


Fig. VII-1

Projects condition

LEGEND

1	Projected housing area of Panakukang
2	Proposed site of Hasanuddin University
3	Amusement center area
▬▬	Planned roads

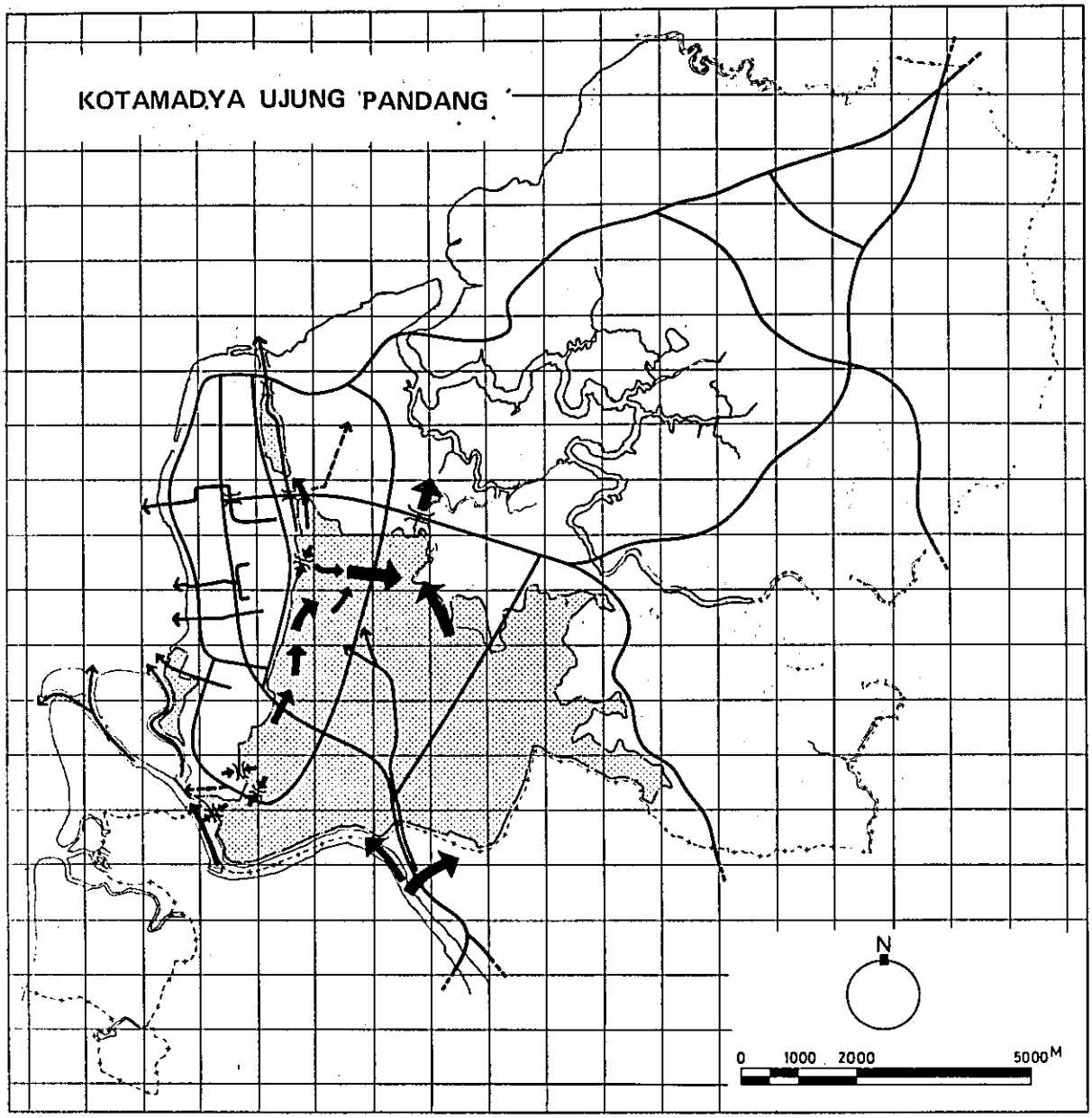


Fig. VII-2

Flood areas condition

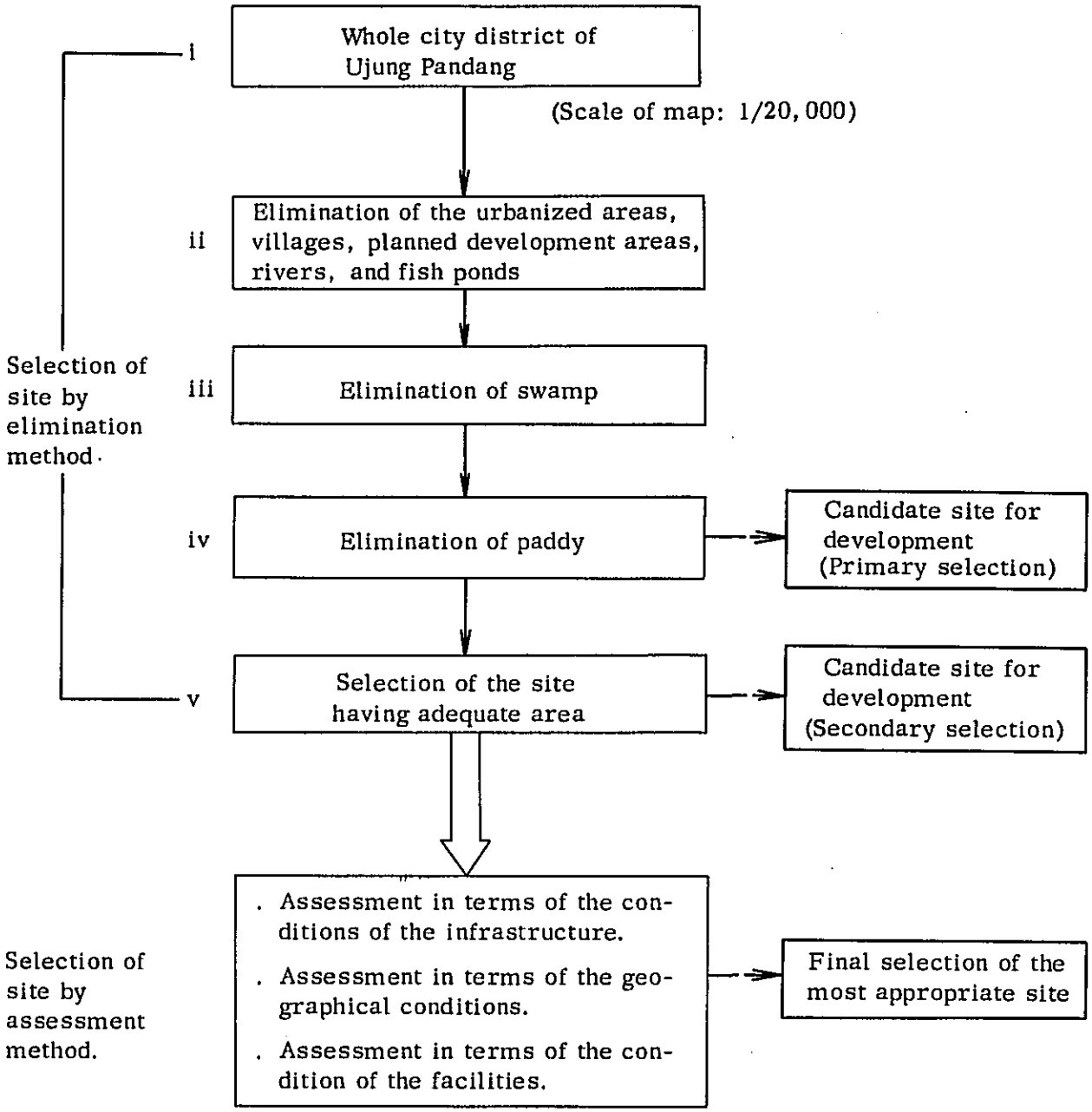
LEGEND

	Flood Areas
	Flood-current, the big arrow indicates of current
	Drainages
	Bridges

Thus, we can see that the productivities of cultivated lands are much lower than the other kinds of land, so that the cultivated land should be considered as the most reasonable candidate land for the site of the industrial estate in the city district of Ujung Pandang.

