

Perspective on Industrial Investment in Taiwan



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INDUSTRIAL DEVELOPMENT & INVESTMENT CENTER

STANDS FOR PROVIDING SERVICE TO
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IN TAIWAN

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PERSPECTIVE ON INDUSTRIAL INVESTMENT IN TAIWAN

Report No. 5 of 13 prepared for the
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A NOTE ON EXCHANGE RATES

Except where specifically indicated otherwise, the following exchange rates have been used throughout this report in conversions between U.S. dollars and values in foreign currencies:

1 US\$ = 40 NT\$ (Taiwan)

1 US\$ = S\$2.82 (Singapore)

1 US\$ = HK\$5.66 (Hong Kong)

1 US\$ = 308 Yen (Japan)

1 US\$ = 400 Won (Korea)

1 US\$ = 6.80 Pesos (Philippines)

1 US\$ = 2.82 M\$ (Malaysia)

1 US\$ = 415 Rupiah (Indonesia)

1 US\$ = 20.8 Baht (Thailand)

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I. INTRODUCTION: THE COMPARATIVE ADVANTAGE
OF TAIWAN AS A SITE FOR MANUFACTURING

Arthur D. Little International, Inc. (ADL), under contract with the Government of the Republic of China, has recently completed a survey of opportunities for manufacturing higher technology products in Taiwan. The output of the survey includes a series of studies of selected, specific new opportunities in the electronics, electrical machinery and general machinery industries. However, these studies by no means exhaust the range of opportunities for new types of higher technology manufacturing in Taiwan and it is the purpose of this report to present findings and supporting data growing out of the ADL survey which will be useful to manufacturers interested in examining Taiwan as a site for production whether within the specific industries studied by ADL or in any other sectors.

In summary form, the comparative advantage Taiwan offers as a site for many types of manufacturing arises from the existence of the following conditions:

- The availability of low-cost, trainable and productive labor across many skill levels.
- The absence of labor strife.
- Well-developed infrastructure for support of industry.
- A positive and consistent government attitude toward the private industrial sector and foreign investment.
- A strong and strongly-growing industrial economy guided by sound, indicative national planning.
- Monetary and internal political stability.
- Modest tax rates and attractive investment incentives.
- Good living conditions for expatriate personnel.
- A broad and well established industrial base.
- A rapidly expanding domestic market and easy access to world markets.

Many of these attributes translate directly into low manufacturing costs. For example, the type of electrical, mechanical and electronic products studied by ADL can be produced in Taiwan at costs on the order of 60% of similar costs in the United States. A cost differential of this order--or even greater--can be expected in many other product lines. The principal factor is the relatively low cost of qualified labor. Both skilled and unskilled labor of the types required for manufacturing relatively high technology products is available at rates which range from 10% to 20% of comparable U.S. costs, even after adjustments for productivity. Raw materials and many types of components are available at costs similar to those in Japan and the United States; in certain cases components and intermediate products of Taiwan manufacture are available at sharply lower prices than those in the more highly developed economies. Land costs are similar to and construction costs are approximately one-third those in the United States. Water, power and transportation costs are at competitive levels.

In the remainder of this report we expand and detail each of these attributes of the Taiwan manufacturing environment.

II. AVAILABILITY, QUALITY AND COST OF MAJOR PRODUCTION FACTORS

The major factors of production are available in Taiwan at levels of quality and cost which would be difficult to find together in any other manufacturing economy. In this section we characterize prevailing conditions with respect to labor, infrastructure for industry, and the availability of materials and components of kinds frequently required in machinery manufacturing.

A. LABOR

1. Wage Rates

Both skilled and unskilled labor for manufacturing is available at rates which range from 10% to 20% of comparable U.S. rates, even after adjustment for productivity. As an example, Table 1 presents an array of typical average wage rates in Taiwan in the electrical machinery and equipment industry in 1973.

Statistics of the U.S. Department of Labor show that average wages in the United States for production labor in activities comparable to those shown in Table 1 are on the order of US\$830 per month, including 20% fringes. Taiwan's average wage rate in electrical equipment manufacturing is in the range of US\$92.50 per month including 22% fringes, using a typical labor mix. Allowing for the 48-hour week which is normally worked in Taiwan and an efficiency of 50% versus United States performance, we estimate that the effective Taiwan labor rate is on the order of 15% of the U.S. rate for equivalent production. Supervisors and executives are paid accordingly. Wage rates in Taiwan rose in early 1973; an average increase of 15% per year is forecast for the foreseeable future. This is in line with other Asian wage trends.

2. Fringe Benefits

Fringe benefits for workers in Taiwan average 20 to 25% of the base wage rate. Fringes include approximately two months' bonus, clothes, dormitory, and insurance (80% paid by the company, 20% by the worker).

3. Worker Quality and Attitude

The quality of worker available in Taiwan is uniformly reported by foreign firms as exceptionally good. Virtually all potential workers coming onto the job market have a minimum of a ninth-grade education. Assembly workers can be trained within one month, machine operators in one year; three to five years are required for the skilled occupations. Trained technicians will have as much as six years of additional formal education before coming on the job market

TABLE 1
TYPICAL ACTUAL AVERAGE WAGE RATES IN TAIWAN
AUTOMOTIVE ELECTRIC EQUIPMENT, 1973

<u>Function</u>	<u>Skill Level</u>	<u>Base Wage</u> <u>US\$/mo.</u>	<u>Wage Incl.</u> <u>22% Fringes</u>
General and assembly labor	Un-to semi-skilled	42-53	51-65
Machine operator	Semi-skilled	68	83
Coil winder	Semi-skilled	68	83
Machinist	Skilled	79	96
Foreman	Skilled	86	105
Tester	Skilled	105	128
Mold maker/ die caster	Skilled	105	128
Quality control inspector	Highly-skilled	105	128
Manufacturing Supervisor	Highly-skilled	132	160
Engineer	Professional	132	160

as qualified workers. Workers are diligent and apply themselves with inherent dexterity augmented by their education. The average employment period for production work is three years, indicating a significant degree of loyalty to the employer.

4. Work Week and Productivity

The normal work week is six eight-hour days. While two-shift operation is not common as yet in Taiwan, this is becoming a reality as industries become more capital-intensive. While productivity is still somewhat lower than that of equivalent United States workers, it is widely believed to be improving rapidly primarily because of improvements in manufacturing techniques and management. It is expected that productivity will very nearly equal that of U.S. workers within a few years.

5. Labor Relations

Taiwan does not have an active labor movement and the Government does not interject itself into wage negotiations. Strikes are virtually unheard of.

