8.4.4 Industrial Estate Development Project

(1) Quang Nam-Da Nang Province

There are the following three Industrial Estates (IE) and EPZ in Quang Nam-Da Nang Province (see Table 8-9, Figure 8-7 and 8-8).

- Da Nang EPZ
- Lien Chieu-Hoa Khanh IE, and
- Dien Nam-Dien Ngoc IE.

The Lien Chieu-Hoa Khanh IE, which is located 10 to 12 km from Da Nang City, and which comprises an area of 50 hectares, is explained hereafter. The land area could be expanded to about 800 hectares. This IE location is excellent because of the reasons below:

- The urban function of Da Nang City can be utilized
- The location is next to the national highway No.1, and
- The Chan May Port in Thua Thien-Hue province can be utilized to transport commodities in case the Hai Van Pass Tunnel is constructed.

For the above reasons, improvement and expansion of this IE should be planned in the light of the coordination with a route of the Hai Van Pass Tunnel constructed in future.

As to type of industry, the existing manufacturing are silk, silica sand and marine products and so on. The following viewpoints should be considered for inducement of new industries:

- An urban type of manufacturing in relation with Da Nang City and the Da Nang EPZ, and
- A relation with the Nissan Automobile Corporation, which received an operation license lately, should be established.

The following types of manufacturing are desirable to be induced. The first three items are expected as key manufacturing in the IE:

- Automobile equipment
- Machinery & machinery equipment
- Metal processing
- Construction materials
- Foodstuff, and
- Wood processing and forestry.

Thus, industries to be induced into the Lien Chieu-Hoa Khanh IE should be an urban and up-to-date type industries. In Quang Nam-Da Nang Province, establishment of a human resource development institute for further industrialization should be promoted in accordance with completion of the Da Nang EPZ and development of the Lien Chieu-Hoa Khanh IE.

Table 8-9 The Comparison of Industrial Estates (1/4)

Province		Quang Tri Province		
Name of Industrial Zone		1 South Dong Ha IE	2 Cua Viet Port IE	3 Lao Bao - Ban Den FTZ
IP/EPZ Site	Site area	200 ha	150 ha	110 ha
	Distance from town	2 km	13 km	along to Ql-9 and Lao Bao border
	Land acquisition	not so hard	easy	hard
	Condition of land	waste land	waste land	inhabitants area, Ql-9
Utilities	Electric supply	available 110 KV/35 KV	35 KV	35 KV
	Water supply	planned water supply line from river	water supply 15,000 m3, deep well (ADB)	river water
	Telecommunication	available	available	available
	Others (gas, steam)	nil.	nil.	nil.
Wastage	Sewage system	nil.	nil.	nil.
	Solid wastage	nil.	nil.	nil.
Transport ation	Road network	Ql-1	Ql-9 (13 km from Ql-1)	Ql-9
	Railway network	available	planned railway for cement factory	Under F/S (east-west international railway)
	Port network	Cua Viet Port (under construction): 18 km	Cua Viet Port (completed 1997, 2,000 tonage ship)	Cua Viet Port (under construction)
	Airway network	Hue Airport (planned Ai Tu Airport)	Hue Airport (planned Ai Tu Airport)	Hue Airport (planned Ai Tu Airport)
Labor Force	Engineer, specialist	from Dong Ha Town	from Dong Ha Town	from Dong Ha Town
	Skilled	from Dong Ha Town	from Dong Ha Town	from Dong Ha Town
	Unskilled	from Dong Ha Town	from district	from Ho Xa Town
Living condition	Hospital	hospital (300 beds) in Dong Ha Town	hospital in Dong Ha Town (100 beds)	poor
	Shopping	shopping center	shoping center	poor
	Amusement	poor	poor	poor
Main products	Local	engineering, maintenance, assembling industries and electric & electronics	sea products, silicate, ship building and repair (under 50 HP boat)	trade service, import and export, comodity transit, storage, processing industries
(note)		66.2% of aluminium and/or bauxite mining Bom Chao, 60 km	no person living in the planned IE	Mekong cooperation, international east-west trade corridor

Source: JICA Study Team

Table 8-9 The Comparison of Industrial Estates (2/4)

Province		Thua Thien-Hue		
Name of Industrial Zone		1 Chan May Port FTZ	2 Van Xa IE	3 Phu Bai Airport IC
IE/EPZ Site	Site area	1,800 ha	200 ha	400 ha
	Distance from town	49 km	5 km	7 km
	Land acquisition	not so hard	not so hard	existing/not so hard
	Condition of land	agricultural land	agricultural land	hilly land
Utilities	Electric supply	110 KV from Da Nang/directly from 500KV line	available	110KV from Da Nang
	Water supply	available	available	available
	Telecommunication	available	available	available
	Others (gas, steam)	nil.	nil.	nil.
Wastage	Sewage system	nil.	nil.	nil.
	Solid wastage	nil.	nil.	nil.
Transportation	Road network	5km from Ql-1	Ql-1	Ql-1
	Railway network	available (5km from railway)	available	available
	Port network	planned deep sea port (30km from Tien Sa Port)	Phu Tan port about 7 km	Phu Tan port 12 km
	Airway network	Phu Bai Airport	Phu Bai Airport	Phu Bai Airport (direct)
Labor Force	Engineer, specialist	from Hue City	from Hue City	from Hue City
	Skilled	from Hue City	from Hue City	from Hue City
	Unskilled	available	available	available
Living condition	Hospital	Hue City	Hue city	Hue City
	Shopping	Hue City	Hue City	Hue City
	Amusement	Hue City	Hue City	Hue City
Main products	Local	construction material, chemical, wood, glass, textile, garment, electric and electronics, foodstaff	food stuff, textile, garment, leather and artificial leather	electric and electronics, machine equipment, chemical, textile, garment
(note)		commercial basis	consideration of specific site	high-tech. industry and light industry

Source: JICA Study Team

Table 8-9 The Comparison of Industrial Estates (3/4)

Province		Quang Nam-Da Nang		
Name of Industrial Zone		1 Da Nang EPZ	2 Lien Chieu - Hoa Khanh IB	3 Dien Nam - Dien Ngoc IE
IP/EPZ Site	Site area	63 ha	800 ha	418 ha
	Distance from town	6 km	10 to 12km	20 km
	Land acquisition	under construction	not so hard	under construction
	Condition of land	flat and residence	flat land	flat land
Utilities	Electric supply	available	existing IZ: 35 KV:10,000kVA	available
	Water supply	available	deep well	irrigation cannel
	Telecommunication	available	available	available
	Others (gas, steam)	nil.	nil.	nil.
Wastage	Sewage system	under con.	plan	plan
	Solid wastage	nil.	nil.	nil.
Transportation	Road network	bottle neck of bridge	Ql-1	3 km from Ql-1
	Railway network	exist but not use	available but depend on new rout	available
	Port network	Tien Sa Port, 6 km, 30,000 ton	Tien Sa Port, 18 km	Tien Sa Port: 25 km
	Airway network	Da Nang Airport: 14 km	Da Nang Airport: 6 km	Da Nang Airport: 20 km
Labor Force	Engineer, specialist	sufficient	sufficient	available from Da Nang City
	Skilled	sufficient	sufficient	available from Da Nang City
	Unskilled	sufficient	sufficient	available
Living condition	Hospital	Da Nang City	Da Nang City	Da Nang City
	Shopping	Da Nang City	Da Nang City	Da Nang City
	Amusement	city center and	city center and	beach
Main products	Local	textile, garment, machine equipment, electric and electronic products	construction material, metal, machine equipment, chemical, foodstaff products	textile, garment, electric and electronics, chemicals
(note)		required of access road and new river crossing etc.	consideration of Hai Van tunnel	required of infrastructure and utilities

Source: JICA Study Team

Table 8-9 The Comparison of Industrial Estates (4/4)

Province		Quang Ngai			
Name of Industrial Zone		1 Dung Quat Port IE	2 Tinh Phong IE	3 Quang Ngai Town IE	4 Pho Phong IE
IE/EPZ Site	Site area	1800 ha	200 ha	100 ha	300 ha
	Distance from town	21 km	15 km	3 km	37 km
	Land acquisition	not so hard	not so hard	not so hard	not so hard
	Condition of land	hilly land	rice field	sugar cane field	suger cane field
Utilities	Electric supply	from DN-100km of 220KVA	available	available substation 110 kVA	available
	Water supply	irrigation canal	small river	small river	small river
	Telecommunication	available	available	available	available
	Others (gas, steam)	planned	nil.	nil.	nil.
Wastage	Sewage system	planned	nil.	nil.	nil.
	Solid wastage	planned	nil.	by-product	nil.
Transportation	Road network	Ql-1	Ql-1	Ql-1	Ql-24
	Railway network	nil.	available	available	available (6 km)
	Port network	planned	planned	nil.	nil.
	Airway network	(Chu Lai Airport)	(Chu Lai Airport)	(Chu Lai Airport)	nil.
Labor Force	Engineer, specialist	Quang Ngai city	available	available	difficult
	Skilled	Quang Ngai city	available	available	difficult
	Unskilled	available	available	available	available
Living condition	Hospital	Quang Ngai city	available	nil.	nil.
	Shopping	Quang Ngai city	available	nil.	nil.
	Amusement	Quang Ngai city	available	nil.	nil.
Main products	Local	stone, marine products	brick, granite, clinker gliding	sugar cane, sweet, milk, mineral water, beer	suger cane, sweet, paper, rubber, wood produsts
(note)		required of infrastructure	required of utilities	resource basis-sugar	newly build

Source: JICA Study Team

Figure 8-7 Location of the Industrial Estates, Export Processing Zones and Free Trade Zones