(2) How to select the appropriate site for the industrial estate within the city district of Ujung Pandang

In selecting the appropriate site for the industrial estate within the city district of Ujung Pandang, both the elimination method and assessment method can be used in combination. For example, in selecting the site, those which are not appropriate for the location of the industrial estate (such as the sites in the urbanized districts and villages, rivers, fishponds, planned development area) should be eliminated from the list of the candidate sites and the site which has been selected should be assessed as to the conditions concerning the infrastructure and geographical conditions then it has to be compared with other candidate sites in view of the coordination with the actual trend of industrial development in the district concerned. In order to make the most reasonable assessment, various method of assessment should be used in combination. Shown in the following is the flow of the procedure in selecting the site of industrial estate.


i
Whole city district of Ujung Pandang
(Scale of map: 1/20,000)
ii
Elimination of the urbanized areas, villages, planned development areas, rivers, and fish ponds
Selection of site by elimination method
iii
Elimination of swamp
iv
Elimination of paddy
Candidate site for development (Primary selection)
v
Selection of the site having adequate area
Candidate site for development (Secondary selection)
. Assessment in terms of the conditions of the infrastructure.
. Assessment in terms of the geographical conditions.
. Assessment in terms of the condition of the facilities.
Selection of site by assessment method.
Final selection of the most appropriate site

(3) Results obtained by the selecting procedure for the site of industrial estate

Shown in Fig. VII-3 are the candidate sites for the industrial estate in the city district of Ujung Pandang selected by the above-mentioned elimination method. (Primary selection)

Those shown in Fig. VII-4 are the candidate sites each of which has the area of more than 100 hectares and will not give any adverse affects on the drainage systems of the paddies. These are the candidate sites which have passed the secondary selection. (The secondary selection is made based on the result of the primary selection.)

As the result of the primary and secondary selections, there have remained 9 blocks of lands whose total area is 1,965 hectares as the candidate sites which have passed the secondary selection.

The results of assessments and studies of these candidate sites (secondary selections) - such assessments and studies have been made as to their locations, areas, roads available, access to the terminals and the conditions of neighboring districts - are as shown in Table VII-1.

1. Fig. VII-3 Selected candidate sites for industrial development (primary selections)

1. Fig. VII-4 Selected candidate sites for industrial development (Secondary selections)

1. Table VII-1 Assessment of the candidate sites for the industrial estate (secondary selections)

According to the above assessment, No. 5 and No. 6 blocks are both located adjacent to one or more than one of the other facilities such as a proposed site of school campus, barracks of the army, experiment station of an agricultural school and a dormitory of cathoric church. In view of these facts and the future development plan of the city district of Ujung Pandang, these candidate sites (No. 5 and No. 6 blocks) are desirable to be reserved as the future sites for residential area and administrative facilities.

Therefore, in consideration of the above conditions, it should be recommended to consider the blocks of No. 1, 2, 3, 4, 7, 8 and 9 which altogether come to 1,670 hectares in total area as the appropriate candidate sites for the industrial estate.

Table VII-1 Assessment of the Candidate Sites for the Industrial Estate (Secondary Selections)

	Location and Area	Traffic condition	Access to terminals	Conditions of neighboring districts
1.	15 km from the heart of Ujung Pandang City 190 ha.	Site is located along the both the two main high ways leading to the heart of city and a road leading to these highways.	Access to the port is possible from two different directions.	Site is located near a golf course, a meteorological station, the work shop and the laboratory.
2.	15 km from the heart of Ujung Pandang City 350 ha.	Site is located along a well-maintained highway leading to the center of city.	"	
3.	14 km from the heart of Ujung Pandang City 180 ha.	Site is located along a well-maintained road leading to a main highway which further leads to the center of city.	"	There are villages along the road which the front side of the site faces.
4.	14 km from the heart of Ujung Pandang City 550 ha.	Site is located along both a well-maintained main highway leading to the heart of the city and a well-maintained road leading to the main highway.	"	Site is located adjacent to a market.
5.	11 km from the heart of Ujung Pandang City 200 ha.	Site is located along a well-maintained main highway leading to the heart of the city.	"	Site is located adjacent to an experiment station of agricultural school and the barracks of the army.
6.	8.5 km from the heart of Ujung Pandang City 95 ha.	"	Site is most closely located to the port.	Site is located adjacent to the proposed site of school campus, barracks of the anny and dormitory of chathoric church.
7.	9.5 km from the heart of Ujung Pandang City 140 ha.	Site is not located along any road.	Access to the port can be made possible by improving the condition of the road.	Site is located close to newly-developed urban district of Panakukang.
8.	9.5 km from the heart of Ujung Pandang City 110 ha.	Site is located along an not-well-maintained road leading to the heart of the city.	"	"
9.	11 km from the heart of Ujung Pandang City 150 ha.	Site is not located along any road.	"	

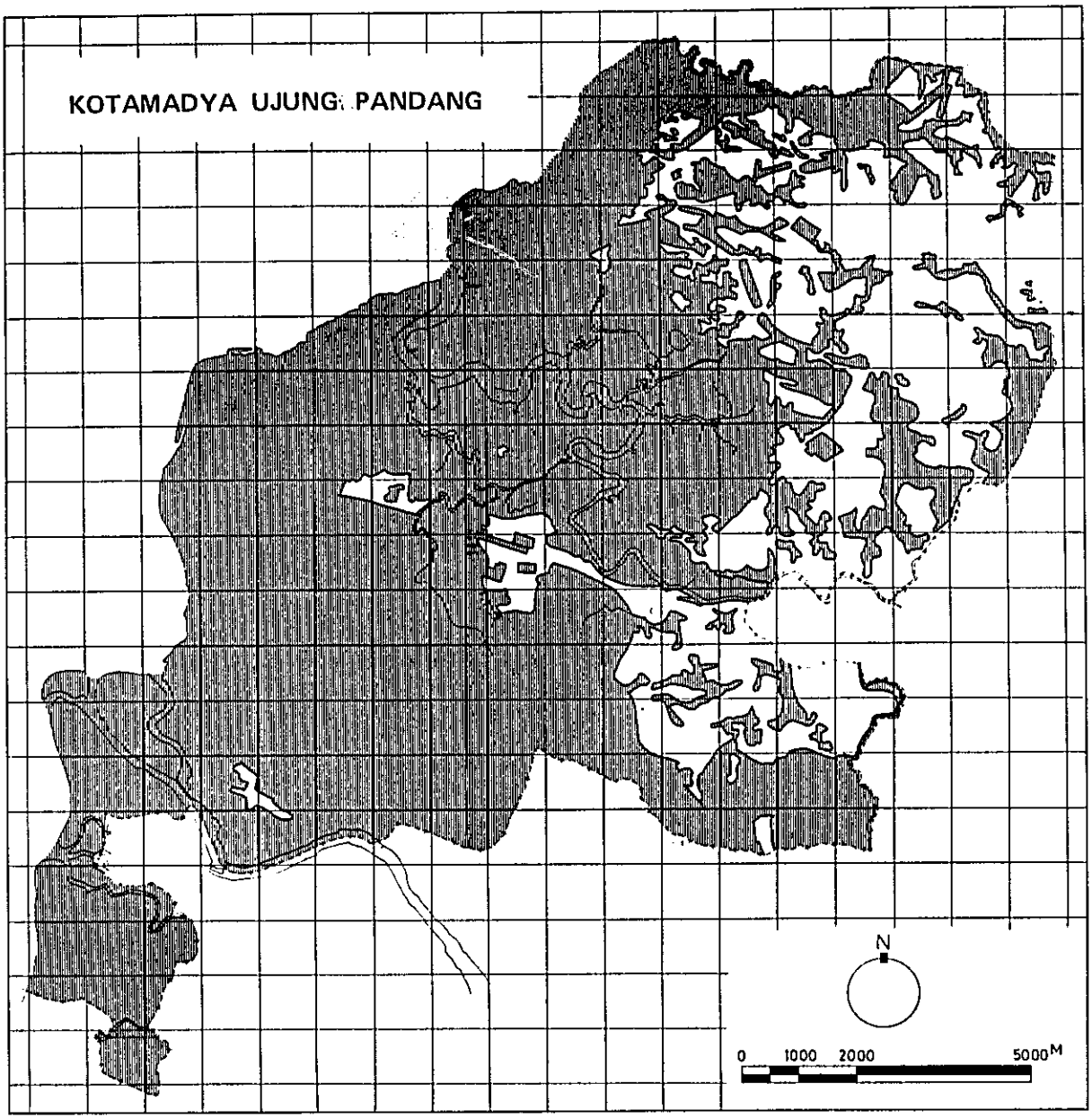


Fig. VII-3

Selection of candidate sites of industrial estate (primary selection)