6. Communications with Workers

Virtually all workers can read and write Chinese and many are also able to read and some to write English. The Taiwan dialect is spoken primarily among workers. Supervisors and professional people are virtually all capable of speaking both the Taiwan dialect and Mandarin Chinese--which is the language of business in Taiwan. In addition, most supervisors, engineers and executives speak English to an acceptable level of fluency. Verbal communication is not difficult for these reasons and, as the written Chinese is common throughout Taiwan, communication through the printed page is no problem.

7. Size and Distribution of the Labor Force

Taiwan's population at the end of 1972 was approximately 15.3 million, and its labor force approximately 6.7 million. Employment in manufacturing was over 1.2 million, 18% of the total. Figure 1 indicates the distribution of the labor force and manufacturing employment by district. It will be noted that both the total labor force and that portion engaged in manufacturing is concentrated around Taipei in the north and Kaohsiung in the southwest, with smaller concentrations around the West Coast cities of Taichung and Tainan.

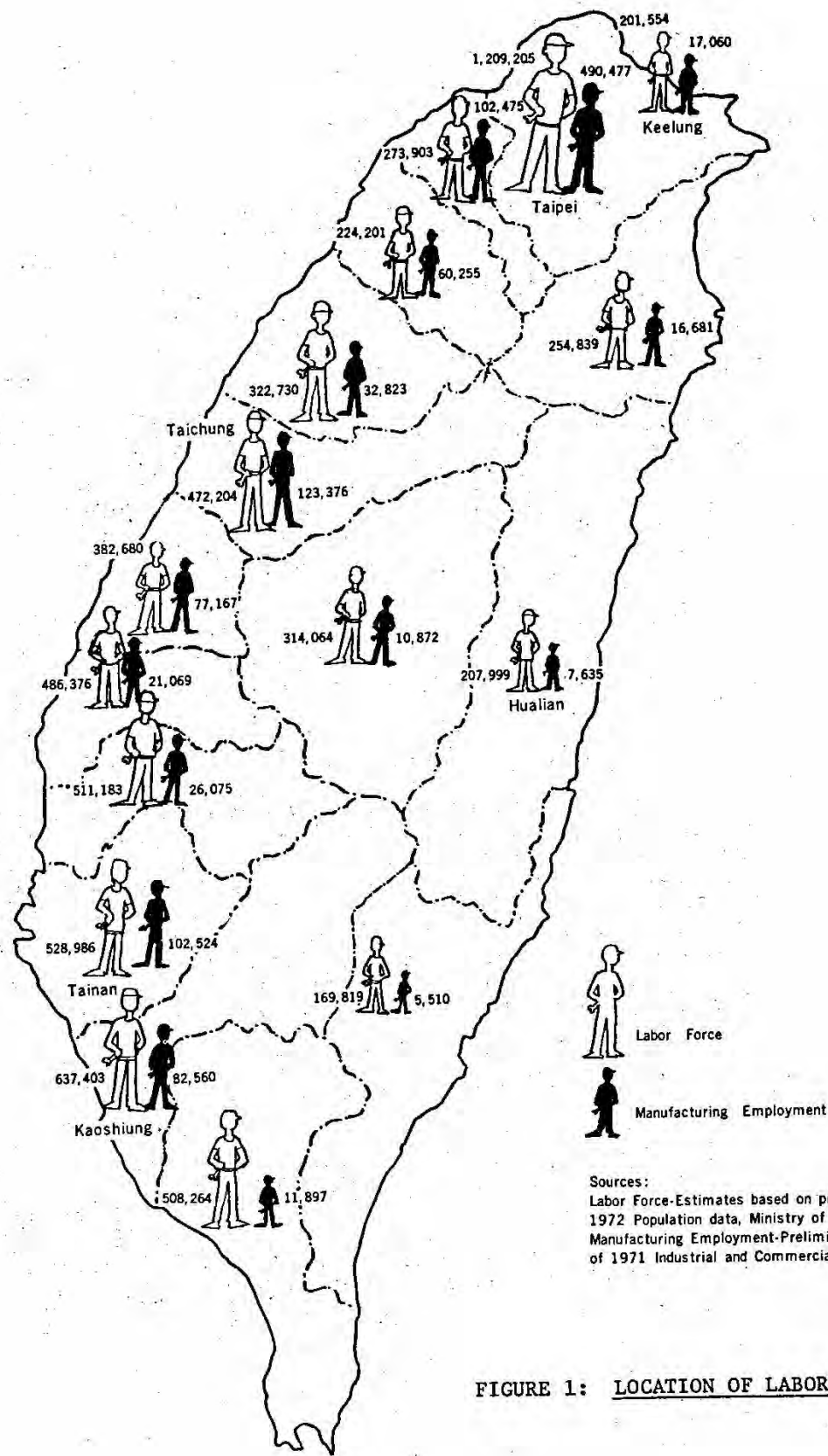


FIGURE 1: LOCATION OF LABOR FORCE

8. Manpower Development Programs

Table 2 summarizes key manpower statistics bearing on manufacturing employment.

TABLE 2
KEY MANPOWER STATISTICS, TAIWAN

	<u>1970</u>	<u>1980</u>	<u>Comment</u>
Population (million)	14.6	17.8	Expected annual average increase, approximately 1.9%
Civilian labor force (million)	4.64	6.48	Participation rate approximately 57%; rate of unemployment, 4%
Civilian employment (million)	4.43	6.23	Annual average increase, 179,000 (3.5% per year)
Percent employed in secondary industries	30	35	Mining, manufacturing, construction, power, public utilities
Civilian employment in manufacturing only (million)	0.989	1.67	Net annual increase, 68,000

Source: CIECD

In an effort to keep manpower supply in balance with demand in the face of Taiwan's high rate of economic growth, the Government has evolved a highly-organized manpower development planning process. Among other outputs, this process produces projections of industrial labor demand and supply, by industry and by occupation, which are now available for annual periods up to 1980.

Currently, according to the fourth manpower development plan, 98,100 skilled and semi-skilled workers will be needed annually for the years 1971-1974 to meet secondary industry requirements (excluding mining and quarrying). To meet this need, the Government has developed a comprehensive variety of vocational education and training programs, aimed at keeping the output of trained manpower closely aligned with emerging requirements.

At present, highest priority is being given to the training of workers in the metalworking crafts--e.g., tool makers, machinists,

plumbers, welders--skilled workers in precision instrument manufacture, electricians, and related electrical and electronics workers.

There are now 23 industrial vocational schools which offer three-year programs for the training of skilled workers. As can be seen from Table 3, steady and significant expansion of training has taken place and is projected for the future.