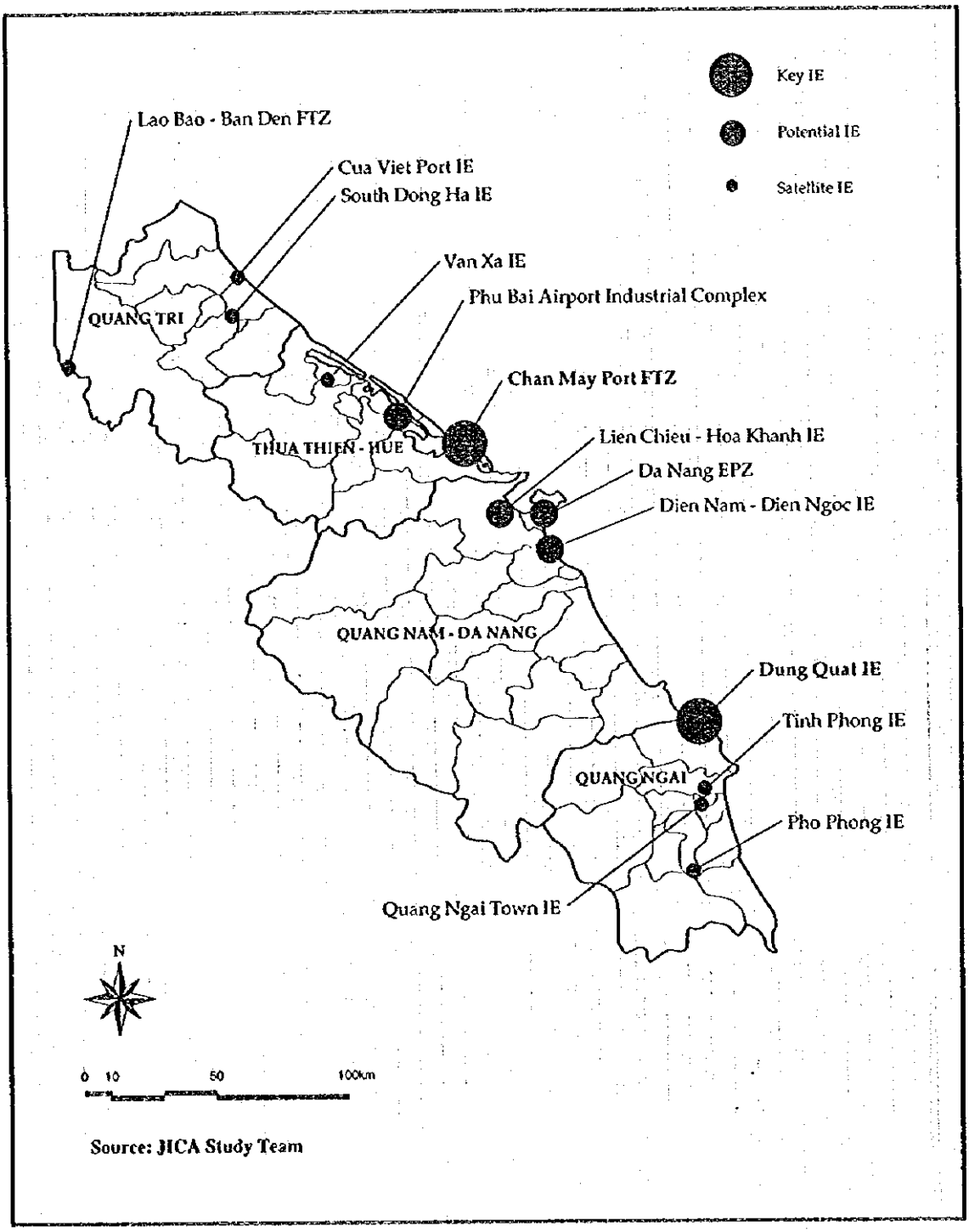
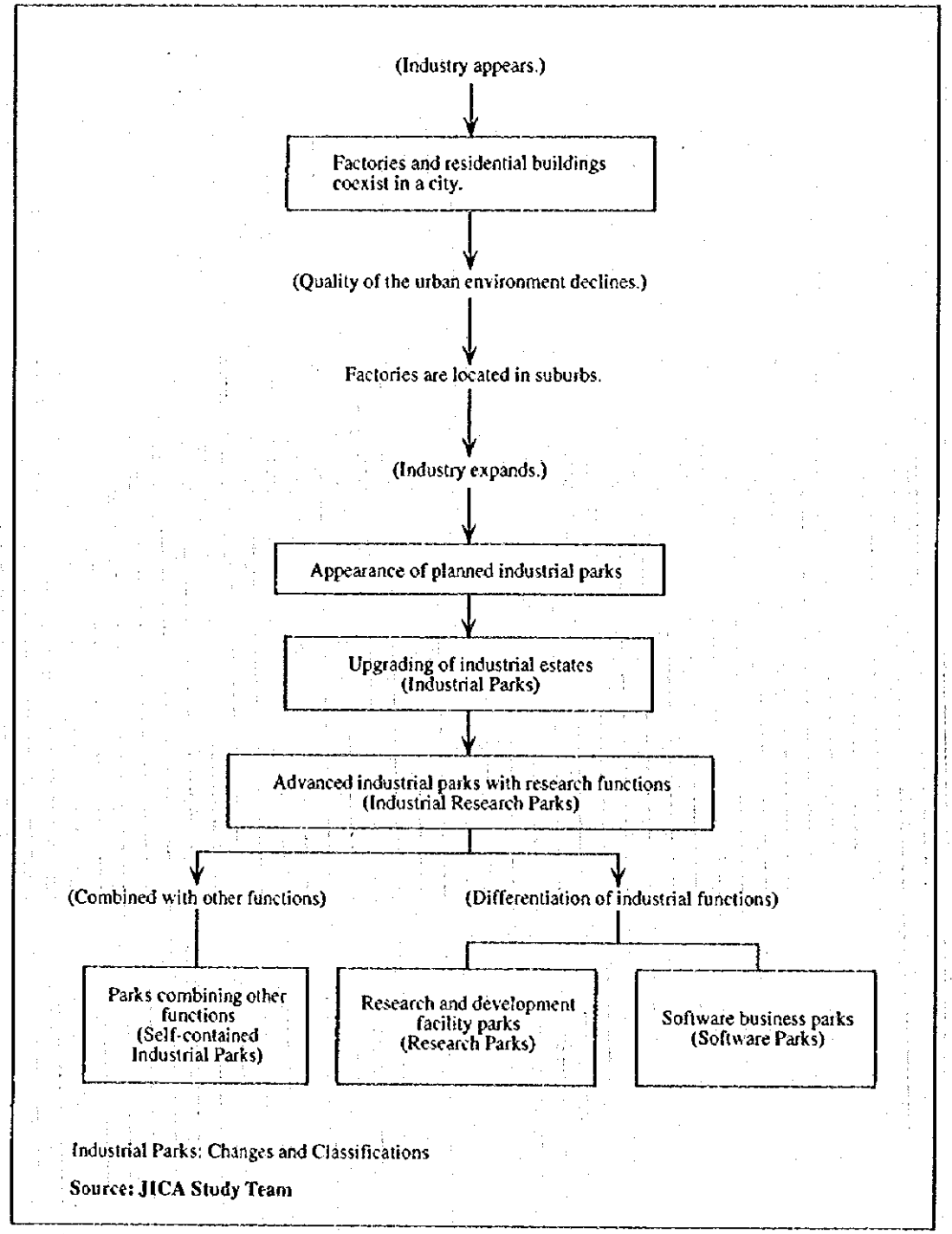


Figure 8-8 Evolution of Industrial Sites



Industrial Parks: Changes and Classifications

Source: JICA Study Team

(2) Quang Ngai Province

There are the following four IEs in Quang Ngai Province:

- Dung Quat Port IE
- Tinh Phong IE
- Quang Ngai Town IE, and
- Pho Phong IE.

Tinh Phong IE is located 10 km from Tinh Phong Town, and the total area is 200 hectares. Presently, there are some factories of sugar cane, bricks, burner and so on. A manufacturing related to construction materials will be induced to supply the anticipated Dung Quat Project.

The favorable manufacturing to be induced in the Tinh Phong IE is raw material processing, using supplies from the Dung Quat Industrial Zone.

Quang Ngai Town IE is located 3 km from Quang Ngai Town. The present area is 25 hectares and will be expanded to 100 hectares in the year of 2010. At present, there are some factories of sugar cane, candy and leather products.

Pho Phong IE is located 37 km from Quang Ngai Town at a junction of the national highway No. I and No.24. The current area is 25 hectares and it may be expanded to 300 hectares in the year of 2010. Currently, there are some factories of sugar cane, construction materials, bricks, breaking machine, furniture, hand craft and so on. In future, paper chip production will be induced under consideration of the national highway No.24 connected to Laos. All the above three IEs are local resource based types. Among these IEs, the Pho Phong IE should be a target to be improved. However, in terms of industrialization of Quang Ngai Province, the Dung Quat project is emphasized as a priority project, and it is difficult to improve the South IE at the same time.

(3) Thua Thien-Hue Province

There are the following three Industrial Estates in Thua Thien-Hue Province.

- Chan May Port FTZ
- Van Xa IE, and
- Phu Bai Airport Industrial Complex.

Van Xa IE is located along the national road No.1 and 5 km from Hue City. The total area is 200 hectares. There is a large scale cement factory at present. Phu Bai Airport Industrial Complex (IC) is located next to the Phu Bai Airport, 7 km from Hue City. The land is flat and currently used for agriculture. There is a possibility to develop the areas as an IE.

Phu Bai Airport IC has a potential to be developed as a high-tech industrial park under consideration of characteristics of Hue City. Especially, an industrial technical research institute to develop agricultural techniques and bio-related food processing should be established with the cooperation of Hue University and other academic research institutes. For example, the following research and development studies are expected in the institute:

- Processing technique of liquors utilizing high quality water
- Processing technique of shrimp products
- Application of bio-techniques to agricultural, forestry and stock breeding products, and

- Dissemination of the above techniques.

Chan May Port Free Trade Zone (FTZ) is described in the next section.

(4) Quang Tri Province

There are three IEs, namely Lao Bao-Ban Den FTZ, Cua Viet Port IE and South Dong Ha IE. Lao Bao-Ban Den FTZ is located at Lao Bao border on national road No.9 with 110 ha land. Cua Viet Port IE is located on the hinterland of Cua Viet Port under construction.

By improvement of the national road No.9, Trans Asia Highway connecting between Laos and Northern Thailand, and access to Cua Viet Port and the national highway No.1 will be convenient and distribution capacity will be increased in future. Furthermore, the primary sector like agriculture occupies 85 % of the production in this province, so that there is a high possibility to develop a promotion area of local resource based manufacturing.

Small scale local resource based manufacturing already exists but it is dispersed. The manufacture should be collected into the IE in the light of urban planning. Studies for establishment of the IE and for an environmental impact of the dispersed manufactures are required for the urban planning and industrialization.

The existing infrastructure is weak and accumulation of functions of the provincial capital is not rich. However, there are sufficient prospects for industrial development because of a base of the primary sector growth and some mineral resource endowment. Therefore, there is a capacity for the growth of manufacturing. It is expected that IE development should be studied under consideration of utilizing a merit of the late IE development.

The IE development projects in four provinces are explained above, and characteristics of the IE development will change in accordance with the speed of industrial development and changes of the industrial structure. At present, the IEs are categorized into the following three types:

- Industrial parks combined with other functions: self-contained industrial parks
- Research and development facility parks: research parks, and
- Software business parks: software parks.

Since development of the some IEs are implemented in the four provinces, however it is expected that the regional industry structure and characteristics should be well study to meet this study report by provincial governments.

8.4.5 Chan May Port Free Trade Zone Development Project

The economic structure in Thua Thien-Hue Province consists of agriculture, manufacturing, construction and service. Among them, agriculture, manufacturing and service are regarded as important, and especially processing of primary products by agriculture, forestry and fishery and tourism are emphasized currently. Issues in this region are as follows:

- Promotion of agriculture, forestry, stock breeding and manufacturing
- Improvement of urban transportation, and
- Ports development.

To solve these issues, active inducement of foreign capital is encouraged. Target industries are textile, garment, leather, handy craft, electric and electronic equipments and so on. The manufacturing ratio out of the whole industries in the years of 2000 to 2010 is to be raised to 30 to 32 %.

As to limestone, kaolin, titanium, silica sand, mineral water and shrimp and so on, following

development will be anticipated:

- Mineral resources
- Cultivation of shrimp in vast lagoons
- Utilization of forestry resources, such as pine tree and eucalyptus, and
- Tourism utilized the Citadel and the 120 km coastal line resort.