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	Candidate sites (primary selection)
	Non suitable area

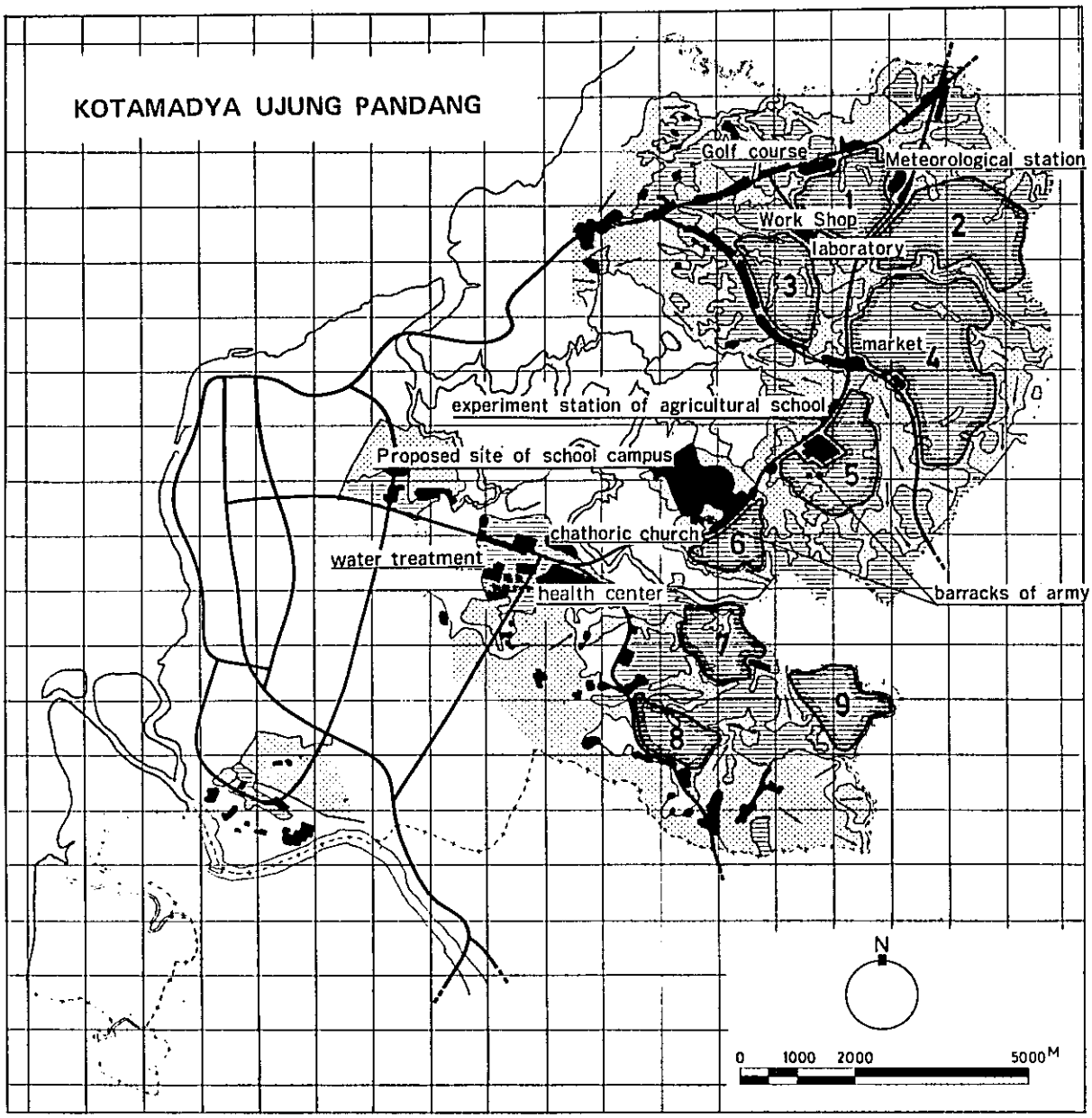


Fig. VII-4

Selection of candidate sites of industrial estate

(secondary selections)

LEGEND

	Villages and planned development area
	(Paddy)
	Candidate sites (primary selection)
	Candidate sites (secondary selection)
	Drainage rout of paddies

Ⅷ BASIC GUIDE FOR DEVELOPMENT OF INDUSTRIAL ESTATE

VIII BASIC GUIDE FOR DEVELOPMENT OF INDUSTRIAL ESTATE

This chapter deals with the layout, plans for facilities and factory locations and the construction costs of the Ujung Pandang Industrial Estate. Although an appropriate location of the industrial estate has been selected and appropriate industries to be induced to the industrial estate have been analyzed, the exact location, the size and other details of the projected industrial estate have not been determined yet. It is therefore impossible, at present, to start the final designing work. Consequently, an image we have about an ideal form of the Ujung Pandang Industrial Estate is presented here. It is a preliminary study for the next feasibility survey on the basic plan and design of the industrial estate. The ground plans and others given in this chapter are of stereotyped patters which can be applied to the industrial estate whereever its location may be. The construction costs are merely estimated figures to give a general idea about the costs, and the accurate costs should be calculated on the basis of a detailed map when the exact location of the industrial estate is fixed. It is a only draft to be studied further by those who are concerned about the industrial estate project.

1. Framework of Ujung Pandang Industrial Estate

The basic features, aim and framwork of the Ujung Pandang Industrial Estate are determined as follows: (Some items may be changed through the feasibility study.)

(1) Schedule

In case the industrial estate project is finalised on the basis of the conclusion of the feasibility survey that the project is economically, technically and financially feasible, the implementation plan will be worked out after making surveys on land, geology, ground and water supply. These surveys will require at least one to two years to complete. Therefore, the start of the actual development of the industrial estate will be around 1978-79 at the earliest, and enterprises will begin to enter the industrial estate toward the end of the 1970s and the early 1980s. Considering the current economic situation of the Ujung Pandang region, it is unlikely that the industrial estate will be fully occupied by enterprises as soon as the estate is completed. It is therefore necessary to work out a stage construction plan.

(2) Size of Land

The size of the industrial estate should be expanded by stage depending upon the number of enterprises entering the estate. Here the size of the Ujung Pandang Industrial Estate - a master plan - as phase 1 is fixed at about 200 hectares. This industrial estate will be developed in a dew stages. It is important to study whether the estate should be expanded or a new site should be developed when the estate is fully occupied.

(3) Employment

The total number of workers to be directly employed by enterpries is estimated at about 25,000 if the number of workers per one hectare is 125. The number of indirect workers, that is, those to be engaged in the administration, operation and other services of the industrial estate and those to be employed by the transportation and construction industries and others related to the industrial estate, will reach a considerable figure.

(4) Production

Productivity per manufacturing industry worker around 1990 will be estimated at about one million Rps. ($2,400) per year on the value-added basis. Therefore, the industrial estate as a whole will be expected to create 25,000 million Rps. ($60 million) of value-added per year. If the value added ratio at that time is fixed at 35% (about 40% at present), the total annual procution of the industrial estate will amount to more than 70,000 million Rps.

(5) Factory land

The factory land ratio is set at 60 to 65% and open spaces are set aside for roads, parks and greenery areas, so that the estate will have features similar to, as it were, an industrial park.

(6) Selection of land

A dry land with firm ground should be selected by giving due consideration to drainage and other conditions so that the cost for reclamating land can be kept as low as possible. However, in some cases, paddy fields or swamps may be included depending upon the conditions of the land.