TABLE 3
INDUSTRIAL VOCATIONAL TRAINING, TAIWAN

	<u>Enrollment</u>	<u>Graduates</u>
1950	8,800	2,341
1970	61,000	8,660
1971	79,516	12,261
1972	99,300	17,100
1971-75 Plan (Annual Average)	108,300	26,450
1980 Plan	135,000	--

Source: CIECD

Government assistance to industry in meeting these additional needs is provided through 17 agricultural schools, two industrial skill centers devoted primarily to the upgrading of workers and to the training of foremen and instructors, regional training centers providing basic courses to entry workers, and the National Vocational Training Service for Industry, a demonstration and training unit which trains vocational school instructors and offers vocational courses to students as well.

All of these government-operated schools work closely with industrial companies in the development and offering of special courses to meet individual company requirements. A number of programs, which supplement the formal industrial vocational education programs, are now in effect:

- Cooperative Training - Such programs, which combine factory work with classes in nearby vocational schools, are receiving increasing attention. About seven of the industrial vocational schools now provide such "sandwich" programs, under which courses ranging in length from three to six months are offered, subsidized by the sponsoring companies. One variation is an arrangement under which junior high school students

in remote areas transfer to schools near plants which employ them, spend six hours per day working and three hours in school during evenings. We understand that the Government intends to promote expansion of such programs, particularly those under which graduates can be awarded certificates.

- Special Courses - A broad variety of additional courses, designed and conducted in close collaboration with industry, are sponsored by such institutions as the Metal Industries Development Center, the Auto Technicians Training Center, and the China Productivity Center. Many of these are oriented toward supervisory and middle management.

Most larger firms established in Taiwan now operate a variety of in-plant training programs as a matter of self-interest. The smaller and medium-sized firms, however, have generally neglected such activity, offering training to new workers strictly on an on-the-job basis. Accordingly, to encourage such firms to strengthen their activities, the Government passed a law (effective April, 1973) which applies to all industrial firms employing 40 or more. Briefly, such firms are required to contribute 1.5% of their payroll to a new organization called the National Vocational Training Fund Board. Firms already having in-plant training programs can apply for a deferment of up to 80% of their total assessed payment. Of the funds collected by the Board, 80% are used to finance training activities for the contributing companies, which are contracted to the various training centers and schools mentioned above. The objective of the entire program is to broaden the base of trained workers available to industries in all categories. Thus, firms wishing to establish their own training programs can receive help in doing so, including subsidization of instructors by the Board.

9. Comparative Wage Rates in Asia

In the course of ADL's study we carried out a survey of comparative wage rates in Taiwan and competitive Asian locations. The results are compiled in Table 4.

The information from this survey suggests the following conclusions as to Taiwan's competitive position:

- Taiwan's labor force ranks among the highest in Asia in terms of breadth and depth of skills; the only country which clearly surpasses it in these attributes is Japan;
- Wage rates in Taiwan in nearly all job categories are lower than in most Asian nations, although seldom the lowest; furthermore, productivity is among the highest;
- Taiwan wages are lower than those of either Singapore or Hong Kong in all job categories;

TABLE 4
COMPARATIVE ANALYSIS OF WAGE RATES

<u>Type of Job</u>	<u>Country Ranking</u>	<u>Average Wage</u> (US\$ per month)
<u>Engineers</u> (includes industrial, civil, electrical, mechanical and chemical engineers)	Philippines	134
	Taiwan	200
	India	207
	Korea	213
	Vietnam	224
	Indonesia	314
	Thailand	411
	Hong Kong	451
	Japan	557
	Malaysia	594
	Singapore	762
Australia	781	
<u>Craftsmen</u> (includes toolmakers, sheetmetal workers, welders, and elec- tricians)	India	45
	Indonesia	47
	Philippines	50
	Vietnam	83
	Thailand	91
	Korea	96
	Taiwan	99
	Malaysia	99
	Singapore	133
	Hong Kong	142
	Japan	262
Australia	463	
<u>Skilled Workers</u> (includes skilled machine operators, mechanics and other skilled workers)	Indonesia	53
	India	54
	Philippines	63
	Vietnam	69
	Taiwan	73
	Malaysia	92
	Korea	102
	Thailand	117
	Hong Kong	122
	Singapore	183
	Japan	272
Australia	442	

TABLE 4 (Continued)

COMPARATIVE ANALYSIS OF WAGE RATES

<u>Type of Job</u>	<u>Country Ranking</u>	<u>Average Wage</u> (US\$ per month)
<u>Semi-skilled Workers</u> (includes semi-skilled machine operators and mechanics and other semi-skilled workers)	Indonesia	32
	Philippines	47
	Malaysia	56
	Korea	66
	Taiwan	73
	Hong Kong	84
	Singapore	87
	Japan	240
	Australia	337
<u>Unskilled Workers</u> (includes unskilled workers performing heavy and light manual labor)	India	16
	Indonesia	26
	Philippines	42
	Taiwan	45
	Malaysia	45
	Vietnam	53
	Thailand	53
	Singapore	60
	Korea	68
	Hong Kong	82
	Japan	120
Australia	303	
<u>Electrical and Electronic Assemblers</u>	Taiwan	25
	Singapore	39
	Philippines	57
	Hong Kong	72
	Thailand	74
	India	120
	Japan	180
Australia	299	
<u>Quality Inspectors</u>	Taiwan	35
	Korea	42
	Indonesia	53
	Vietnam	67
	Philippines	76
	Singapore	82
	Hong Kong	87

TABLE 4 (Continued)

COMPARATIVE ANALYSIS OF WAGE RATES

<u>Type of Job</u>	<u>Country Ranking</u>	<u>Average Wage</u> (US\$ per month)
<u>Quality Inspectors</u> (continued)	Thailand	122
	Malaysia	141
	India	153
	Japan	257
	Australia	462
<u>Management</u>	Vietnam	231
	India	360
	Korea	388
	Taiwan	467
	Philippines	486
	Indonesia	496
	Thailand	559
	Malaysia	635
	Hong Kong	647
	Singapore	869
	Japan	901
Australia	1,216	

- Of Taiwan's major competitors in export-oriented industries, Korea's wage structure is closest to Taiwan's;
- Wages paid by US firms in Taiwan to engineers, skilled workers, semi-skilled workers, unskilled workers and quality inspectors are less than those paid by U.S. firms in Korea. However, Korean wages appear to be marginally lower in the case of craftsmen and managers.
- Taiwan wages appear to be particularly low relative to others in the case of engineers, electrical and electronic assemblers, and quality inspectors.
- Wages in Japan are generally 3 to 4 times those in Taiwan (and Korea). Although wages paid in Japanese management categories are only 2-3 times those in Taiwan, wages for electrical and electronic assembly work may be 7-8 times those in Taiwan.