In Hue City, the following plans are considered:

- Formation of the central growth region by an unification of Hue City and Da Nang City
- Development of Chan May Port as a main commercial port which is used for distribution of commodities covering the Central Region
- Development of a FTZ at a hinterland of the Chan May Port, and
- Development of Phu Bai Airport IE.

As for industrial development, and other IEs will be selected and the hinterland of the Chan May Port will not be used. In special, the site adjacent to the Phu Bai Airport draws attentions to establish a new IE, where research and development will take a major part.

In Hue City, industrialization will be promoted in the following manners:

- Promotion and accumulation of light industries, such as electric and electronic industry and biological industry in the light of characteristics of Hue City, and
- Promotion of up-to-date technology through an exchange of experience and knowledge among the Hue and Da Nang Universities and domestic and foreign research institutes.

8.4.6 Direction of Cottage Industry Development

In the event of furthering the progress of industrial development in the Central Region, another important factor accompanying the aforementioned development of industry oriented at the proper use of regional resources, is the development of cottage industries in rural regions.

This type of industrial development usually takes form on a small scale, regionally, mainly in the form of farming, mountain, and fishing villages. Therefore, in comparison to industry oriented at the proper use of regional resources which develops on the scale of a standard firm, cottage industries develop on a smaller scale generally manufacturing which is performed in the home, by private individuals and an aggregate body.

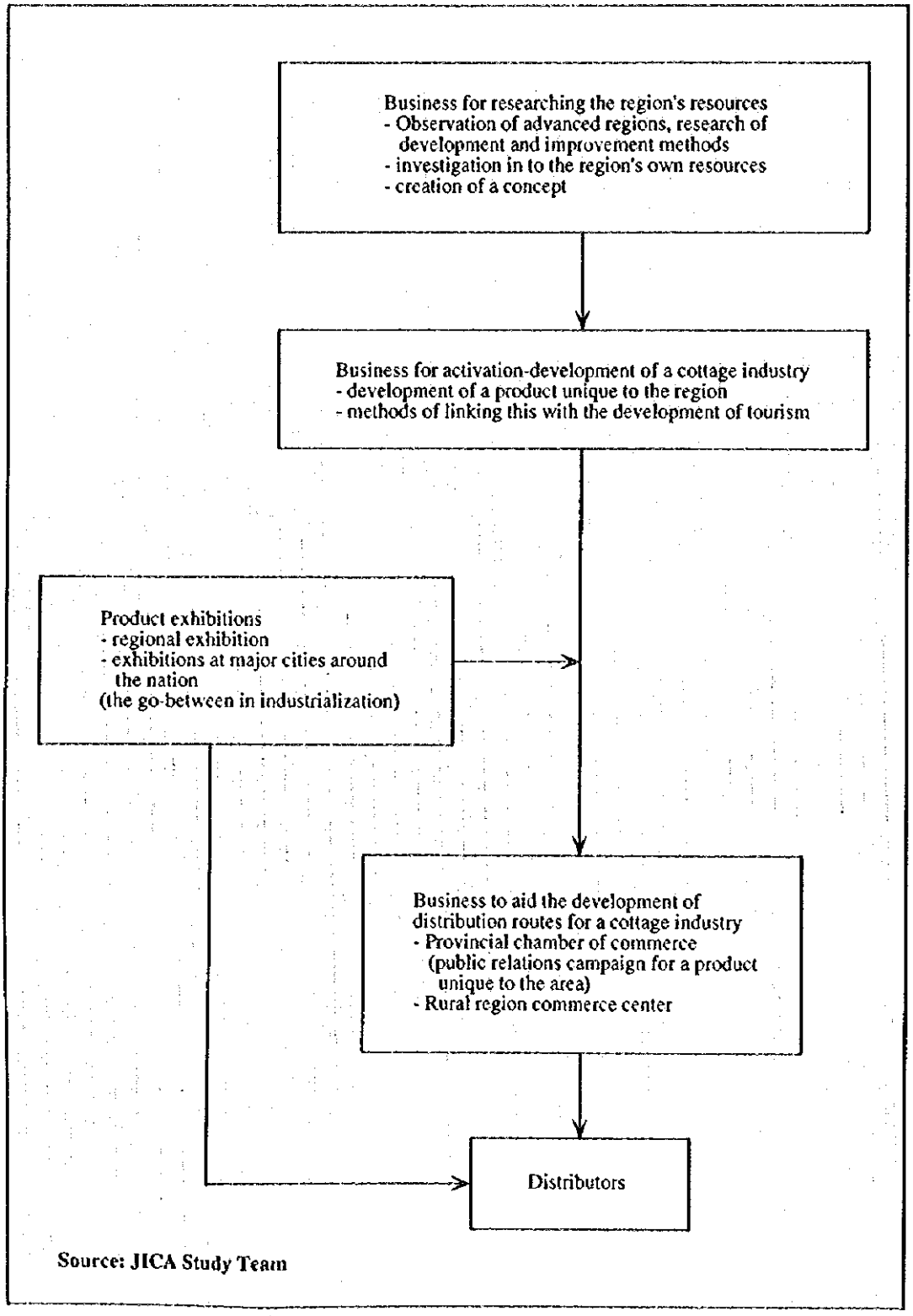
The promotion of cottage industries benefits the inhabitants of the region by introducing a method of earning daily cash income, giving rise to industries which utilize the various resources which exist in the region and also nurtures the regions many resources.

Cottage industries also manufacture products indigenous with the region, around which a singular enterprise can be promoted. Also, this business is the most basic method of cultivating the region. Already in several countries, there are both governmental and regional bodies which aid the development of such industries.

In order to assure the success of cottage industries the following methods are generally considered (see Figure 8-9, Table 8-10 and 8-11).

Concentrating on those resources which are superfluous, idle, or distressed. Also focusing on the region's history, traditions, distribution routes, technology and leaders.

Figure 8-9 Flow of Cottage Industry Development Promotion



Source: JICA Study Team

Table 8-10 Gross Output of Industrial Crops by Provinces

Year	1992	1993	1992	1993	1992	1993	1992	1993	1992	1993	1992	1993
Item	Cotton (tons)		Jute (tons)		Rush (tons)		Sugar Canes (tons)		Peanut (thousand tons)		Soybean (thousand tons)	
Whole Country	12,816.0	5,226.0	25,733.0	22,387.0	77,167.0	69,478.0	6,437.0	6,083.2	226.7	259.3	80.0	105.7
Quang Tri	-	-	-	-	30.0	-	0.6	0.3	1.6	1.8	-	-
Thua Thien-Hue	68.0	-	-	-	-	40.0	14.3	13.7	2.1	2.3	-	-
Quang Nam-Da Nang	15.0	15.0	164.0	317.0	961.0	983.0	103.4	88.2	5.7	8.5	-	-
Quang Ngai	-	-	-	-	285.0	281.0	420.2	342.0	3.3	3.4	0.1	0.1
Item	Tobacco (tons)		Buffaloes (thous heads)		Cattles (thous heads)		Pigs (thous heads)		World Exploited (1,000m3)		Sea fish (thous tons)	
Whole Country	27,286.0	20,299.0	2,886.5	2,960.8	3,201.8	3,333.0	13,891.7	14,873.9	2,646.6	2,884.0	627.4	660.0
Quang Tri	186.0	181.0	29.0	30.9	58.4	62.0	150.7	155.5	9.8	21.5	2.8	2.5
Thua Thien-Hue	504.0	382.0	34.6	35.4	17.6	20.4	182.0	189.0	21.2	29.7	-	-
Quang Nam-Da Nang	766.0	889.0	50.2	51.8	190.5	192.6	509.8	508.4	142.7	126.3	29.0	29.8
Quang Ngai	211.0	166.0	45.4	47.0	159.8	166.1	375.4	375.4	17.6	27.9	23.1	23.4

Source: Statistical Year Book 1994

Note: 1. Industrial Crops

Cotton, Jute, Rush, Sugar. cane, Peanut, Soybean, Tobacco

2. Sea fish

Except Fresh water fish and water shrimps

Table 8-11 Gross Output of Main Agricultural Products by Provinces

Whole Country & Name of Province	1990	1991	1992	1993	1994
Gross Output of Paddy by Provinces : Thousand tons					
Whole Country	19,255	19,622	21,590	22,837	23,528
Quang Tri	82	106	113	75	83
Thua Thien-Hue	128	150	154	123	109
Quang Nam-Da Nang	352	368	357	350	390
Quang Ngai	241	275	205	187	260
Gross Output of Maize by Provinces : Thousand tons					
Whole Country	671	672	748	882	1,144
Quang Tri	1	2	1	1	1
Thua Thien-Hue	1	1	1	1	1
Quang Nam-Da Nang	6	7	8	7	11
Quang Ngai	5	5	4	4	9
Gross Output of Sweet Potatoes by Provinces: Thousand tons					
Whole Country	1,929	2,137	2,593	2,405	1,906
Quang Tri	26	36	26	22	20
Thua Thien-Hue	46	50	46	35	39
Quang Nam-Da Nang	86	77	70	84	67
Quang Ngai	39	41	44	38	30
Gross Output of Cassava by Provinces : Thousand tons					
Whole Country	2,276	2,455	2,568	2,450	2,260
Quang Tri	21	32	31	28	26
Thua Thien-Hue	36	44	44	50	35
Quang Nam-Da Nang	167	173	163	139	149
Quang Ngai	88	95	80	82	89

Source: Statistical Year Book 1994

(1) Planning Development

Firstly, a promoter must be located either within the region or brought in from the outside for consultation after finding its market.

(2) Basic Theme

Pinpointing a basic theme under which to manufacture and distribute a unique product. In this case, it is important to create a theme which is wide in range and concept, allowing for many possibilities.

(3) Actualization of the Concept

Create a system, which will definitively increase manufacturing output and devise a method of raising the quality of the product. Also, put efforts into a public relations program which will put the product out on the market.

In order to realize this concept, structure, distribution, and production should each be prepared as follows.

(a) Framework

In the case where the framework is created at the region, first it is essential to create a framework which enfolds the region, its major organs, agriculture, forestry, fishing, livestock, tourism, and industrial organizations and unions, and also the chamber of commerce, and administrations.

(b) Retail

Strengthen a sales structure which provides public relations and introduces the product, ties it in with tourism and as best as possible presents the product with a brand image. It is also necessary to display the product at manufacturer exhibitions held in the major cities of the region.

(c) Manufacturing

Processing industry, which aims at producing a good commercially or production done by the family or any similarly related group. Also processing industry should produce commodities by multiple production and discriminating production. Furthermore, a production system that provides for the introduction of information or manufacturing technology related to a certain product. In order to achieve this it is necessary to strengthen product testing and research and development.

(4) Selection of the Region's Resources

Upon developing a cottage industry, what is most important is the suitable selection of one of the region's resources. The following are several criteria in making a selection:

- Endowed in quantity: forests, fishing grounds, farm land, underground resources
- Endowed by quality: the existence of a product suitable to the region's unique climate
- Endowed by human resource: the existence of human resources, which hold the knowledge to specific technology related to the region and the existence of a product which, reflects the characteristics of the region, and
- Endowed in space: ranches, fruit orchards, fields, cultivated forests.