(7) Infrastructures

As for infrastructures such as electric power, service water, roads and houses, the existing facilities should be utilized as far as possible. It should be studied whether the development of a housing complex is possible near the industrial estate in case the estate is expanded in the future.

2. Principle of Land Use Plan

1) Factory site standard units and lotting

The minimum area of a factory site is 0.5 to 3.0 hectares, according to the desirable industry substitution draft plan. As to a method of locating industries, it is desirable (1) to consider the use of the site by alternate industries, (2) to keep a good production environment and scenery and (3) to group factories of similar size as far as possible in order to prevent a wide difference in scale of enterprises. Some representative industries classified by scale are given below:

Size of factory site

0.5 ha ..... Macaroni, noodle, bakery products, coffee (powder & fried), leather products, shoes, bricks, roofing tiles, radio, TV Casette other communication equipment, electric apparatus and supplies, stationery

1.0 ha ..... Canned meat, canned fish and sea products, soft drinks and carbonated waters, cigarettes, clothing, furniture, bicycle assembly

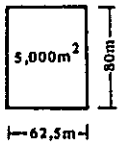
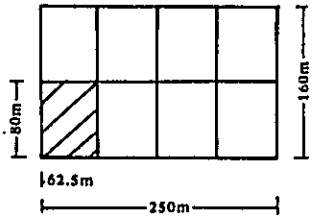
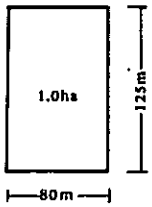
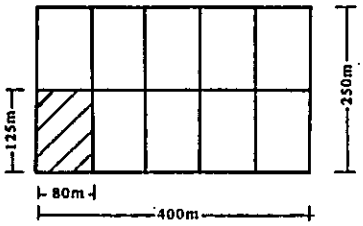
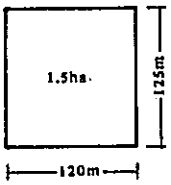
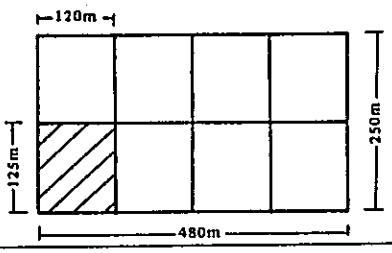
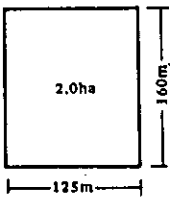
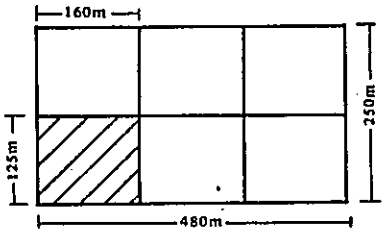
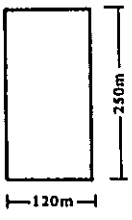
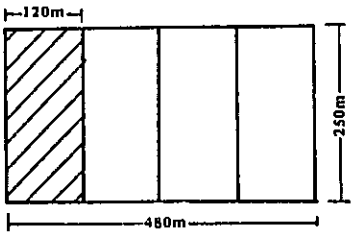
1.5 ha ..... Matches, plastic ware, cement products

2.0 ha ..... Rice milling, beer, wooden building materials, ship-building (canoes)

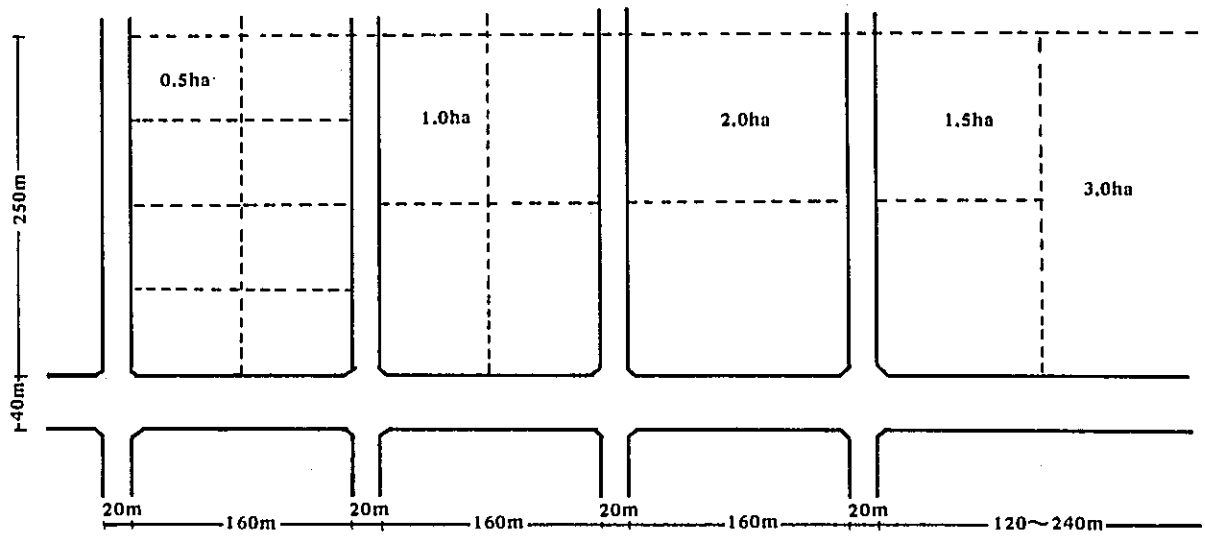
3.0 ha ..... Saw mills, spinning, structural metal products

As factory site scale selection modules, factory site standard units and subdivision and lotting classified by scale of factory are given in Table VIII-1.

Table VIII–1 Standard Units and Lots of a Factory Site

	Standard unit	Subdivision of a Factory Site	Remarks
Factories requiring an area of 0.5 ha.			• Single-item and small-lot production • Production with a short line • Not so much restricted by a shape of the site
Factories requiring an area of 1.0 ha.			• Production with a line of a medium length • Possessing specific equipment • Not so much restricted by a shape of the site
Factories requiring an area of 1.5 ha.			• Lot production for the most part • Possessing specific equipment • Not so much restricted by a shape of the site
Factories requiring an area of 2.0 ha.			• Lot production for the most part • Processing of heavy and long materials • Some industries require specific conditions as to a shape of the site
Factories requiring an area of 3.0 ha.			• Lot production with specific, large-scale equipment • Production with a long line • Some industries require specific conditions as to a shape of the site

Furthermore, in considering the future of the industrial estate as a growth pole of the region, lots of more than 5 hectares are expected to be necessary for assembly of industrial machinery and motorcycles, etc. A methord of subdivision and lotting of site for factories of 0.5 to 5 hectares is given below:



2) Desirable Industries and Layout of Industrial Estate

In considering the layout of the industrial estate, besides the grouping by the size of lot per factory, there are several other groupings as given below:

i) Grouping by common raw materials

Industrial raw materials to be used at the industrial estate can be divided into those transported overland from the hinterland of Ujung Pandang and those supplied through the port. Therefore, the supply route of common raw materials will affect to determine the location of factory sites and then, there is also a merit grouping of factories by using the common raw materials.

a) Grouping by lumber - Saw mills, wooden containers, furniture, wooden fixtures, wooden building materials, shipbuilding interior materials

b) Grouping by steel materials - Structural metal products, metal containers, farm implements and hand tools, cutlery, nails, bolts, other metal products

ii) Grouping by common infrastructures

Considering the effects of the development of infrastructures (for example, costs and construction schedule), those industries which use large amounts of

water and electric power should be located together.

c) Grouping by water - Soft drinks and carbonated waters, beer, ice making, processing of marine products, thermal electric power generation, cement

iii) Grouping by labor intensive industries

Considering commuting of workers to the industrial estate, attention should be given to the availability of transportation facilities and to the accessibility to the welfare facilities.

d) Grouping by labor intensive industries - Printing, publishing, canning, knitting, paper, paper containers, assembly of motor-cycles, assembly of bicycles, electric apparatus and parts, radio, TV, Casette, other communications equipment, furniture

iv) Grouping by open shed for storing raw materials and semi-finished products

Some industries require open-air lots within the factory site for storing raw materials and semi-finished products. These lots are offensive to the sight, and therefore, those industries which require such open-lots should be located together.