The extent to which bonuses and fringe benefits are offered in addition to wages varies substantially among countries and by industry, type of worker and type of employer. This makes meaningful and consistent cross-country comparisons difficult. In general, however, the scale of bonus/fringe benefit packages usually provided in these countries suggests that in Taiwan, Korea, Singapore, Hong Kong and Japan employees receive as a matter of course a bonus equal to at least one month's wages, plus fringes of at least another 10% of base wages. The bonus/fringe benefit packages in those countries provided by foreign investors to local employees range from 20% to 50% of wages.

B. INFRASTRUCTURE FOR INDUSTRY

1. Supporting Industries

Taiwan has an unusual complement of supporting industries for a developing country. Its substantial machine tool industry supplies machinery of conventional and special design at prices which are 50% or less than equivalent European or United States machine prices. The quality of these machines is not up to the standards of foreign equipment, but they are suitable for many applications. Such services as plating, painting, machining, die casting, welding and metal forming are readily available on a subcontract basis. Special hardware and piece parts of low to moderate precision can be ordered to print from local subcontractors.

2. Transportation

a. Facilities

Taiwan has particularly well-developed highway and rail systems. These are concentrated along the West Coast connecting the Northern and Southern ports of Keelung and Kaohsiung and the three major cities of Taipei, Taichung and Kaohsiung. Figure 2 indicates the location of Taiwan's major highways and rail lines. Of particular note is the new North-South Freeway which is under construction. This freeway will further stimulate industrial growth along the heavily populated Western side of the Island. It is expected to be completed in 1978 at a total cost of nearly US\$600,000,000. Taiwan's existing highway system covers 15,673 km. Its rail system covers an additional 1,179 km.

There are approximately 60,000 trucks in Taiwan which, in 1972, transported an estimated 42 million tons of cargo more than 1.6 billion ton-kilometers. During 1972 the rail system transported more than 17 million tons of cargo nearly 2.7 billion ton-kilometers.

As is indicated on Figure 2, Taiwan's major ports are in Kaohsiung and Keelung. Although the extraordinary rate at which Taiwan's trade has grown in recent years places a considerable strain on existing facilities, Kaohsiung in 1972 handled a total of 19,466,000 tons and Keelung 7,998,000 tons. Although both ports are currently handling containers, Kaohsiung, with much more space in which to expand, will have the country's greatest capacity in the future to handle and store containers.

In addition, a new port is under construction at Taichung for the purpose of handling the rapid increase in industrial growth of that area already taking place around the Taichung Export Processing Zone. When the first stage is completed in mid-1976, the harbor will be capable of handling 2.8 million tons of cargo per year. Eventually, the port of Taichung will have the capacity to handle 16 million tons per year and will include specialized berthing facilities for container cargo, general cargo, grains, ores, cement and timber.

Taiwan's existing international airports, handling cargo as well as passengers, are located outside Taipei and Kaohsiung (see Figure 2). Both are capable of handling the world's largest cargo planes. In 1972, Taipei International Airport handled 63,840 tons of cargo and 2,066,568 passengers. A major new airport is under construction in Taoyuan, 17 miles southwest of Taipei, adjacent to an area of particularly rapid industrial growth.

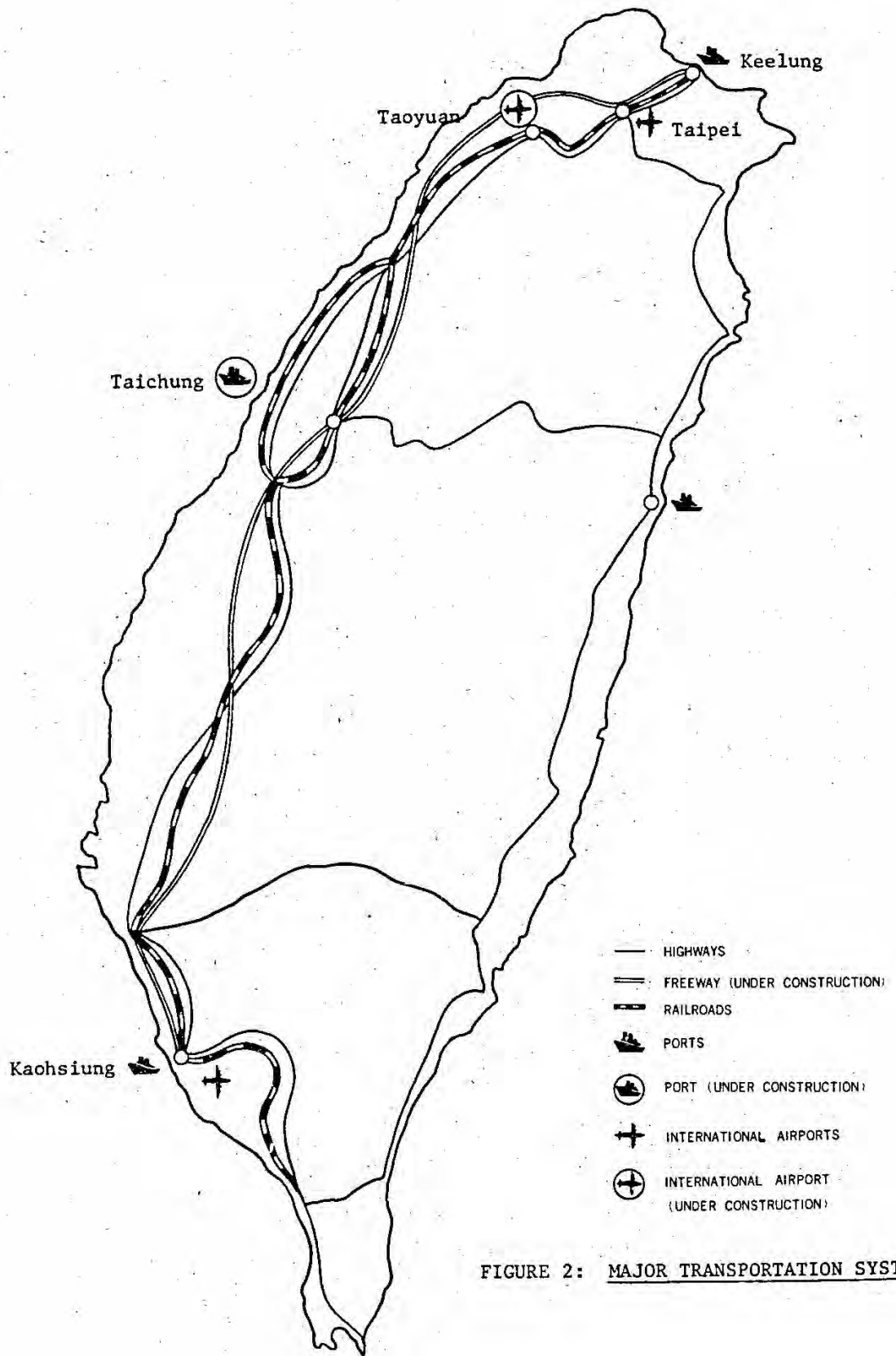


FIGURE 2: MAJOR TRANSPORTATION SYSTEMS

b. Costs¹

The major costs which will be incurred in moving goods from a factory in Taiwan to a destination abroad are:

- Trucking and/or rail charges,
- Custom broker fees,
- Handling and storage charges at ports and airports,
- Sea freight and air freight charges, and
- Insurance.