Regional resources should be selected under the above criteria to make a product characteristic of the region. Particularly in cottage industries, the quickest route in the retail of a product is to tie it in with tourism. Meanwhile, as a next step, there is the goal of supplying industries which properly utilize the region's resources with raw materials and intermediary materials. This case usually refers to industrial crops. However, it is necessary to get local manufacturing to devise a method of increasing any added value on their products. In order to make a product valuable it may even be necessary to bring in resources from other regions. Also, there is the possibility of consigned processing from certain firms. It is important to set up a structure within the region which can deal with a wide variety of these situations.

(5) Selecting a Product to Manufacture

The development of a cottage industry is not always limited to the manufacture of the region's traditional goods. It must be an item, which will promote the region's economy in its move toward the future and give promise of employment to those living in the region. It is necessary to examine what type of product manufacturing should be promoted in the region. In general, products can be divided into the following categories, from which a selection can be made:

- New product: development of a new product, which utilizes the region's resources
- Development of existing products: the improvement of a conventional product and its development in the market in terms of quality and volume
- Land utilization: product development through the effective use of fields, fishing grounds, mountain forests, which are idle or have low property value
- Utilizing human resources: product development centered around the introduction of the use of human resources, education and research, promotion of employment, technologies, and raw materials
- Tourist related: product development aimed at the tourist industry focusing on tourism and public relations, and
- Traditional technology: product development supported by traditional technologies, which have existed in the region from past generations.

(6) Links with the Promotion of the Region

The development of a cottage industry sparks the region's economy, on top of which it also provides the following benefits:

- Procurement of raw and intermediary materials benefits the area's farm villages, fishing businesses and commerce
- Processing, manufacturing: benefits entrepreneurs, employees, and subcontractors
- Shipping, wholesale: benefits businessmen, employees and transport companies, and
- Retail, distribution: benefits businessmen and employees.

These benefits become an even more positive influence on the region's economy through implementation of a manufacturing system, which handles the initial stage of raw materials all the way to the final stage of retail. These benefits also have the effect of triggering commerce in the aforementioned areas of agriculture, forestry, livestock, fishing, processing, and manufacturing.

Also, it offers more places of employment for the inhabitants of the area. It offers worthwhile jobs without discretion to age, for the employment of housewives and the elderly, and gives young people an opportunity to express their ingenuity and originality.

Furthermore, the sale of a superior product as a public relations for the region making more people aware of its existence. Particularly, it can tie in with the promotion of the overall tourist industry.

(7) Approach and Methodology

In the development of a cottage industry, it goes without saying that the most important factor is the existence of a strong leader. The structure of development can be promoted in various styles such as through administrative guidance.

However, regions endowed with human resources show the best results. In the event that a leader can not be found within the region, on must be located either in the form of a partnership or through affiliation.

Finding a strong leader and trustworthy partners is the most important aspect.

(8) Points in Promoting an Enterprise

Production and distribution are just two points of a cottage industry enterprise. However, durability is the key to this type of business. Manufacturing, the actual development of a salable product, and all the way up to but excluding its distribution, are not the main aspects of the industry itself. Mainly, it cannot be referred to as an enterprise until the active promotion of distribution and management have been undertaken. Therefore, with regard to appropriate investment and cost cutting it is necessary to clarify medium and long term goals and also know how well it has been planned.

Particularly it is important to thoroughly research what customers desire. This is the road to success for cottage industries, which are the suppliers of customer needs.

Meanwhile, it is also important to continually nurture the region's resources. It is necessary to secure as much of the region's resources as possible. Therefore an examination of the region's resources must be made beforehand. It is important to keep in mind, whether or not the amount of resources available can withstand depletion, in their use in processing and manufacturing and whether the quality of those resources is superior or not.

There are two factors concerning the manner of processing and manufacturing sought by industry which properly utilizes the region's resources, those who supply the raw and intermediary materials and those who utilize them. In either case, the most important factor is to heighten the added value of a product. It is important to distinguish the industry by a high-grade product in order to avoid just being a supplier of materials.

(9) The Need for Subsidy-Aid

Many cottage industries lack a suitable leader and capital for participation in an enterprise. Therefore in order to smoothly nurture a business it is necessary for the government and provinces to offer subsidies and aid.

Of the four provinces which make up the Central Region, in the event that the development of cottage industries is promoted as one method for promotion of the region, a proposal for the creation of a system of subsidies and aid by the government and provinces must be made. However, this will be a future topic of investigation in conjunction with the national government and provinces in regards to the limits on the amount of financial aid and loans.

The following are several examples of subsidy and aid.

(a) Aid to build up a cottage industry

Utilizing the existing industry in the region or the region's resources, plan the nurturing of a

cottage industry based on the originality of the regions inhabitants and their efforts:

- Training personnel
- Loans for building up of an industry, and
- Assistance in setting up events, which spark activities in the region.

(b) Enterprises which promote the liveliness of cottage industries

Improve the products already being produced by existing cottage industries. Or in the event of the development of a totally new product, recruit ideas from within the region and exhibit the product, and expand its market. As a supplemental business, receive supplemental planning:

- Market research, and
- Hold a product exhibition.

Sources of aid, regional commerce organizations, Chambers of Commerce. Make the amount of aid given uniform.

(c) Sources aid to equipment and facility for cottage industry

As for manufacturing equipment and facilities, receive application for authorization, examine documents, offer a suitable business plan and upon certification offer aid:

- Manufacturing facilities, and
- Manufacturing equipment - incidental facilities.

Besides the above, it is necessary to give a certain amount of subsidy or aid in improving manufacturing technology, maintenance of villages, promote exchange between the region and metropolises.

(10) Promotion of Cottage Industries within the Four Provinces of the Central Region

With regard to the promotion of cottage industries, first it is essential to link this with the processing industry in farming regions being promoted by the government in the development of a special product.

Therefore, with regard to the items which the government is trying to strategically promote, it is necessary to examine each province beforehand as to whether the region is suitable for a cottage industry and if there is an body of human resources which can implement the industry.

That is, rice, rubber, coffee, tea, vegetables, fruits, seafood, and meat, all focal items pointed out by the government, select the items existing in each province and it is desirable to implement a smoothly a concrete production and distribution system.

It is desirable to examine agricultural products, industrial crops as indicated in the diagram and develop them under the guidance of a suitable leader.

With regard to a concrete selection of an area and personnel, this is done by each province organization. A specific aid policy is arranged in order to preserve the industry's durability over the long-term. Currently there are several small scale cottage industry being developed in each province. Therefore first these should be analyzed and methods of strengthening and promoting them should be considered. Also in the event that a new cottage industry is implemented, it is important to call out to a wide range of areas. In either case, it is essential to set up an agency or personnel and assistance to handle these matters. In the event that implementation is difficult, it is also possible to consider allowing the Chamber of Commerce of the particular provinces or a business association to take on a lead position.

Fundamentally it is most desirable to have the inhabitants of the region independently undertake the development of a cottage industry. However, since under current situations there are many barriers to overcome, for the time being the administrative organs of each province government will take on the task of starting development.

One other method is the implementation of a cottage industry in conjunction with a firm or large-scale distributor. In this case, it is important to conduct this arrangement under a medium or long-term contract. In this situation it is hoped that the province, chamber of commerce, or local business associations will function as a go-between bridging any gaps.

8.5 DEVELOPMENT PLAN BY KEY SECTOR

8.5.1 Selection of Manufacturing Industry

For industrial development of the Central Region, site selection for manufacturing sub-sectors is done from the following points of view, assuming highly potential location sector or locating one resulting from the growth of existing industry.

8.5.2 Industrial Sectors Which Have High Growth Potential And Activation of Firms

In its year 2000 programs, industrial sectors expected by Viet Nam's government to have considerable growth are refinery, petrochemicals, machinery, electric and electronic products, textile products and foodstuffs.

In addition, considering energy industry key element, the government plans to jump-start firms, such as electricity, coal, steel, fertilizers, plastic ware, detergents, insecticide, farm machinery and equipment, bicycle and motorbike tires and tubes, electrical and electronic appliances, consumer goods, textile and garments, paper, shoes and sandals, beer and soft drinks.

Furthermore, as for state owned industry, the government considers the following subject as central electricity, coal, machine tools, engines, processing industry, paper, textiles and cigarettes, are important industrial sectors, while in local industry firms, such as electric fans, farm hand-tools, ceramics, garments, and confectionery are considered important.

8.5.3 Existing Industry Types of The Central Four Provinces

According to the government's data, gross domestic product (GDP) in the central four provinces was 326,479 Mil VND in 1993. As for the average percentage of state industry to non state industry, the former was 48.62% and the latter was 51.38%.

Referring to the rate by province, it shows 46.23% to 53.77% in Quang Nam-Da Nang, 59.67% to 40.33% in Thua Thien-Hue, 57.44% to 42.56% in Quang Ngai and 31.3% to 68.87% in Quang Tri. Looking over the trend from 1991 to 1993, it shows that the ratio of non state industry rose slightly in Quang Nam-Da Nang, while the share of state owed industry rose in Thua Thien-Hue. In Quang Ngai, the ratio of state industry remained high, but declined a bit in 1993, and with the share of private industry remaining is a little higher. In Quang Tri, the ratio of non state industry is very high, accounting for 70%.

8.5.4 The Selection of Location by Industry Type in Central Four Provinces

Da Nang and Hue City are defined as regional core cities, while Quang Ngai and Dong Ha are defined as local cities.

Regarding industrial sectors which have high growth potential in the Central Region, it is necessary to improve the quality of the mentioned regional resources-utilizing industries and develop or entice high value-added industry for local firms' growth. The latter sector, in particular, should be invited to the regional location through a process of political selection of industry. In the former, it is important to establish the main production site, meet specific domestic demand and increase brand-name products for high quality exports. In the latter focusing on industrial sectors for alternative import solutions and proceeding the location selection. As for the industrial sector for export processing zone (EPZ), however, it is important to try to promote an infusion of foreign investment as much as possible and establish a base for international commodity exports.

By industrial sector, high value-added light industrial and specialized research and development (R&D) industry should be reinforced in both cities of Da Nang and Hue, while in Quang Ngai and Dong Ha high value-added light industry should be reinforced. In addition, all the four regions have to improve existing regional resources-utilizing industries.

The industrial sector, in particular, fabricating parts, components and unit parts or apparatus, should be selected, focusing on the industry that can introduce and import raw materials from other regions and process and produce them locally. These sectors include ferrous metal machine parts and tooling products, industrial plastic products, galvanized and hot-dip coated metal products including molds and heat treatment. The sector for EPZ is international commodity and high-tech system as mentioned.

With the aim of developing foodstuff industry, other sectors include exterior and interior industries with related processing technologies, especially, bio technology. As for bio technology, however, it is necessary to review the location of laboratories, research institutes and fields at the same time, as this sector of R&D extends from food industry to pharmaceuticals industry and machinery industry.

It is crucial to select the industry that can make the best use of regional characteristics and promotes regional economy, contributes to the activation of the industrial sectors with high growth potential and firms and sophistication of industrial structures of all regions and the whole country.