e) Grouping by open-air lots for storing raw materials and semi-finished goods - Beer, soft drinks and carbonated waters, saw mills, cement products, bricks, roofing tiles, ceramic and porcelain, structural clay products

v) Grouping by the shape of packing of raw materials and finished products

Among raw materials and finished products transported into or out of the factories, bulky materials and products as well as such materials which require special methods of transportation.

f) Grouping by bulky materials and products - Saw mills, wooden containers, furniture, wooden fixtures, wooden building materials, paperboard containers, cement products, bricks, roofing tiles

vi) Grouping by the type of pollution

Industries should be grouped by the types of pollution such as noise, vibration, air pollution, dust and water pollution.

g) Grouping by noise and vibration - Saw mills, shipbuilding

h) Grouping by air pollution - Canning, leather, painting, paints

i) Grouping by dust - Lime, cement products, bricks, roofing tiles, structural clay products, ceramic and porcelain

j) Grouping by water pollution - Beer, soft drinks and carbonated waters, slaughtering, canning, leather, bleaching, dyeing, printing, cement products, bricks, roofing tiles, structural clay products

Next, we shall examine what consideration should be given in laying out industries grouped as above.

a) For those industries grouped by the use of lumber, a lumber center should be established at the site for distribution facilities, and factories should be located on a smooth moving line from the center.

b) For the steel material group industries, a steel material center should be established, and factories should be located as in the case of a).

c) Those industries grouped by water should be located near the clearing bed and water tower.

d) Labor intensive industries should be located on a smooth moving line from and near the bus center and the industrial estate center. It is desirable for the line of movement of commuters not to cross the line of movement of industrial goods and ran materials and products.

e) Those requiring open-air lots to store materials should be located in a secluded area so as not to offend the sight of the industrial estate.

f) Those industries which deal with bulky materials should be located in an area directly connected with the truck terminal so that the number of transhipment can be kept minimum.

g) Those industries which produce noise and vibration should be located far from the town area and human settlements.

h) Those industries which cause air pollution should be located by considering the direction of trade wind and the location of human settlements.

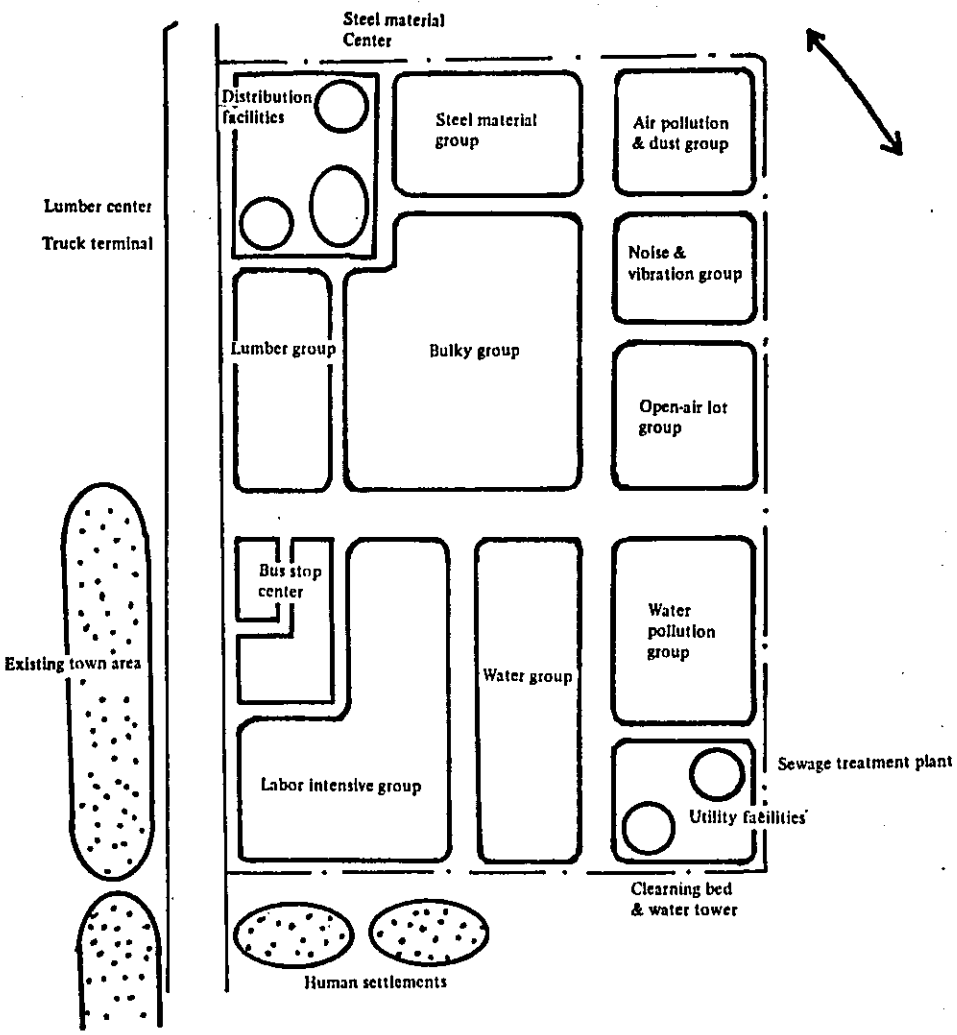
i) Those industries which produce dust should be located by giving the same consideration as mentioned in h). These industries should be located in such a way that they will not cause any damage to other industries located within the industrial estate.

j) Those industries which cause water pollution should further be grouped by the types of pollutants such as painting waste, gilding waste, waste

oil, waste acid, alkaline waste and BOD. And they should be located near the utility facilities.

A model layout of these industries is given in Fig. VIII-1.

Fig. VIII–1 Layout Model of Industrial Estate by Grouping Industries

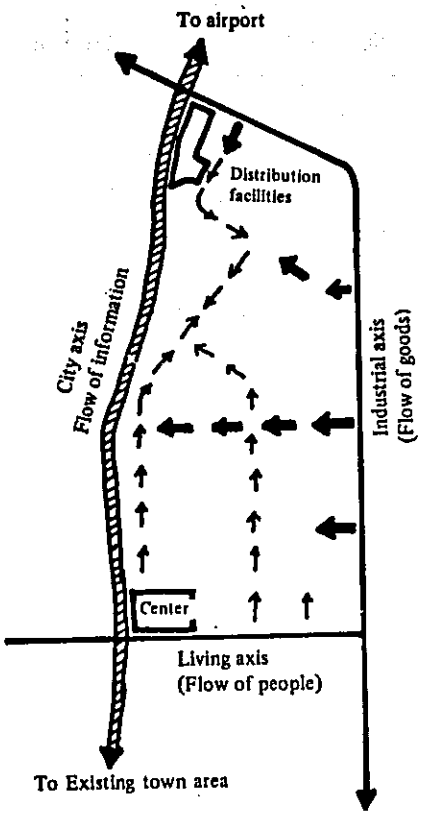


3) Land Use Plan

(Plese refer to Annex A)