The following is a general summary of each of these costs for electrical machinery and equipment. Figure 3 provides a brief summary of transport costs for one ton of machine tools and for one ton of electronic equipment.

(1) Truck and Rail Charges

Trucking charges are subject to negotiation. Rates are principally a function of distance, size of load, type of load and type of truck. A normal charge is US\$.05 (NT\$2) per ton-kilometer.

Rail charges are fixed by category of good and computed on a distance basis. Machinery or electronic goods are charged US\$0.012 (NT\$0.45) per ton-kilometer. The rate for 20-foot containers is US\$1.05 (NT\$40) per kilometer while that for 40-foot containers is US\$1.53 (NT\$60) per ton kilometer.

(2) Custom Broker Fees

A custom broker is usually hired to obtain an export license and other documents and clear customs. For exported goods charges range from US\$9.50 (NT\$360) to US\$23.70 (NT\$900) but average US\$13.15 (NT\$500) per bill of lading.

¹ U.S. dollar costs quoted in this section were based upon an exchange rate of 1 US\$ = NT\$38, which existed at the time this data was collected.

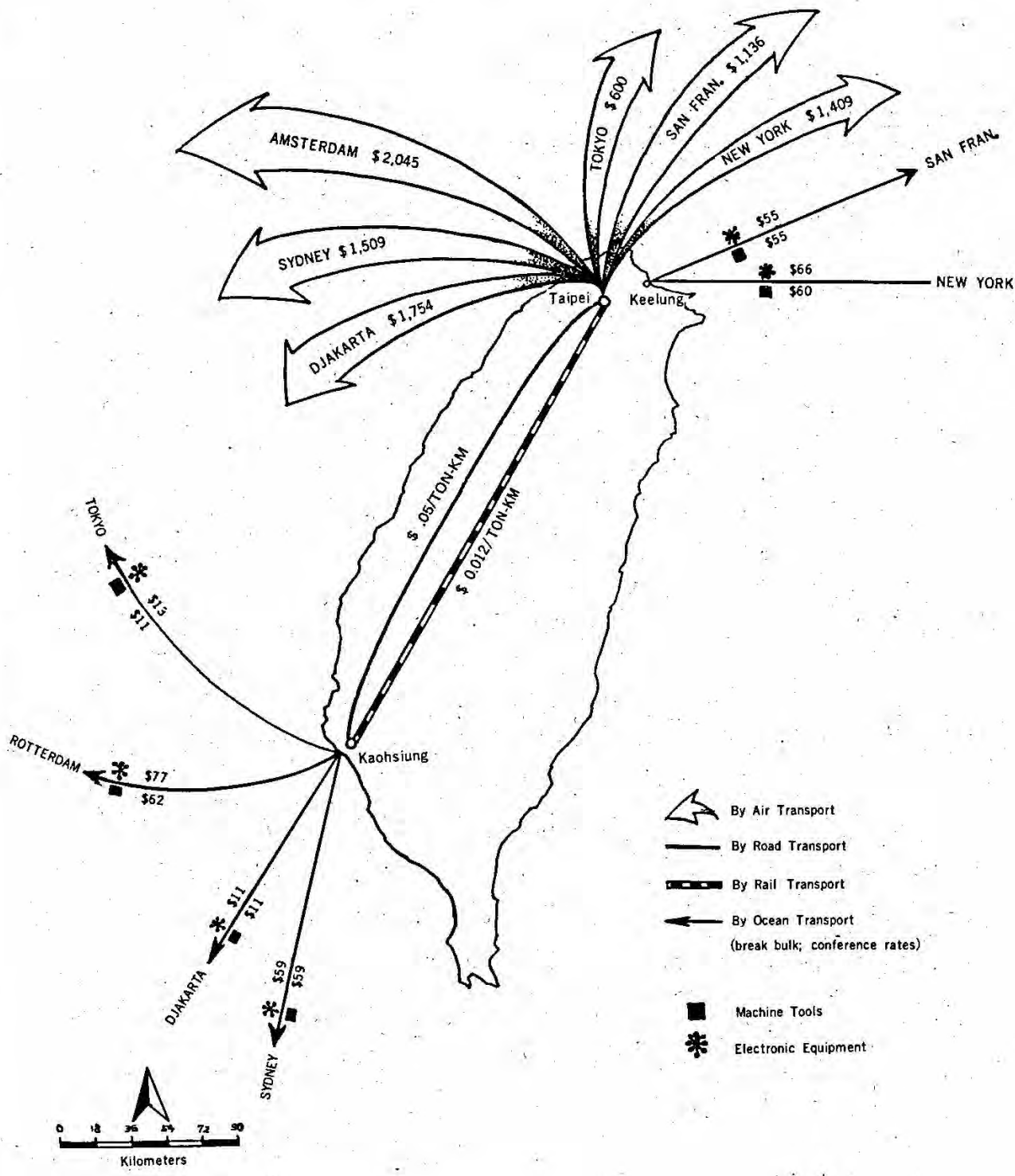


FIGURE 3: REPRESENTATIVE TRANSPORT COST OF 1 TON OF MACHINE TOOLS AND 1 TON OF ELECTRONIC EQUIPMENT (US DOLLARS)

(3) Handling and Storage Fees

At the ports of Kaohsiung and Keelung, the handling and storage fees charged to the shipper average between US\$1 to US\$2 (NT\$38 to NT\$76) per ton of cargo for breakbulk. This charge includes storage of the goods for five days. This is usually adequate since the shipper is not likely to send the goods to the port until five days before the ship is ready to receive them. After this period, there is a charge of approximately US\$1 (NT\$38) per ton for each additional five-day period.