Looking over the ranking of domestic production volume in the industries of the four provinces, the top-ranking industry is the foodstuff industry. The top-five industries in the Provinces are the following:

(a) Quang Nam-Da Nang:

- Foodstuff industry
- Machine equipment industry
- Food industry
- Textile industry, and
- Wood processing and forestry industry.

(b) Thua Thien-Hue:

- Foodstuff industry
- Textile industry
- Wood processing and forestry industry
- Construction materials industry, and
- Food industry.

(c) Quang Ngai:

- Foodstuff Industry
- Construction materials industry
- Machine equipment Industry
- Wood processing and forestry industry, and
- Textile industry.

(d) Quang Tri:

- Foodstuff industry
- Construction materials industry
- Wood processing and forestry industry, and
- Metal production industry.

The four Provinces are characterized by centralized areas of regional resource-utilizing industry, such as foodstuff industry, wood processing and forestry industry, textile industry. Some, electric and electronic industry and chemical industry can be found in Da Nang and Hue, and ferrous metallurgy industry can not be found except in Da Nang.

In mineral products, there is cement from lime stone, refined silica from silica sand and titan from titanium. In farm products there are a set of sugar products, such as sugar, sugar syrup and candy from sugar cane. In marine products there are frozen seafood, fish oil and fish sauces and others from a wide variety of fish including shrimp. These local resource based products and the first products are relatively high output from industrial sectors in the central four Provinces. As for mineral products, attention is given to cement and silica, but all the Provinces have few mineral resources suitable for industrialization (see Table 8-12 to Table 8-14).

Table 8-12 Main Proposed Industries in each Province by Vietnamese Government

Sector No.	Name of Industrial Sectors	Proposed Industries by Central Government (#; Central government, *; Local government)	Quang Nam-Da Nang	Thua Thien-Hue	Quang Ngai	Quang Tri
01	Power	#Electricity (key element & important industry)	Electricity	Electricity	Electricity	Electricity
02	Fuel	#Coal, #crude oil, #natural gas	Coal	-	Petroleum oil	-
03	Ferrous metallurgy	#Steel	Steel	-	Steel	-
04	Non ferrous metallurgy	*Ceramics	Silica sand	Silica sand, kaolin, titan	Silica sand, kaolin	Silica sand, kaolin, titan
05	Machine equipment	Farm machinery and equipment, bicycle, #machine tool and engines, *farm hand tools	Transport machinery, automobile, mechanics	Automobile, mechanics, ship building and redpair	Construction machine, marine machinery, ship building & maintenance	-
06	Electric and electronic	#Electrical & electronic appliances, *electric fans	Electric appliances	Electric appliances, electric fan	-	Electric appliances
07	Metal production	#Metal & metal components	Metal components	Metal components	Metal components	Metal components
08	Chemical	#Fertilizer, Detergents, tires & tubes for motorcycle, insecticide, plastics	Pharmaceuticals, insecticide, detergent	Pharmaceuticals	Plastics, fertilizer, pharmaceuticals	Pharmaceuticals
09	Construction material	#Cement	Cement, bricks, tiles, stones, lime, granite	Cement, bricks, tiles	Cement, tiles	Cement, bricks, tiles
10	Wood processing and forestry	-	Rattan, bamboo ware, sawn timber, cinnamon tree	Pine tree	Rattan, cinnamon tree, fire tree, rubber tree	Rubber tree, black pepper
11	Cellulose and paper	#Paper	Paper	-	-	-
12	Glass and pottery	-	Glass, pottery	Glass, pottery	-	Pottery
13	Food	-	-	-	-	-
14	Food stuff	Beer & soft drinks, #cigarettes, *confectionery	Beer, salt, soft drink, frozen seafood	Beer, salt, soft drink, frozen seafood, cigarettes	Sugar, wine, alcohol, seafoods	Beer, alcohol, frozen seafoods, sugar, salt
15	Textile	#Textiles	Textiles	Textiles	Textiles	Textiles
16	Garment	Garments, *garments	Garments	Garments	(Garments)	Garments
17	Printing	-	Printing	Printing	Printing	Printing
18	Leather and artificial leather	Shoes & sandals	Shoes, leather	Shoes	Leather	-
19	Others	Consumer goods	Running water	Running water, handicraft	Running water	Running water

Source: Vietnam's Economic Renovation and Foreign Economic Policies

Table 8-13 Situation of Industrial Region and Industrial Estate

Name of Province	Name of IE	Major Special Feature of Industrial Region				Major Special Feature of IE		Major Market of IE		Major reciprocal relation of IE	
		Urban	Outskirts of Urban	Farm and Mountain Village	Fishing Village	Regional Resources Utilized Type	Value Added Type	Domestic Market	International Market	Existence	Non Existence
Quang Tri	Cua Viet Port IE				#	#		#		#	
	Lao Bao - Ban Dea FTZ			#			•	#	•		•
	South Dong Ha IE		#				•	#		#	
Thua Thien-Hue	Chan May Port FTZ				#		#	#	•	#	
	Van Xa IE		#			•	#	•	#	#	
	Phu Bai Airport Industrial Complex		#				#	#	•	#	
Quang Nam-Da Nang	Da Nang EPZ	#					•	#	•		•
	Lien Chieu - Hoa Khanh IE	#				#		•	#	#	
	Dien Nam - Dien Ngoc IE		#				•	•	#	#	
Quang Ngai	Dung Quat Port IE				#	#	•	•	#	#	
	Tinh Phong IE		#			#		#		#	
	Quang Ngai Town IE		#			#		#		#	
	Pho Phong IE			#		#		#		#	

Note: # means nomal situation and • means major situation.
Source: JICA Study Team

Table 8-14 Main Proposed Industries in Future (1/4)

Name of Province	Name of Industrial Estate	Name of Industrial Sector	Main Proposed Industries in Future
Quang Tri	South Dong Ha IE	Electric and electronic	Household electic appliances Electric bulbs and lighting fixtures Communication equipment and related products Various electronic parts
		Machine equipment	Metal working machinery Miscellaneous machinery and machine parts Various machine and parts manufacturing and repair
	Cua Viet Port IE	Foodstuff	Seafood processing
		Glass and pottery	Glass products
		Machine equipment	Ship building and repair
	Lao Bao - Ban Den FTZ	# Electric and electronic	Various electronic parts Other electrical machinery
		# Textile	Woven fabric mills Miscellaneous textile mills products
		# Garments	Outer garment Miscellaneous fabricated textile products

Note: # means assembling and/or processing by distributors.
Source: JICA Study Team

Table 8-14 Main Proposed Industries in Future (2/4)

Name of Province	Name of Industrial Estate	Name of Industrial Sector	Main Proposed Industrues in Future
Thua Thien Hue	Chan May Port FTZ (Assembler or processing by distributors are mainly applied.)	# Construction material	Cement and its products Clay refractories Aggregate and stone products Other ceramic stone and clay products
		# Chemical	Petrochemicals products
		# Wood processing and forestry	Plywood and prefab-wood products Furniture Miscellaneous furniture and fixtures
		# Glass and pottery	Glass products
		# Textile	Ropes and netting Lace and other textile goods Miscellaneous textile mills producsts
		# Garment	Outer garment White shirts and underware Miscellaneous fabricated textile products
		# Electric and electronic	Household electric appliances Communication equipment and related products Computer equipment and accessories Electronic equipment Other electrical machinery Various electronic parts
		# Foodstuff	Frozen seafood Beer, salt, sofidrinks, cigarettes
		# Other	Handicraft
	Van Xa IE	Foodstuff	Seafood processing Seasonings Manufactured ice Miscellaneous food and related products
		Textile	Ropes and netting Miscellaneous textile mills products
		Garment	Outer garment Miscellaneous fabricated textile products
		Leather and artificial leather	Leather tanning and finishing Mechanical leather products Leather boots and shoes making
	Phu Bai Airport Industrial Complex	Electric and electronic	Household electric appliances Electric bulbs Communication equipment and related products Computer equipment and accessories Electric equipment Electric measuring instruments Other elctrical machinery
		Machine equipment	Metal working machinery Textile machinery Miscellaneous machinery and machine parts Aircraft repair and parts Miscellaneous transportation equipment
		Chemical	Drugs and medicines Miscellaneous chemical and allied products Plastic plates, bars, tubes, etc. Plastic films, etc Industrial plastic products Compounding plastic materials Miscellaneous plastic products
		Textile	Woven fabric mills Knitting mills Silk reeling plants Lace and other textile goods Miscellaneous textile mills products
		Garment	Outer garment White shirts and underware Miscellaneous fabricated textile products

Note: # means assembling and/or processing by distributors.
Source: JICA Study Team

Table 8-14 Main Proposed Industries in Future (3/4)

Name of Province	Name of Industrial Estate	Name of Industrial Sector	Main Proposed Industries in Future
Quang Nam -Da Nang	Da Nang EPZ	Machine equipment	Mesuring instruments Surveying instruments Medical instruments and apparatus Physical and chemical instruments
		Electric and electronic	Communication equipment Computer equipment and accessories Electronic equipment Electric measuring instruments Various electronic parts Other electrical machinery
		Textile	Silk reeling plants Woven fabric mills Kniting mills Lace and other textile goods Miscellaneous textile mills products
		Garment	Outer garment White shirts and underware Miscellaneous fabricated textile products
	Lien Chieu - Hoa Khanh IE	Machine equipment	Motor vehicles, parts and accessories Agicultural machinery and equipment Construction and mining machine Metal working machinery Miscellaneous transportation equipment
		Metal production	Heating apparatus and Plumbing supplies Fabricated metal products Stamped and pressed products Powder metallurgy, plating and heat treating Bolts, nuts, rivets screws and wood screws Miscellaneous fabricated metal products
		Chemical	Plastic plates, bars, tubes Industrial plastic processing Foamed and reinforced plastic products Compounding plastic materials Miscellaneous plastic products
		Construction material	Cement and its products Structural clay products Clay refractories Abrasive products Aggregate and stone products
		Foodstuff	Frozen seafood processing Softdrinks and carbonated water Alcoholic beverage Manufactured ice and salt Miscellaneous food and related products
		Glass and pottery	Glass and its products Pottery and related products Other ceramic stone products
		Wood processing and forestry	Plywood and prefab-wood products Wooden container Miscellaneous wood products Furniture Sliding doors and screens Miscellaneous furniture and fixtures
	Dien Nam - Dien Ngoc IE	Chemical	Industrial inorganic and organic chemicals Soaps, detergents, paints, pharmaceuticals, insecticide Drug and medicines Miscellaneous chemicals and allied products
		Electric and electronic	Household electric appliances Electric bulbs and lighting fixtures Various electronic parts Other electrical machinery
		Textile	Ropes and netting Miscellaneous textile mills products
		Garment	Outer garment White shirts and underware Miscellaneous fabricated Textile products Handicraft

Source: JICA Study Team

Table 8-14 Main Proposed Industries in Future (4/4)

Name of Province	Name of Industrial Estate	Name of Industrial Sector	Main Proposed Industrues in Future
Quang Ngai	Dung Quat Port IE	Power	Thermal electric power station
		Fuel	Petroleum refinery Lubricating oils and greases
		# Ferrous metallurgy	Iron smelting without blast furnaces Steel with rolling fabricates Coated steel Steel forgings and casting Iron castings Miscellaneous iron and steel
		Chemical	Petrochemicals Industrial plastic products Miscellaneous plastic products Industrial organic chemicals Chemical fibres Miscellaneous chemical and allied products
		# Machine equipment	Ship breaking and repair
	Tinh Phong IE	Construction material	Structural clay products Clay refractories Abrasive products Aggregate and stone products Other ceramic stone and clay products
	Quang Ngai Town IE	Foodstuff	Sugar and sugar syrups Bakery and confectionery products Miscellaneous food and related products
		Leather and artifical leather	Leather tanning and finishing Mechanical leather products Boot and shoe cut stock and findings Leather footwear Leather gloves and mittens Luggage Handbags and small leather goods
	Pho Phong IE	Foodstuff	Suger and suger syrups Bakery and confectionary products Alcohol beverage
		Wood processing and forestry	Furniture Miscellaneous furniture and fixtures Sawing and planning mills and wood products Wooden containers Rubber products Plywood and prefab-wood products Miscellaneous wood products

Note: # Second stage
Source: JICA Study Team

8.6 PRIORITY PROJECTS AND PROGRAMS

8.6.1 Project formation and selection process

(1) Prerequisite conditions

Prerequisite conditions for the industry selection are as follows:

- Realization of a market economy and continuation of industrialization and modernization
- Creation of employment opportunity
- Quality improvement and quantity expansion of regional resources utilizing industry
- Introduction and establishment of high-value added industry, and
- Establishment of cottage industry to promote the regional economy.