4) Transportation network plan

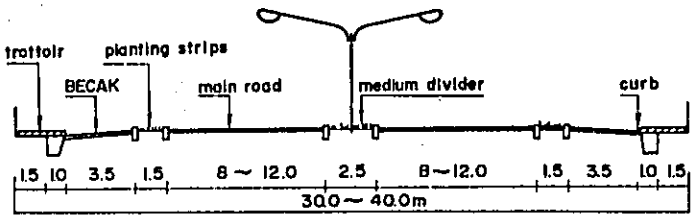
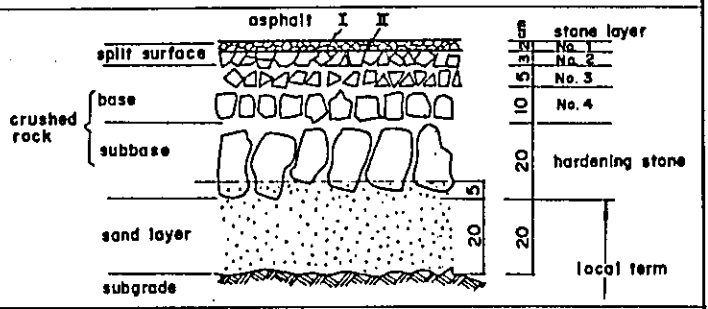
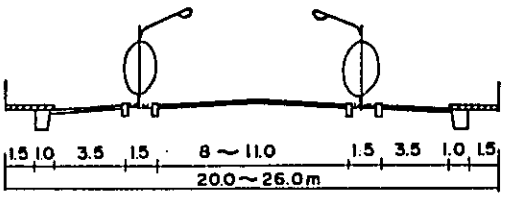
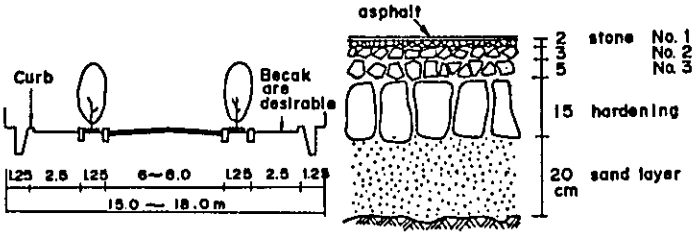
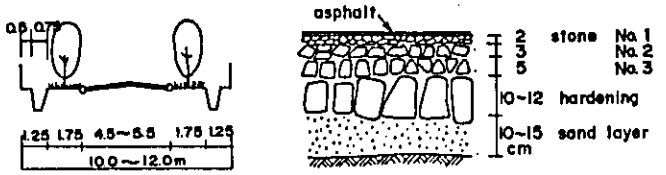
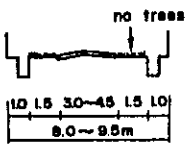
Lines of the movements of people and goods have been so planned that the flows of the city, industrial and living axies will not tangle each other.



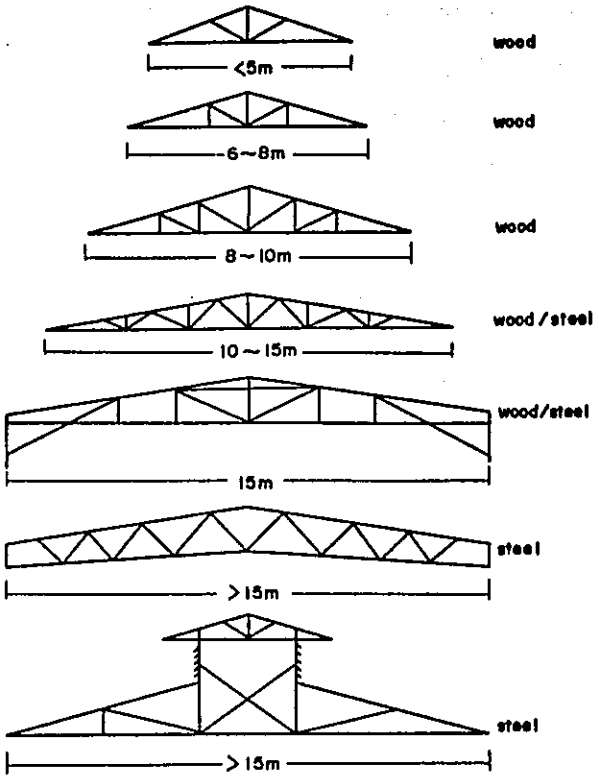
The most important question here is what the cross sectional structure (the number of lanes, width, etc.) of major roads in the industrial estate should be in order to ensure the smooth flows of people and goods. If the number of cars owned is estimated to approach the current level of Japan, the volume of generated and attracted traffic in peak days of the year is estimated to be 50 cars per hactare and the volume of concentrated traffic in the whole of the industrial estate will be 10,000 cars per day. The maximum of 6,700 cars per day or two thirds of the volume of generated and attracted traffic in peak days of the year are expected to converge on major roads in the estate. In addition, the volume of traffic from other areas should be a four-lane road, and secondary roads should be two-lane roads if the maximum volume of traffic is estimated at 3,400 cars per day or one third of the volume of generated and attracted traffic in peak days of the year.

The structures of the major and secondary roads are shown in Fig. VIII-2. The vertical gradient should be less than 3% since many bicycles and becats will be using the roads.

Fig. VIII–2 Design Standard of Road and Bridge by clacification

		SECTION
CLASS– 1 A) Major roads	bearing capacity : 12 tons cost Becak lane, trottoir, ditch excluded: Rp2000/m³ surface treatment: double	
		
B) Minor/ Secondary-roads		
CLASS II	bearing capacity: 7 tons cost: Rp 1500~1750/m² surface treatment: single	
CLASS III	bearing capacity: 5 tons. cost: Rp 1000~1300/m² surface treatment: single	
CLASS IV	bearing capacity: <5 tons cost: Rp750~1000/m² surface treatment: single	

TRUSS



wood dimension : 8/16, 8/12, 6/14, 6/12 (girder), 5/7 (joist)

fastener : bolt 3/4", 5/8"
plate ϕ' 2mm

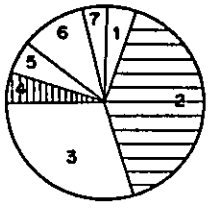
roof covered : sirap, zinc

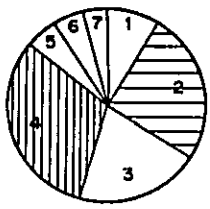
Table VIII–2 COST-Composition by unit of work

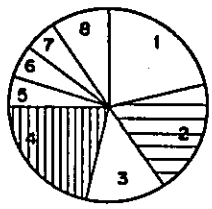
	1. Dwelling	2. Office/Public building	3. Industry
1 earth work	5 %	10 %	20 %
2 bricks work	40	25	20
3 wood work	30	20	15
4 beton	5	30	20
5 sanitary	5	5	5
6 electric & water install,	10	5	5
7 painting	5	5	5
8 steel work	– /100 %	– /100 %	10 /100 %

– overhead cost	10%
– tax	5%
– contractor's profit	10%
– building permition (local regulation)	5%
	30%

not included.







5) Principle of Facility Location Plan

Various facilities in the industrial estate play an important role in providing workers with a good working environment and in creating an excellent production environment. Facilities considered necessary at present are as follows:

a. Administrative and welfare facilities -- As facilities need for safe and convenient operations of enterprises, a telephone and telegram office, a post-office, a fire department, a medical clinic, a administration office, etc. should be located together.

b. Commercial facilities -- Stores, banks, restaurants and a food supply center should be located for enterprises and workers.

c. Recreation facilities -- A park of an ample space should be located in each block for the purpose of promoting communications among workers and of helping build their wholesome human characters. Besides ordinary parks, sports parks for soccer, badmington, tennis, swimming, etc. should be established. Other multi-purpose parks will also be built.

d. Educational facilities -- Training rooms, large and small assembly halls will be established in the estate for the purpose of raising the technical and educational level of workers.

e. Religious facilities -- A mosque, a church and a temple will be built since there are Moslems, Christians and Buddhists among workers.

f. Utility facilities -- A sewage treatment plant, industrial waste disposal facility, a garbage incinerator will be built so that the waste water and other wastes from the industrial estate will not cause damage to the neighboring areas. For the stable supply of water and energy, a cleaning bed, a water tower, a power plant, a transformer substation, oil tanks, etc. will be built.

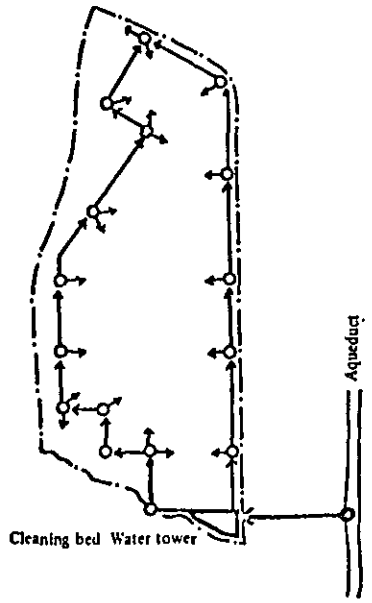
g. Distribution facilities -- The flow of goods within the industrial estate should be closely linked with the port facilities and the airport of Ujung Pandang. Therefore, a distribution center will be established in the estate to ensure the smooth transportation of goods.