Because of limited container storage space at the port of Keelung, and to a lesser extent at Kaohsiung, container storage depots outside the port are owned by private firms which charge storage fees of US\$.80 to US\$2.37 (NT\$30 to NT\$90) per day per container.

At Taipei and Kaohsiung International Airports a storage fee of US\$4.78 (NT\$182) per ton for the first three days is charged, plus US\$10.50 (NT\$400) for handling.

(4) Freight Rates

Table 5 provides representative ocean freight rates for breakbulk cargo to major destination areas. These are summarized in Figure 3. Breakbulk is given on a revenue ton/freight ton basis, i.e., 40 cubic feet or 2,000 pounds, whichever will provide the most revenue to the shipping company.

Table 6 provides representative air freight data to these same destinations.

3. Industrial Land and Buildings¹

The Government does not require that investors locate manufacturing facilities in any specific area of the country nor are tax devices used to influence such decisions. The location of existing industries, labor, transport systems, power and other service facilities will, however, affect where a particular facility might best be located. In addition, in order to satisfy investor requirements, the Government has established a number of Export Processing Zones (EPZ's) and other Industrial Districts designed for general and heavy industry. These are noted in Figure 4.

¹ U.S. dollar costs quoted in this section were based upon an exchange rate of 1 US\$ = NT\$38, which existed at the time this data was collected.

TABLE 5

REPRESENTATIVE OCEAN FREIGHT
RATES TO MAJOR DESTINATIONS

(Conference Rates in
US\$ per revenue/freight ton)

<u>Destination</u>	<u>Electronic Products Breakbulk</u>	<u>Machinery Breakbulk</u>
New York	66	60
San Francisco	55	58
Rotterdam	77	62
Sydney	59	59
Tokyo	13	11
Djakarta	11	11

TABLE 6

REPRESENTATIVE AIR FREIGHT
RATES TO MAJOR DESTINATIONS

(US Dollars)

	<u>Per Metric Ton</u>	<u>Chartered Plane*</u>
New York	1,409	51,000
San Francisco	1,136	30,000
Amsterdam	2,045	On negotiation basis
Sydney	1,509	On negotiation basis
Tokyo	600	7,900
Djakarta	1,754	On negotiation basis

* Maximum load of 85,000 pounds and 8,500 cubic feet.

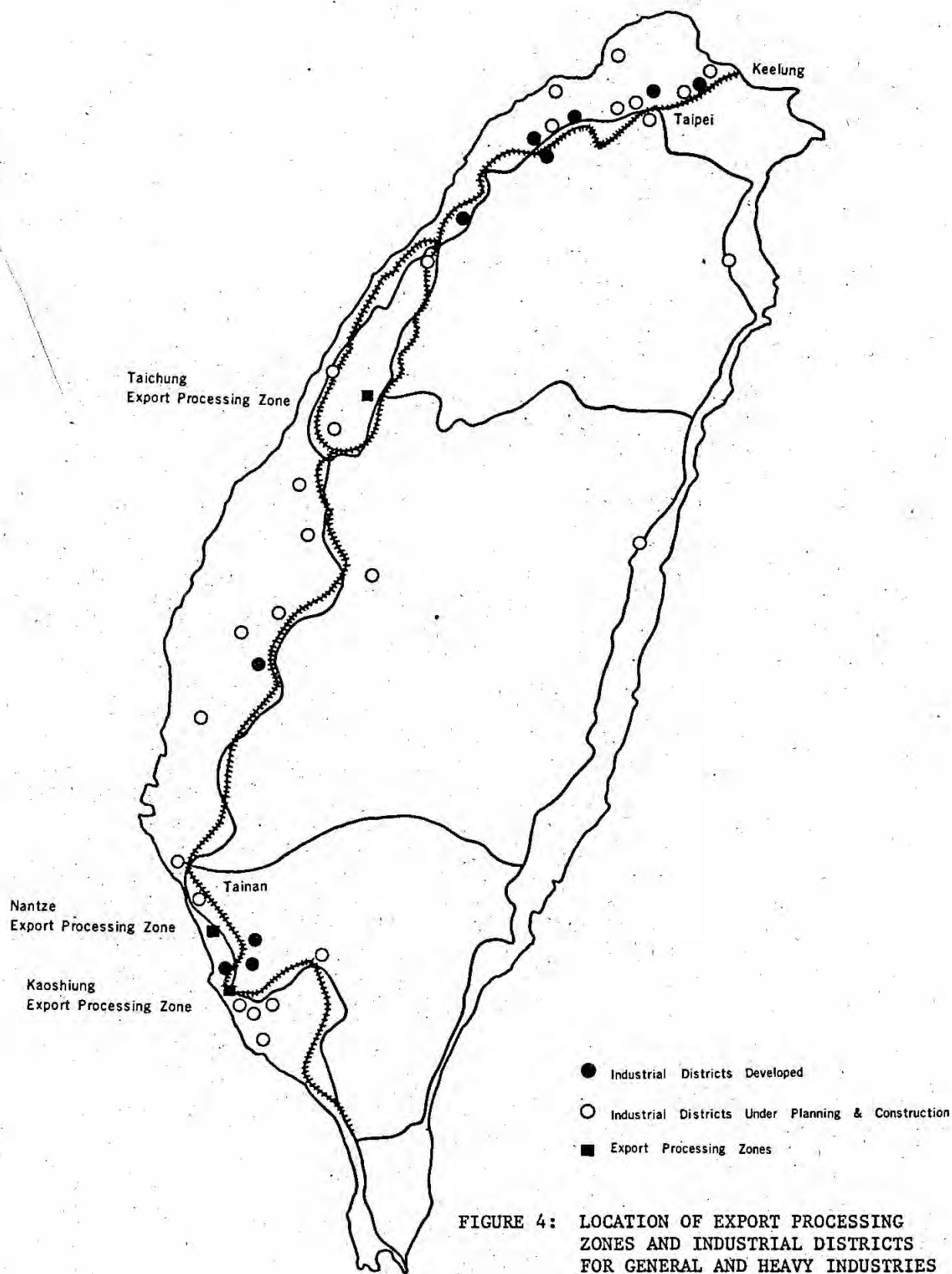


FIGURE 4: LOCATION OF EXPORT PROCESSING ZONES AND INDUSTRIAL DISTRICTS FOR GENERAL AND HEAVY INDUSTRIES

a. Export Processing Zones

In an effort to make Taiwan particularly attractive to export-oriented manufacturing investors, the Government embarked in the early 1960's on a vigorous program to develop strategically-located Export Processing Zones. Enterprises located in these zones receive the favorable tax treatment provided by the Statute for Encouragement of Investment. Table 7 provides summary information on the three Export Processing Zones.