Points examined for the selection of industry have been the are followings:

- Types of industry (labor intensive, urban, surface transportation, air transportation, high-value added)
- Industry proposed by the central government and the four Provinces
- Existing industries
- Issues on industrial promotion
- Issues on regional promotion
- Possibility of demand
- Growth of industries
- Intention of industry selection at present and in future
- Suitability to regional characteristics
- Existing industrial infrastructure in industrial estates (IEs)
- Adjustment to environmental conservation, and
- Availability and training policy of human resources to support industrial development.

(2) Selection of Industry

In the four Provinces, high-value added industry is selected in order to raise quality and to expand quantity of local resources. Reasons for the selection are as follows:

- Demand for primary products such as food, coal and oil will further increase in future
- Most of machinery, equipment and raw materials is imported and then produced in Viet Nam
- This situation needs to be improved at first
- Most of existing industries are low-value added at present, and their ripple-effects to other industries are very limited. In future, materials and products need to be high-value added regardless of domestic demand and external demand, and

- Market is small and labor cost is not competitive in the four Provinces, so that a growth of existing industry is slow.

In common, enforcement and establishment of power industry is the first priority, and promotion of supporting industry is the second priority in the four Provinces. Necessary industries to be promoted are:

- Electricity
- Electric and electronics
- Ferrous metal
- Machine and equipment; machine parts and tooling products
- Chemical: industrial plastic, and
- Metal product: mold, galvanized and hot dip coated metal products, heat treatment.

The following concerns also need to be solved:

- Food industry; bio-technology needs to be paid attention in order to upgrade quality of products
- Electric and electronic industry: promotion of joint ventures with foreign companies and introduction of foreign investment are realistic
- Small & medium scale industry; a policy and supporting measurements needs to be prepared by both the government and the chamber of commerce and industry in advance. The possible production sites will be in the IE, or in designed areas
- Adjustment of environmental conservation; treatment for pollution, industrial disposal and adjustment with surrounding environment are critical. In particular, an environmental assessment is requested for Dung Quat. Depending on the result of the assessment, some proposed industries might be exempted, and
- Enforcement of existing industry; existing conglomeration of industry is an incentive to new comers. A support to enforce the existing industry needs to be prepared by the government before introduction of new industry.

8.6.2 Situation of Industrial Region and Industrial Estate

Considering about the situation for industrial development of the four Central Provinces, the outlines of the IEs and EPZ is shown in Figure 8-7.

From now on, industrial structure will be changed to the high generation type of industries, that is value added type of industries will account for a higher share in the industrial structure of Viet Nam. Change in industrial structure in the regional areas and industrial location will reflect foreign and domestic markets as well as industrial location policy and objectives.

Considering about the modernization of industrial area and function of the IE, each IE should be introduced in specific industry as much as possible. At first, introduction of industries is mainly regional resources oriented industry, however, it is necessary to develop value added type of industries.

The character of industrial area and IE should be clearly mentioned in advance when it is established, meanwhile, high-tech industrialization should be encouraged smoothly in advance.

It is necessary for considering about competitive relations between each industrial area and IE. Because, solving of this issue will be done by discrimination of the selection of characteristic and type of industries. That is to discriminate by supplying type of raw material and components and final products assembling, and to produce same products else where. For that

reason, it is necessary for subdivide by kind of business, clearly mentioned between assembler and supporting industries.

Excellent products will be produced by introduction of business type, tight relationship for systematic and promotion of high generation. Existing relationship is corespondent by lacking of products in the market, in near future, there is a danger for lose the competitiveness by shortage of domestic market.

It is recommendable to evaluate the cost competitiveness and production qualities by each industrial type from small and medium scale of industry to high technology type of industries. The following are important notes for industrial development in the four Provinces.

- A proportion of value-added industry will be increased in line with a change of industrial structure, especially in the region. Industry to meet both domestic and external demands will be promoted and industrial structure will be gradually up-graded
- Introduction of particular industry will be encouraged in order to modernize industry and to characterize the function of industrial parks. At the beginning, regional resources utilizing industry will be a core inducement, then value-added industry needs to be introduced gradually through improvement in operation style. In other words, characteristics of industrial areas and of industrial parks should be defined at the first stage to facilitate penetration of high-tech industry in future
- Differentiation of operation types and relationships between assembly and supporting industries needs to be clearly defined in order to keep competitiveness, and
- Cost competitiveness and product quality from cottage industry to high-tech industry need to be carefully examined.

8.6.3 Estimates of Investment Scale for Industrial Development

The following are investment scale estimates for industrial development in the four Provinces to the years of 2000, 2005 and 2010 (Table 8-15 and 8-16). The estimate covers industrial land, employee in industrial sector, number of enterprises and industrial water consumption. The basis of comparison is GDP in the year of 1993 (Table 8-17). The estimates seem to be a maximum, and further precise studies in consideration with urban water use are requested to avoid over-investment.

- Industrial land

  An average area per operation is five hectares. However, land utilization is very inefficient, and actual use of land is about one hectors. In line with urbanization, an unit of industrial land will be smaller. In this estimate, Da Nang is 3 %, Hue is 2% and Quang Ngai and Quang Tri are 1 % annually.

- Employees in industrial sector

  Employees in non-state industry, such as cooperative, private and household, are included. An average of employees per operation is 101.

- Industrial water consumption

  A proportion of food stuff is relatively high, and an average of water consumption per person is $12m^3$/day (Thailand: 8-$9m^3$/day). In future, water utilizes industry will decrease and a share of fresh-water utilized industry will be about 60 % of the total operation. In case of 60%, the estimates will be 207,050.4 in 1993, 374,868.0 in 2000, 439,531.2 in 2005 and 507,816.0 in 2021.

Table 8-15 GDP by Industrial Sectors and Provinces

Unit: million VND

Sector No.	Name of Industrial Sectors	Quang Nam-Da Nang				Thua Thien-Hue				Quang Ngai				Quang Tri			
		1991	1992	1993	Growth rate (%)	1991	1992	1993	Growth rate (%)	1991	1992	1993	Growth rate (%)	1991	1992	1993	Growth rate (%)
01	Power	199	246	375	37.3	-	-	-	-	-	-	39	-	51	22	-	-
02	Fuel	897	17	1,173	14.4	-	-	-	-	-	-	1	-	-	-	-	-
03	Ferrous metallurgy	17	17	4,816	1,583.1	-	-	-	-	-	-	-	-	-	-	-	-
04	Non ferrous metallurgy	415	246	763	35.6	437	605	321	-14.3	-	-	-	-	-	-	-	-
05	Machine equipment	16,542	17,527	14,805	-5.4	1,718	1,423	1,719	0.0	2,041	1,751	1,514	-13.9	267	290	259	-1.5
06	Electric and electronic	614	35	1,031	29.6	256	186	105	-36.0	-	-	-	-	51	-	-	-
07	Metal production	8,154	7,542	11,440	18.4	1,231	1,323	1,537	11.7	881	768	436	-29.7	2,661	1,375	1,513	-24.6
08	Chemical	15,728	22,063	3,523	-52.7	1,889	1,616	1,606	-7.8	2,413	3,617	213	-70.3	15	26	-	-
09	Construction material	17,189	18,089	9,789	-24.5	3,327	3,830	4,861	20.9	3,729	3,529	3,139	-8.3	3,184	2,704	3,311	2.0
10	Wood processing and forestry	17,604	12,710	11,557	-19.0	4,528	4,123	5,243	7.6	1,233	1,262	1,138	-3.9	1,470	1,090	1,799	10.6
11	Cellulose and paper	913	1,213	1,482	27.4	5	26	276	643.0	14	21	12	-7.4	-	-	-	-
12	Glass and pottery	698	826	54	-72.2	105	53	51	-30.3	86	71	72	-8.5	25	26	35	18.3
13	Food	8,204	8,983	11,829	20.1	1,000	1,270	2,132	46.0	117	160	124	2.9	1,488	404	520	-40.9
14	Food stuff	44,667	49,436	92,652	44.0	28,378	41,170	54,547	38.6	23,044	29,388	34,515	22.4	4,048	8,367	8,062	41.1
15	Textile	23,793	25,438	12,218	-28.3	5,061	9,416	5,614	-5.3	515	1,190	612	9.0	-	-	39	-
16	Garment	1,694	1,740	1,487	-6.3	155	119	111	-15.4	-	-	-	-	762	35	134	-58.1
17	Printing	1,262	1,846	2,198	32.0	145	46	32	-53.0	52	38	18	-41.2	14	-	-	-
18	Leather and artificial leather	4,086	3,973	2,169	-27.1	241	259	156	-19.5	52	89	85	27.9	21	33	59	67.6
19	Others	3,405	3,850	4,448	14.3	1,784	1,037	1,429	-10.5	356	312	700	40.2	229	350	581	59.3
	Total	166,081	175,797	187,809	6.3	50,260	66,502	79,740	26.0	34,533	42,196	42,618	11.1	14,286	14,722	16,312	6.9

Source: Ministry of Industry

Table 8-16 GDP by Industrial Sectors in Quang Tri Province (1/4)