6) Water Supply and Drainage Plans

(1) Water supply

We suppose that the water necessary for the industrial estate can be drawn

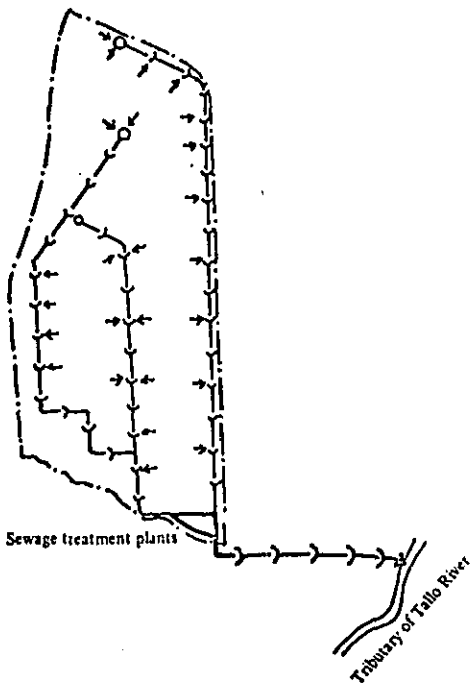
from the aqueduct for Ujung Pandang, which is recommended by the provincial government. The water supply plan is given in the left. Securing of other water sources by public institutions is mentioned in the Supplements.



(2) Drainage plan

The drainage plan can be worked out in principle in two systems -- one for industrial waste water and one for ordinary sewage. Treated water will be discharged into a tributary of the Tallo River.

Therefore, two sewage treatment plants -- one for industrial waste water and one for ordinary sewage -- will be necessary.



APPENDIX

Interim Report

15 March, 1976

Survey Team for the
Ujung Pandang Industrial Estate

The survey team for the pre-feasibility study of the Ujung Pandang Industrial Estate has carried out its local survey in Ujung Pandang area during the period starting 28 February through 10 March 1976, in company with, and with the cooperation of, local counterpart team of the Government of South Sulawesi Province, as shown in the Appendix I. Although there were difficulties in collection and in availability of necessary materials, statistical data and information, the effort of the local counterpart team to contribute to the work was enormous. Assistance from the Central Government staff was also valuable.

These materials thus collected wait to be sent back for analysis, and some of the critical information and data are not in hand yet.

Therefore, present stage of the pre-feasibility study is before any analytical work step, and it is too early to make any significant comment. However, the following preliminary remarks could be made (without consideration to orderly statements)

∴ Desirability of the project

It is the survey team's impression that the development and successful operation of the industrial estate(s) is not merely desirable, but also essential for future economic development of Ujung Pandang, South Sulawesi Province, and the Region of East Indonesia, thus contributing to the development of the Indonesian Economy as a whole. The importance of Ujung Pandang is, we believe, stated in PELITA II, as a key growth pole to promote economic power of the Region of East Indonesia. This point can

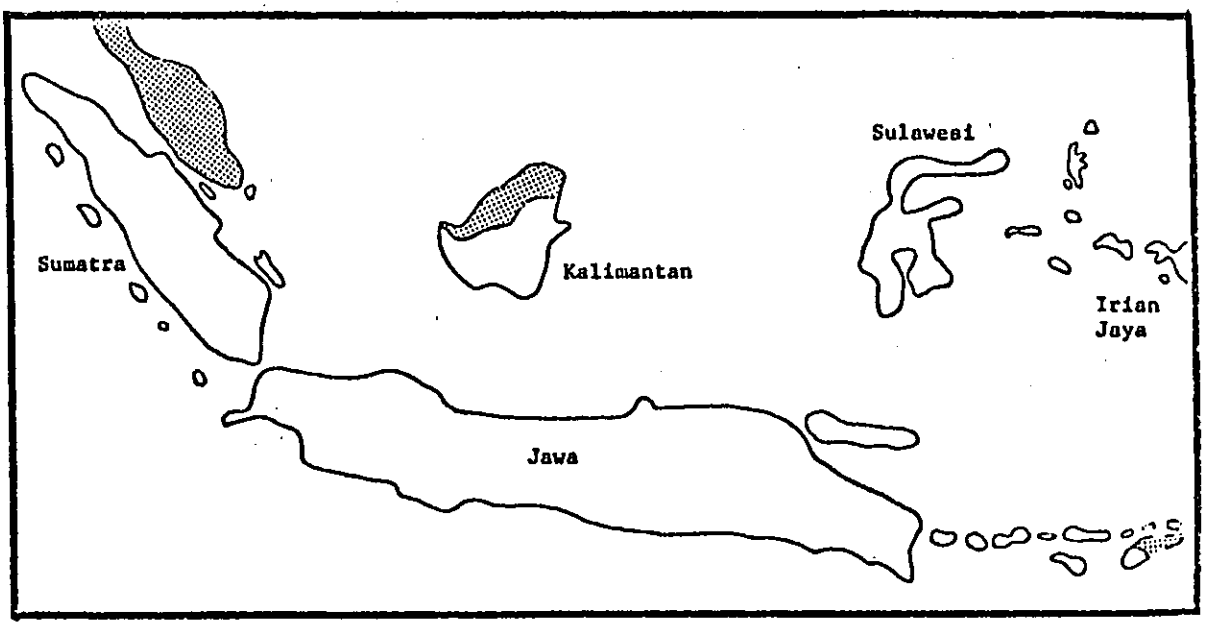
easily be understood by looking at the map shown on nextpage. This is not an ordinary geographical map, but the map redrawn so that each Region will represent its economic power. It is seen at a glance how large a distortion exsists in East Indonesia, and it certainly makes one feel that early correction should be made.

The industrial estate in Ujung Pandang will serve considerably to correct this difference, as playing an important role of breakwater against the outflow of population from East Indonesia, by creating employment opportunities to these people. Now let us assume that the difference of population growth rate between South Sulawesi and Indonesia as a whole is purely an indication of social mobility, i.e., population outflow, and also let us assume that an industrial estate of the size of 200 ha can provide jobs to 25,000 workers (this last probably is not far from reality), feeding 125,000 people including the families. By the rule of thumb calculation, it is suggested that creation of one industrial estate is almost equivalent to having taken the measure to prevent the outflow of population from South Sulawesi for four to five years, enhancing the level of consumption as well. This is only one example to demonstrate significance and impact of the industrial estate in Ujung Pandang and there are many. Therefore we feel this project is very important, and most urgently be promoted.

II. Development of the industrial estate

1) The following points should be taken into consideration in selecting the site for the industrial estate.

Fig 1-1 Map of Indonesia Expressed in terms of Economic Magnitude, 1972



(note) The Area of each island represents its Regional Gross Domestic Product in 1972, excluding oil sector.

a) Access to the Ujung Pandang-Airport highway which is the only main transportation route in the area

b) Easiness of drainage of rainfall in the estate, of waste water, and prevention of harmful influence over agricultural plantation

c) To avoid swamp area for selection of the site considering the cost of development

d) To minimize the number of farmers families to be removed out of the site area

e) Precaution that no grave hindrance factors for future expansion of the industrial area exist and compliance to the future land utilization plan of the area in case of expantion

2) As regards the size of the industrial estate, it would be impossible to conceive of the estate of gigantic size owing to the situation of infrastructure. The following points should be noted.

a) As the size of the estate in the first stage, medium sized (100 - 200 ha) estate is appropriate considering the development cost and effect of development

b) Whether one medium sized estate is developed or two or three estates of the smaller size are developed should need careful condireration

c) Optimum scale should be decided in accodance with the type of industries introduced as well as other factors

d) Location and size of the estate should be decided rendering sufficient scrutiny of the relation with the existing or planned projects of the area, such as the Government work shop (MOPW), the Golf course or the new location of the Hasaruddin University campus