- Kaohsiung EPZ - This was the first EPZ to be established. It is conveniently located next to the Port of Kaohsiung, Taiwan's major port. 154 factories are now operating in the zone.
- Nantze EPZ - This newer zone, also near Kaohsiung, is particularly well laid out and has adequate land available for new plants.
- Taichung EPZ - Taiwan's move toward becoming a major site for skill- and technology-intensive industries led to the recent creation of the Taichung EPZ. Taichung's environment is particularly well suited for such industries.

The three EPZ's are administered by the Export Processing Zone Administration, under the Ministry of Economic Affairs. The EPZ Administration has responsibility for (1) developing the zones, (2) assisting investors interested in locating in the zones, including the processing of all applications, and (3) administering the zones.

As suggested above, the EPZ administration has already built the basic infrastructure--roads, power, and sewerage systems. A service fee of US\$0.53 to US\$0.58 (NT\$2.01 to NT\$2.19) per square meter for standard factory space per month is charged for such services, including installation charges.

Land in the EPZ's is leased at US\$.06 (NT\$2.30) per square meter per month to those wishing to construct their own factories. Standard factory buildings are also available and may be purchased for US\$37.05 to US\$47.16 (NT\$1,408 to NT\$1,792) per square meter. The land on which these standard factory buildings are located is rented at US\$.042 to US\$.054 (NT\$1.614 to NT\$2.054) per square meter per month.

TABLE 7

TAIWAN'S EXPORT PROCESSING ZONES--SUMMARY INFORMATION

	KEPZ (Kaohsiung)	NEPZ (Nantze)	TEPZ (Taichung)	Total
1. <u>Area (Hectares)</u>	68.5	90.0	23.8	182.3
2. <u>Approved Applications</u>				
Number:	164	46	16	226
Total amount of investment (US\$)	50,701,723	18,009,457	9,150,840	77,862,020
Projected total annual export sales (US\$)	370,763,518	103,666,769	66,326,076	540,756,363
Projected total number of employees	63,152	18,232	8,548	90,932
3. <u>Number of Enterprises in Operation:</u>	156	24	13	193
4. <u>Approved Investment by Source (US\$)</u>				
Domestic investment	6,918,130	4,520,102	150,000	11,588,232
Overseas Chinese investment	6,346,567	3,819,355	315,000	10,480,922
Foreign investment	28,513,239	2,025,000	5,310,840	35,849,079
Joint ventures	8,923,786	7,645,000	3,375,000	19,943,786
5. <u>Present Employment</u>				
Number of employees	4,417	746	828	5,991
	45,831	6,074	3,318	55,223

Source: Export Processing Zones, Essential Statistics, December 31, 1972.

b. Industrial Districts

The Government has identified 50 tracts of land throughout the island as prime areas for future industrial development. Many of these tracts have already been purchased by the Industrial Land Department of the Industrial Development and Investment Center (IDIC) and designated "Industrial Districts". Figure 4 shows the location of those industrial districts, already developed or planned, which are for general or heavy industry. Seventeen industrial districts, comprising 1,589 hectares, have already been developed during the past few years and sold to investors.

In each industrial district the Government provides the basic infrastructure, including roads, water, power, drainage and sewerage systems. Prices range from US\$.15 to US\$.73 per square foot, depending upon the location of the property. In addition, the Government has constructed standard factory buildings which can be purchased by domestic or foreign investors. For the most part, however, investors build their own plants in the industrial districts.

c. Private Land Located Outside the EPZ's or Industrial Districts

Tracts of land which have been designated as industrial land, but have not been purchased by the Government, may be purchased directly from a private owner or requisitioned by the Government on behalf of the company planning to use it for industrial purposes.

In the past, many foreign investors have tended to locate around Taipei, rather than in one of the EPZ's or other industrial areas described above. Although this may continue to be the case in many instances, a number of factors will encourage investors to explore other locations as well. These include (1) the rapid development of the industrial districts, (2) improvements being made in the transport system, particularly along the West Coast, and (3) rapidly-developing alternative urban areas such as Taichung with lower land costs and greater labor availability.

Purchases of rice paddy land for industrial purposes by foreign investors near Taipei in early 1973 were reported to be in the range of US\$.70 to US\$1.00 per square foot. Similar land near other urban areas in early 1973 was reported to be available at US\$.35 to US\$.50 per square foot.

d. Bonded Factories

Although investors interested in establishing an export-oriented industry in Taiwan may choose to locate in one of the Export Processing Zones in order to avoid paying duty on imported capital equipment and raw materials, they may also obtain similar duty-free status for a factory located elsewhere by establishing a bonded enterprise. Customs bonded factories may be established for enterprises which are "exclusively engaged in the manufacture of export goods not for domestic sales and have a paid-up capital of more than NT\$5,000,000" (approximately US\$130,000). Any products processed by one bonded factory and sold to another bonded factory for further processing and export will also receive favorable duty-free treatment.

e. Construction Costs

Construction costs for reinforced concrete factories being built in Taiwan in 1973 averaged US\$5 to US\$6 per square foot.

4. Electric Power

As of December 1972, the total installed capacity provided by the Taipower Company was 3,519,000 kw of which 901,000 kw came from hydro-electric facilities and 2,618,000 kw from thermal facilities. The location of all major facilities in the power system is given in Figure 5. Power rates in U.S. dollars are quite low. They are given below.

Secondary voltages

Demand charge--by installed capacity US\$.95/kw/month

Energy charge

Below 1,000 kwh	US\$.0105/kwh
1,001 to 10,000 kwh	US\$.0097/kwh
Over 10,000 kwh	US\$.0082/kwh