Unit: USD 1,000

Sector No.	Name of Industrial Sectors	1991	1992	1993	2000	2005	2010
01	Power	4.64	2.00	0.00	4.68	6.26	8.51
02	Fuel	0.00	0.00	0.00	0.00	0.00	0.00
03	Ferrous metallurgy	0.00	0.00	0.00	0.00	0.00	0.00
04	Non ferrous metallurgy	0.00	0.00	0.00	0.00	0.00	0.00
05	Machine equipment	24.27	26.36	23.55	34.91	46.65	63.44
06	Electric and electronic	4.64	0.00	0.00	6.55	8.75	14.97
07	Metal production	241.91	125.00	137.55	237.39	317.23	542.79
08	Chemical	1.36	2.36	0.00	2.63	3.52	4.78
09	Construction material	289.45	245.82	301.00	441.89	743.60	1,584.84
10	Wood processing and forestry	133.64	99.09	163.55	282.56	377.59	513.46
11	Cellulose and paper	0.00	0.00	0.00	0.00	0.00	0.00
12	Glass and pottery	2.27	2.36	3.18	6.29	8.40	11.43
13	Food	135.27	36.73	47.27	103.19	137.89	187.51
14	Food stuff	368.00	760.64	732.91	2,060.68	3,467.68	5,933.28
15	Textile	0.00	0.00	3.55	5.01	6.69	11.44
16	Garment	69.27	3.18	12.18	39.83	53.22	91.07
17	Printing	1.27	0.00	0.00	1.80	3.02	5.17
18	Leather and artificial leather	1.91	3.00	5.36	21.27	28.43	38.66
19	Others	20.82	31.82	52.82	237.64	399.90	684.24
	Total	1,298.73	1,338.36	1,482.91	3,486.31	5,608.83	9,695.58

Source: JICA Study Team computations

Table 8-16 GDP by Industrial Sectors in Thua Thien-Hue Province (2/4)

Unit: USD 1,000

Sector No.	Name of Industrial Sectors	1991	1992	1993	2000	2005	2010
01	Power	0.00	0.00	0.00	0.00	0.00	0.00
02	Fuel	0.00	0.00	0.00	0.00	0.00	0.00
03	Ferrous metallurgy	0.00	0.00	0.00	0.00	0.00	0.00
04	Non ferrous metallurgy	39.73	55.00	29.18	58.31	77.92	105.96
05	Machine equipment	156.18	129.36	156.27	220.75	294.99	401.14
06	Electric and electronic	23.27	16.91	9.55	23.40	31.27	42.52
07	Metal production	111.91	120.27	139.73	309.39	413.44	562.21
08	Chemical	171.73	146.91	146.00	218.65	292.19	499.94
09	Construction material	302.45	348.18	441.91	1,424.07	2,396.40	4,100.30
10	Wood processing and forestry	411.64	374.82	476.64	779.15	1,041.20	1,781.52
11	Cellulose and paper	0.45	2.36	25.09	130.92	174.95	237.91
12	Glass and pottery	9.55	4.82	4.64	8.94	11.95	16.25
13	Food	90.91	115.45	193.82	583.36	779.57	1,060.08
14	Food stuff	2,579.82	3,742.73	4,958.82	16,903.24	28,444.48	48,669.18
15	Textile	460.09	856.00	510.36	799.23	1,068.04	1,452.35
16	Garment	14.09	10.82	10.09	16.47	22.01	29.93
17	Printing	13.18	4.18	2.91	9.54	20.01	34.24
18	Leather and artificial leather	21.91	23.55	14.18	28.06	37.50	51.00
19	Others	162.18	94.27	129.91	228.39	384.33	657.60
	Total	4,569.09	6,045.64	7,249.09	21,741.88	35,490.26	59,702.12

Source: JICA Study Team computations

Table 8-16 GDP by Industrial Sectors in Quang Nam-Da Nang Province (3/4)

Unit: USD 1,000

Sector No.	Name of Industrial Sectors	1991	1992	1993	2000	2005	2010
01	Power	18.09	22.36	34.09	90.69	121.20	164.81
02	Fuel	81.55	1.55	106.64	196.87	263.08	357.74
03	Ferrous metallurgy	1.55	1.55	437.82	207.48	277.27	377.04
04	Non ferrous metallurgy	37.73	22.36	69.36	180.04	240.59	327.16
05	Machine equipment	1,503.82	1,593.36	1,345.91	2,090.85	4,385.82	9,347.51
06	Electric and electronic	55.82	3.18	93.73	279.10	469.66	803.61
07	Metal production	741.27	685.64	1,040.00	2,587.57	4,354.31	7,450.33
08	Chemical	1,429.82	2,005.73	320.27	1,767.43	2,361.87	4,041.22
09	Construction material	1,562.64	1,644.45	889.91	1,927.98	4,044.19	6,919.70
10	Wood processing and forestry	1,600.36	1,155.45	1,050.64	1,791.26	3,014.29	5,157.53
11	Cellulose and paper	83.00	110.27	134.73	387.82	652.62	1,116.66
12	Glass and pottery	63.45	75.09	4.91	67.51	90.21	122.67
13	Food	745.82	816.64	1,075.36	2,188.95	2,925.17	3,977.72
14	Food stuff	4,060.64	4,494.18	8,422.91	30,983.67	64,992.19	111,203.19
15	Textile	2,163.00	2,312.55	1,110.73	2,628.81	3,512.96	4,777.02
16	Garment	154.00	158.18	135.18	210.52	281.33	382.56
17	Printing	114.73	167.82	199.82	617.17	1,038.57	1,777.01
18	Leather and artificial leather	371.45	361.18	197.18	437.56	584.72	795.12
19	Others	309.55	350.00	404.36	936.75	1,576.34	2,697.16
Total		15,098.27	15,981.55	17,073.55	49,578.02	95,186.39	161,795.74

Source: JICA Study Team computations

Table 8-16 GDP by Industrial Sectors in Quang Ngai Province (4/4)

Unit: USD 1,000

Sector No.	Name of Industrial Sectors	1991	1992	1993	2000	2005	2010
01	Power	0.00	0.00	3.55	5.01	10.50	22.38
02	Fuel	0.00	0.00	0.09	0.13	0.27	0.57
03	Ferrous metallurgy	0.00	0.00	0.00	0.00	0.00	0.00
04	Non ferrous metallurgy	0.00	0.00	0.00	0.00	0.00	0.00
05	Machine equipment	185.55	159.18	137.64	226.99	303.34	412.49
06	Electric and electronic	0.00	0.00	0.00	0.00	0.00	0.00
07	Metal production	80.09	69.82	39.64	89.20	119.20	254.04
08	Chemical	219.36	328.82	19.36	267.08	560.23	1,194.02
09	Construction material	339.00	320.82	285.36	694.90	1,457.63	3,106.66
10	Wood processing and forestry	112.09	114.73	103.45	155.42	207.69	282.43
11	Cellulose and paper	1.27	1.91	1.09	2.01	2.69	3.65
12	Glass and pottery	7.82	6.45	6.55	9.80	13.09	17.80
13	Food	10.64	14.55	11.27	16.87	22.54	30.65
14	Food stuff	2,094.91	2,671.64	3,137.73	10,365.52	13,851.79	18,836.02
15	Textile	46.82	108.18	55.64	85.62	114.42	155.59
16	Garment	0.00	0.00	0.00	0.00	0.00	0.00
17	Printing	4.73	3.45	1.64	4.62	7.77	13.30
18	Leather and artificial leather	4.73	8.09	7.73	22.40	29.93	40.70
19	Others	32.36	28.36	63.64	221.90	373.41	638.91
Total		3,139.36	3,836.00	3,874.36	12,167.46	17,074.51	25,009.23

Source: JICA Study Team computations

Table 8-17 Estimation of Industrial Development Scales in the Key Area of the Central Region

Items	Name of Province	1993	2000	2005	2010
Industrial GDP	Quang Nam-Da Nang	17,074	49,578	95,186	161,796
(US$ 1,000)	Thua Thien-Hue	7,249	21,742	35,490	59,702
	Quang Ngai	3,874	12,167	17,075	25,009
	Quang Tri	1,483	3,486	5,609	9,696
	total	29,680	86,974	153,360	256,203
Industrial Land	Quang Nam-Da Nang	9,270	13,544	15,922	16,570
(hectare)	Thua Thien-Hue	10,943	16,625	16,695	17,278
	Quang Ngai	6,623	12,893	12,857	13,383
	Quang Tri	1,921	2,160	2,052	2,095
	total	28,757	45,222	47,526	49,326
Employee in Industrial Sector	Quang Nam-Da Nang	117,200	217,919	298,311	361,530
(persons)	Thua Thien-Hue	43,400	76,604	85,100	97,432
	Quang Ngai	31,400	69,165	72,530	79,385
	Quang Tri	50,300	59,800	59,800	64,610
	total	242,300	423,488	515,741	602,957
Number of Enteerprises	Quang Nam-Da Nang	9,270	16,763	22,947	27,810
(enterprises)	Thua Thien-Hue	10,943	19,151	21,275	24,358
	Quang Ngai	6,623	13,833	14,506	15,877
	Quang Tri	1,921	2,318	2,318	2,485
	total	28,757	52,065	61,046	70,530
Industrial Water Consumption	Quang Nam-Da Nang	111,240	201,156	275,364	333,720
(cubic meter per day)	Thua Thien-Hue	131,316	229,812	255,300	292,296
	Quang Ngai	79,476	165,996	174,072	190,524
	Quang Tri	23,052	27,816	27,816	29,820
	total	345,084	624,780	732,552	846,360

Source: JICA Study Team

From the scale of GDP of each province, industrial development scale of each IE, EPZ and FTZ is given the condition for land area, number of enterprises, number of employee, industrial consumption and industrial output (see Table 8-18). Considering about regional economy, industrial status, development scale of IE and feature of IE, project implementation schedule is given show in the Figure 8-10.

8.6.4 Chan May Free Trade Zone

There are two key IEs in Central Region, namely Dung Quat Port Industrial Estate and Chan May Port Free Trade Zone. According to the Dung Quat Port Industrial Estate, we take up this project as a Pre F/S in this study and we describe the Chan May Port FTZ hereinafter.

(1) Existing Condition in Quang Tri Province

There are four projects in Quang Tri Province. The first one is the Lao Bao-Ban Den Free Trade Zone (FTZ) in the mountainous area in Quang Tri Province. This FTZ is already established on the border between Viet Nam and Laos. Now they are setting up about one hectare of the FTZ area including one transit shed. Main function of this FTZ is transshipment of commodities and delivery industries that is untie the big cargo to make a small packaging for delivery.

The second is the big market in the center of Dong Ha Town. The usage of this facilities are mainly for international commodities and domestic daily commodities. This center is doing very well and calling in wholesalers and customers.

The third is the upgrading of national road No.9. This road is planned by ADB for the east-west corridor between Viet Nam and Laos. Laos Government expects to set up the international corridor and port for their transportation facilities in cooperative with Viet Nam.

Finally, there are new construction of Cua Viet Port in eastern side of Dong Ha Town. This port is expecting finalize in 1998 with capacity of 2,000 tons of ship. This port is located on the east side of national road No.9 directly.

(2) Chan May Free Trade Zone

In the Central Region, there are thirteen industrial estates (IE) namely two key IEs, four potential IEs and seven IEs, are planned by the study team. Chan May FTZ is the key IE and also including national port project. Chan May FTZ is available for the deep water sea port. This project was agreed by Prime Minister for the feasibility study.

On the other hand, there is a Cua Viet Port, which is under construction. This port is a river mouth port and 2,000 tons ship is available by the year 1998.