3) Characteristics of the industrial estate

a) It might be desirable to form industrial mix of small and medium sized firms, and to consider the possibility of introducing the firm which will constitute the core of these

b) The estate should include in its function an orientation of promoting healthy development of firms such like nursery factories

c) The estate should be placed to accept expansion to new sites of factories already existing in urban area of Ujung Pandang City

d) Special feature should be given in the lay-out and design characteristics of the estate

e) Close relation should be established with Hasanuddin University and the Vocational Center to bear outstanding technical characteristics

III. Regional Development of Ujung Pandang

1) Regional level

a) In order that Ujung Pandang attains development as the center of the area, road network with the surrounding agricultural area should be strengthened

b) Flood control and utilization of rivers in the area should be promoted to prevent flood damages and to bring about effective use of water resources

c) Upgrading of highways connecting the Airport, the industrial estate, and the port, with each other, is required

d) Fortification of road network connecting the industrial estate and resident area is required

e) Regional development plan should include land use plan, industrial development plan, and agriculture improvement plan, and should strongly be promoted for implementation

2) Urban level

a) The urban plan made by Ujung Pandang City is generally agreeable to our idea

b) To characterize strongly the nucleus function of the Ujung Pandang City, reorganization of the central part is considered necessary

c) Creation of metropolitan area by unification of company and governmental offices, reorganization of commercial areas and construction of cultural and recreational facilities is required

d) Prevention of congestion and accidents by means of improvement of urban road network and traffic control system should be examined

3) Improvement of living condition

a) Improvement of water supply facilities

b) Improvement and construction of sewage system and waste drainage system

c) Improvement of housing

IV. Infrastructure

1) Inter-regional highways in Ujung Pandang City are Jl. Gowa Jaya and Jl. Gowa Raya, both of which are two-lane bituminous roads with showlders and gutters. These two highways are comparatively high-graded, on which the industrial estate newly constructed will probably heavily depend.

2) The following points are noted as regards road transportation.

a) Present average daily traffic (ADT)is approximately 2,000 - 3,000 and road capacity can meet his traffic volume satisfactorily. However, bicycles, motorcycles and becats increases in the traffic as roads approach downtown and amount of confusion is observed. Construction of special lane for these vehicles is desirable, as seen in the "Green-belt Plan" of Jl. Gowa Jaya.

b) In some areas owing to inferior drainage system, heavy rainfall floods the road, which requires improvement.

c) Load capacity is generally 5 to 10 tons. The design capacity should be graded up as trucks with the weight of 10 tons will increase to pass. The maintenance systems should also be strengthened as paved surface damage is making progress.

d) Consideration should be given to the construction of bypass route from an appropriate point of the trunk road to directly reach the port, by-passing the built-up area.

3) Development potential for the areas Desa Bira, Desa Bulurokeng will considerably increase as the present gravel road which passes Desa Bira to reach Mandai is improved and paved, and as the bridge at the mouth of Tallo River is constructed. Considerable part of traffic now dependent on the Jl. Gowa Jaya is likely to be diverted to this improved route, which will be characterized as a highway. Amount of traffic should be carefully projected for the future and development possibility of the area should be taken into consideration at establishing design of this highway. Designed load capacity of the new bridge is 8 tons, but it is desirable to hold for 10 ton trucks

at the lowest.

3) Supply of water for industrial use is a major and important constraint in planning the industrial estate. Present water supply program (first phase: 600^{l}/sec, second phase: additional 500^{l}/sec) is apparently incapable of meeting the demand.

   a) For acquisition of underground water for the estate, it is essential to attempt several earth borings to confirm quantity and quality of water available at several appropriate points.

   b) If there is excess capacity in the open canal presently constructed from Maros to the water treatment project, it would be economical to increase water in-take at Talangtalang for industrial use.

   c) From the viewpoint of longer range planning, construction of a water reservoir and network of canals to secure water for agriculture, industry and urban use, and to prevent flood at the same time should positively be examined.

4) Supply of electricity to the industrial estate will possibly be secured if and when the Sadan River power project is completed and distribution system is constructed. However, it is most desirable to construct power plant of its own use in the estate in order to avoid risk of completely depending on bought electricity.

5) Present port facilities (SoeKarno Wharf: 1360m with a berths, Hotta Wharf: 510m with 3 berth) are at this moment in state of excess capacity as against the number of vessels incoming and outgoing. Operating rate of warehouses is also low at 20 to 30 percent. It is not necessary to encourage expansion plan of the port for the industrial estate per se . However, improvement of access facilities

from the estate and the inter-regional trunk roads is necessary.

6) Air passengers at Hasaruddin Airport is increasing in recent years. However, it has 3,100 meter runway and the project to increase capacity for landing of DC-10 is planned. No difficulty is foreseen to meet the demand of nearer future.

V. Present status of industries and industries to be introduced

1) Present situation of industries in South Sulawesi Province

a) Industrialization in South Sulawesi advanced rapidly in the past-five tears, and chemical industries, basic industries and maritime industries increased their share in industrial production in place of light industries, as seen in the table below.

Past Trend of Share of Industrial Production to Total

(%)

	1969	1974
Light Industry	84.1	70.6
Home Industry	2.3	2.2
Textile Industry	4.6	5.6
Chemical Industry	9.0	14.5
Basic Industry	-	5.9
Maritime Industry	-	1.2
Total	100.0	100.0

b) The "modern" industries located in South Sulawesi are: paper mill,

cement plant, wheat flour mill, coconut oil extraction plant, galvanized iron sheet plant, steel bar (in pilot operation stage), shipyard, car assembly plant and sugar factory. The following points draw attention:

i) As regards the market, demand in Sulawesi is generally insufficient and exported to other East Indonesia Region with considerable superiority. Some industries can not keep sufficient operating role with these markets and market products to Jawa and Kalimantan

ii) Quality of labor force is considered satisfactory. However, skilled workers are insufficient in quantity and some are coming from Jakarta

iii) Regarding the electric power, most factories own or operate power station for their own use

iv) Water supply is the most difficult obstacle in these plants and for acquiring supply of water not containing salt, some plant holds wells with depth of even 200 meters

2) Industries to be introduced in the industrial estate

a) Objectives generally formulated for the industrial estate in the area should be i) promotion of employment, ii) increase of income, iii) decrease of import/increase of foreign currency, iv) promotion of industrialization and v) expansion of land utilization. Therefore, industries to be introduced should meet the requirement described above, in addition to the two other conditions; i) Economically feasible under the constraints which Ujung Pandang Industrial Estate imposes, ii) Economically feasible with the market mainly East Indonesia Region.

b) Criteria to be developed for selection of qualified industries would look something like the following tables.

Criteria A -----Factors benefiting the area

(Indicators)	(Factors)
Employee/ha	Employment Absorption
Import Value	Import Substitution
Export Value	Export Promotion
Average Wage	Income Effect
(Judgement)	Impact on Local Economy

Criteria B -----Factors indicating feasibility

(Indicators)	(Factors)
Money invested/project	Required money for investment
Skilled labor/Total Employee	Quality of required labor
Size of market & growth potential	Market potentiality
(Judgement)	Superiority of locality

c) Selection of industries would be carried out by: i) analytical selection process through statistical data collected during the local survey, ii) list of "promising industries" the Government of South Sulawesi Province has, iii) analysis of possibilities of existing firms to remove to the estate. Intermediary conclusion suggests that such industries are included in the selection process as; food processing industries, construction materials industries, metal fabrication industries, plastic products manufacturing, assembly industries.

VI. Schedule of study

Last addition to the comments is about future study schedule. Now the local field survey is over, analysis for the conclusion of pre-feasibility study will take place spending two months, to be followed by one month's draft report writing. The report is expected to cover 1) relating Ujung Pandang Industrial Estate to the national and regional development, 2) analysis of Ujung Pandang regional development, 3) selection of promising industries, 4) alternatives of industrial mix to be selected, 5) evaluation of industrial mix alternatives, 6) formulation of basic concept of Ujung Pandang Industrial Estate where framework of the estate will be set, including selection of several candidate sites for detailed study to follow, plan for land use, transportation network etc.

Then, following the report compiling, someone in the team will re-visit this country to present the result of the study and to submit draft report for review. At this moment, discussion of the possible framework of the feasibility study is planned.

Before this discussion is over, and before other conditions in Japan are settled, schedule of the pre-feasibility study will not be made definite.