Primary voltages

Demand charge--by installed capacity, US\$.87/kw/month

by contracted demand US\$1.13/kw/month

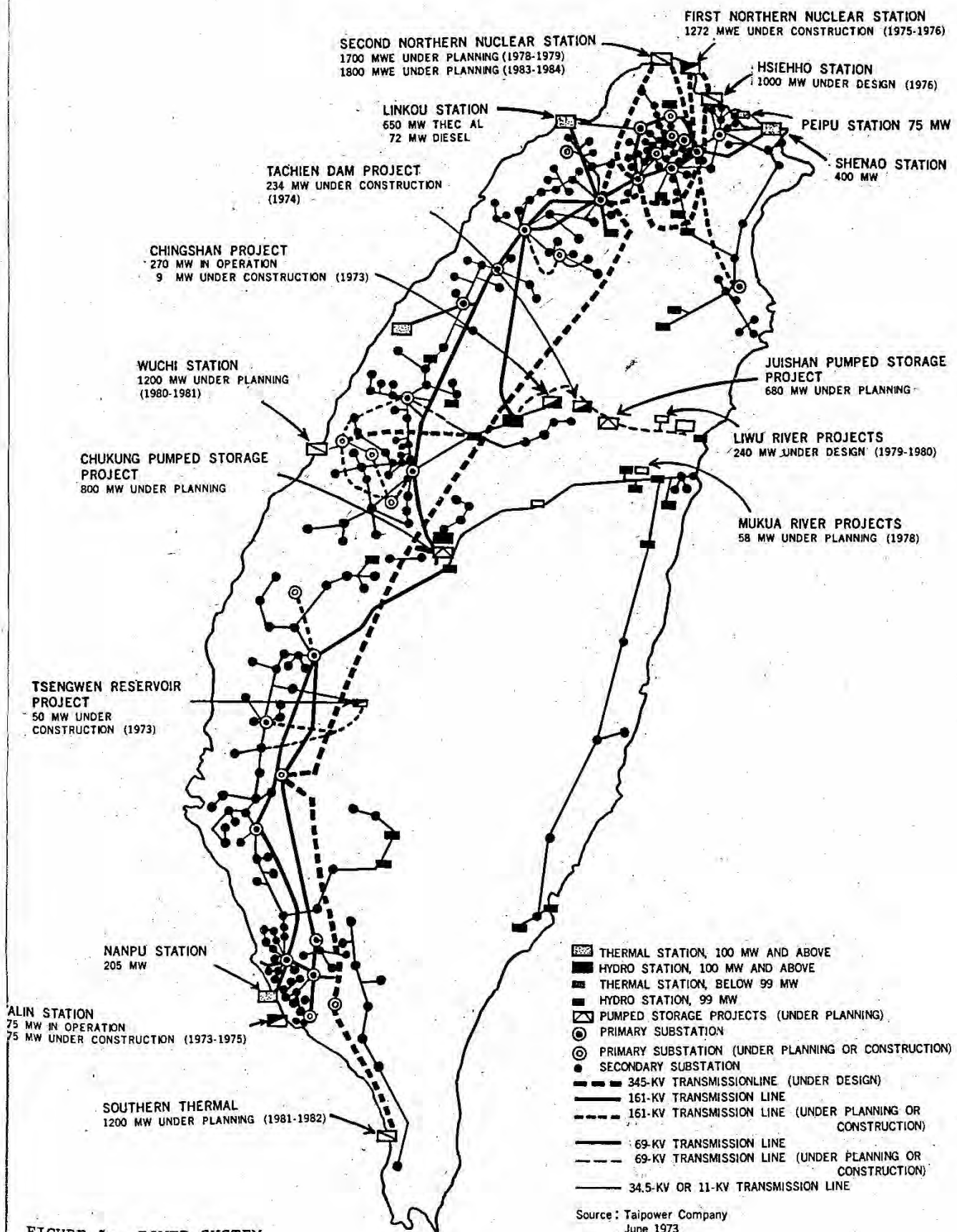


FIGURE 5: POWER SYSTEM

Energy charge

Below 10,000 kwh	US\$.0097/kwh
10,001 to 100,000 kwh	US\$.0092/kwh
100,000 to 1,000,000 kwh	US\$.0074/kwh
1,000,001 to 5,000,000 kwh	US\$.0071/kwh
Over 5,000,000 kwh	US\$.0066/kwh

Taiwan's power supply has been expanding at an annual rate of more than 12% in recent years, but the rapid growth of the economy has occasionally resulted in shortages. During the 1973-1976 period, Taiwan's generating capacity will be raised to 6,657,000 kw, or approximately double the present level.

5. Water for Industrial Use

At the present time the rates charged to industrial users vary with each locality. For instance, the rate in Taipei for small scale industrial users is US\$.046 (NT\$1.75) per cubic meter, while the rate in Kaohsiung is US\$.105 (NT\$4.00). These rates may be adjusted under special circumstances for larger users of industrial water. Many factories have chosen in the past to develop their own water resources.

C. MATERIALS AND COMPONENTS

Since virtually all metals and similar unprocessed materials, as well as semi-processed materials, must be imported, Taiwan finds itself in a situation similar to that of Japan with respect to the domestic availability of raw and semi-finished materials. With respect to components, however, the existence of a growing, diversified domestic industry means that some portion of components required for many types of manufacturing can be obtained from local sources. For example, in the ADL study of minicomputer manufacturing potential we came to the conclusion that, through working closely with Taiwan electronic component manufacturers, it should be possible within two years for a minicomputer manufacturer to secure locally components whose value would account for at least 50% of the minicomputer's material value.

Chinese plants already manufacture intermediate products ranging from integrated circuits and semi-conductors to hardware, sheetmetal and plastic parts. Plants owned by foreigners are now producing processed materials and components for export--directly or indirectly--and should be able to furnish components of suitable quality over a wide range of requirements.

An adequate copper finishing and copper wire industry exists in Taiwan producing a broad spectrum of copper products including enameled magnet wire, solid and stranded copper wire, and insulated cables. Raw copper is purchased at London market prices or lower, and finishing is done in Taiwan. Aluminum castings for housing and end shields can be obtained locally from small foundries. Cold rolled steel sheets are also produced locally. Ball bearings can be obtained from domestic manufacturers. In the case of both aluminum castings and ball bearings, however, close liaison with manufacturers is required to ensure that quality standards will be met.

Table 8 provides examples of selected materials and components available from domestic sources in Taiwan with their costs as of early 1973; the items illustrated are typical of those required by a manufacturer of automotive electric equipment.

With air freight transportation readily available and ship transportation frequent, the problem of supply of raw and semi-finished materials from foreign sources to complement domestic supplies should be minimal.

TABLE 8

EXAMPLES OF MATERIAL AND COMPONENT AVAILABILITY AND COSTS
(For use in manufacturing automotive electric equipment)

Use	Source	Cost (US\$)	Unit of Measure
Copper magnet wire	Local	277.81	100 kg
Electronic components	Local/Japan	Equal to or less than Japanese prices	--
Windings			
Regulators, rectifiers			
Enameled wire, average all sizes	Japan	250.00	100 kg
Ignition coils			
Molding resins, type B	Local	0.64	kg
Ignition coils, distributor caps			
Steel sheet, cold rolled	Local	308-315	MT
Steel shafting	Local	320	MT
Silicon steel	Japan	375-475	MT
Copper	Import	London market price-\$1,200 typical	MT
Armatures			
Aluminum castings	Local	5.25	kg
Alternators, distributors			
Ball bearings	Local/Japan	Japanese price or lower	--
Alternators, starters			