(3) Free Trade Zone Concept

Considering the above conditions, it is proposed that the free trade zone concept in Quang Tri and Thua Thien-Hue Provincesbe implemented (Figure 8-11).

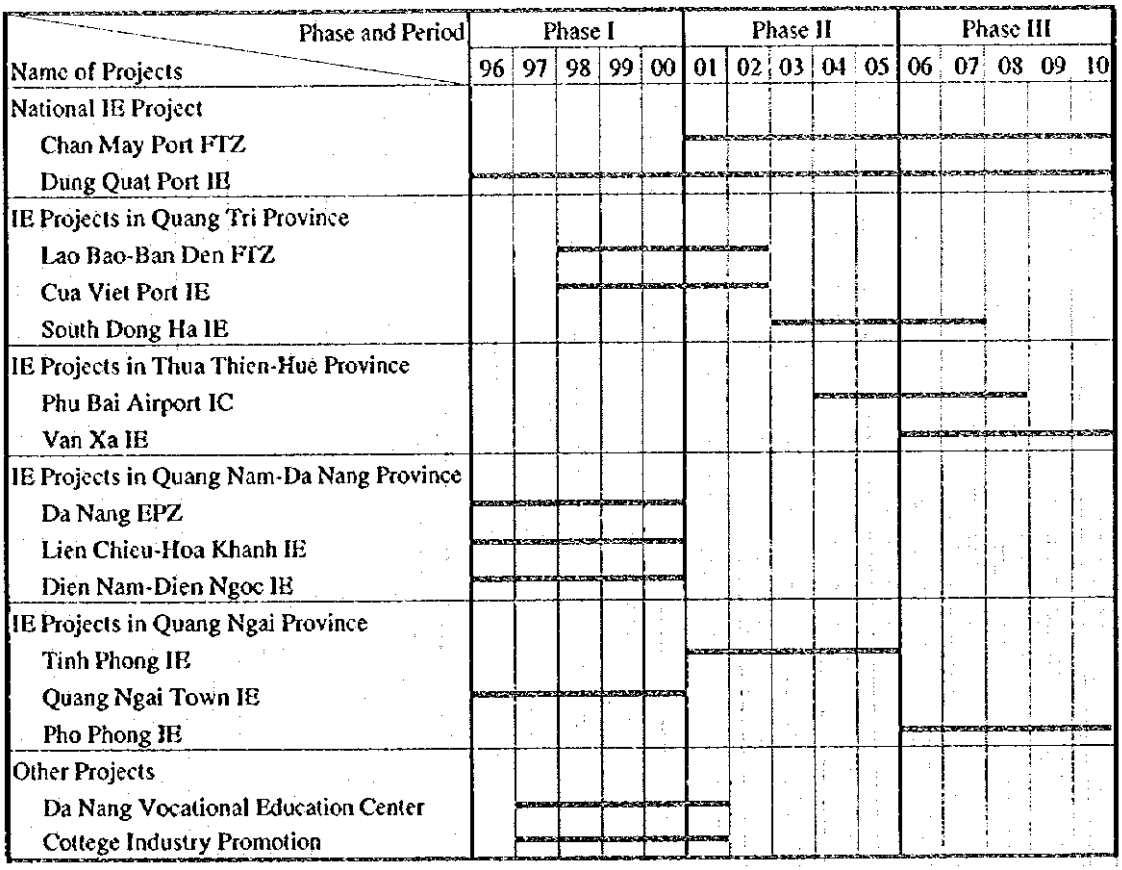
Chan May FTZ is planned as an international distribution hub port for linking east and west, and it consists of a general port, general IE and FTZ. The FTZ consists of a port, IE and tax free warehouse. Any kind of activities in FTZ should be free tax and available for easy assembling, processing activities and distribution industries. So that if it is a international commodity, bonded transportation is available to neighboring countries. If it is a domestic commodity, taxes should payed at the custom office in the port. Domestic commodities are available to sale in the domestic market in Quang Tri but also some kind of international commodities free of tax.

Table 8-18 Industrial Development Scale of IE, EPZ and FTZ

Province	Name of IE, EPZ and FTZ	Land Area			Number of Enterprise	Number of Employee	Industrial Water Consumption	Industrial Output
		Gross (ha)	Net (ha)	(%)	(company)	(person)	(cubic m./day)	(Mil. US$)
Quang Tri	South Dong Ha IE	200	150	75	60	10,000	18,000	3,100
	Cua Viet Port IE	150	113	75	30	4,700	35,000	1,500
	Lao Bao - Ban Den FTZ	110	83	75	25	5,200	32,000	390
Thua Thien - Hue	Chan May Port FTZ	1,200	200 •700	75	87 •200	17,400 •30,000	20,000 •16,000	3,000 -
	Phu Bai Airport Industrial Complex	400	300	75	150	25,000	91,000	5,000
	Van Xa IE	200	150	75	60	7,600	30,000	1,900
Quang Nam - Da Nang	Da Nang EPZ	63	47	75	25	6,000	22,900	1,800
	Lien Chieu - Hoa Khanh IE	800	600	75	170	40,000	144,000	7,000
	Dien Nam - Dien Ngoc IE	418	314	75	180	30,000	180,000	2,300
Quang Ngai	Dung Quat Port IE	1,800	735	41	29	9,700	157,780	15,000
	Tinh Phong IE	200	140	70	40	6,000	12,000	580
	Quang Ngai Town IE	100	75	75	20	3,600	61,000	970
	Pho Phong IE	300	180	60	60	12,000	116,000	3,500

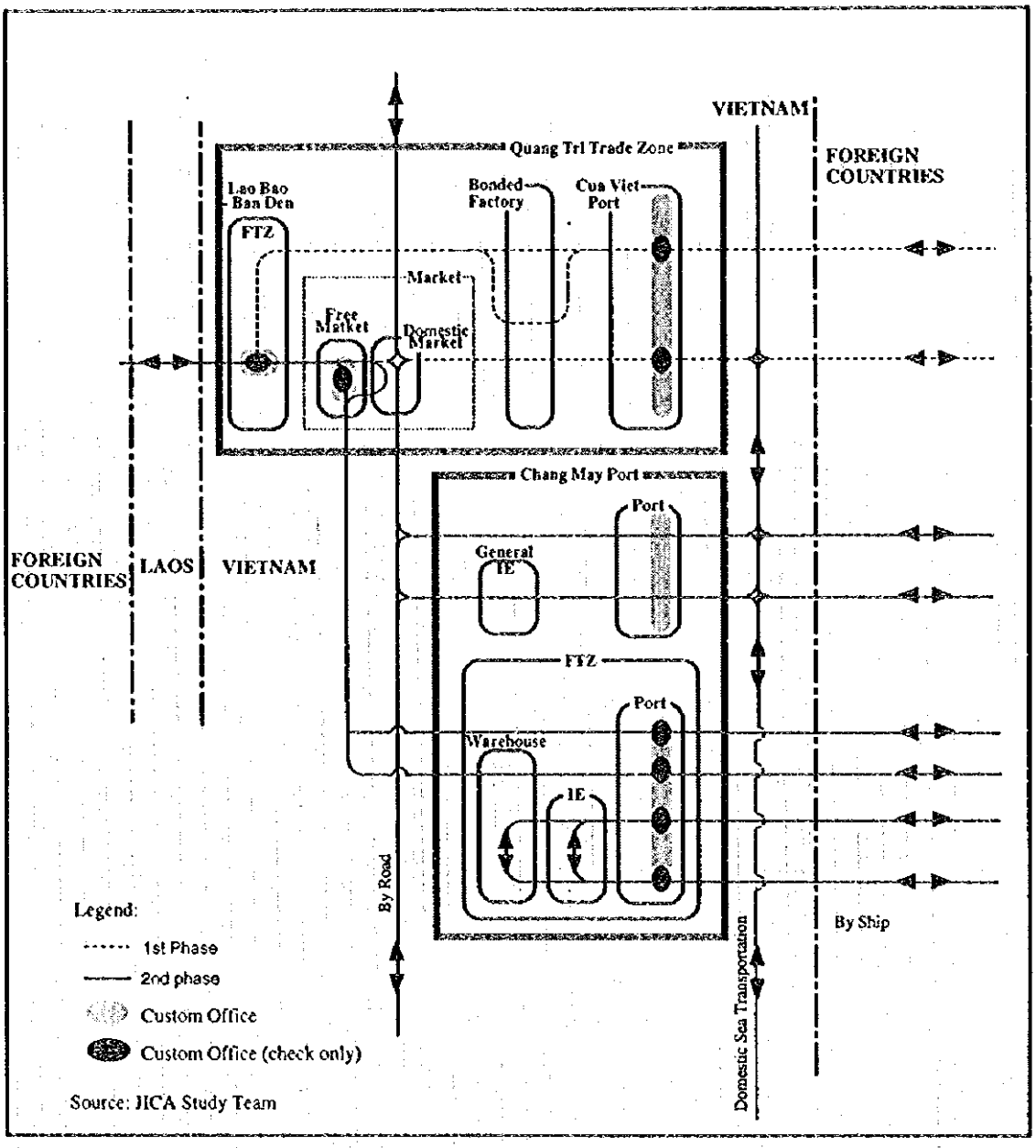
Note: • means distributor and other relating persons.

Figure 8-10 Implementation Schedule for IE, EPZ and FTZ Projects



Source: JICA Study Team

Figure 8-11 Free Trade Zone Concept



Starting of this concept is adapting the existing system and facilities in Quang Tri Province, namely Lao Bao-Ban Den FTZ, market through national road No.9 and Cua Viet Port. However in the case for establishment of IE will be difficult in the first stage. So in Quang Tri, we propose to establish the Quang Tri Trade Zone in the whole Province, and any kind of manufacturing industries are available for establish of bonded factory in Province. It makes easy to establish joint venture (J/V) with foreign countries especially with Laos' enterprises.

In the second stage, after the Chan May Free Trade Zone (FTZ) has been established, the main trade function will be changed to Chan May FTZ. Chan May FTZ is planned for deep sea port, too. If comparing Chan May Port and Cua Viet Port, there is a advantage in Chan May Port.

8.7 INDUSTRIAL LOCATION PROGRAM

8.7.1 Basic Policy

(1) Targeted Region

The program is carried out in Quang Tri and Thua Thien-Hue in the northern part of the Central Region and Quang Nam-Da Nang and Quang Ngai in the south central coastal strip.

(2) Targeted Industry

The program is carried out for industries involved in engineering. Therefore, this program is referred to as the Engineering Site Program, to be specific.

(3) Targeted Suitable Industrial Location Sites

Feasibility to develop coastal and inland industrial estates as Export Processing Zone (EPZ) and Industrial Estate (IE) should be confirmed.

8.7.2 Conditions for Industrial Location

When developing industrial sites in the Central Region, we should confirm the advantages of the conditions. Smooth industrial development usually depends on sound promotion of the primary industry, such as agriculture, in the region. This is because if there is more than enough people working in the primary industry, some of them can be shifted to the engineering industry.

Fortunately, there is a large enough work-force in the primary industry in the Central Region to allow for a shift over to the engineering industry. However, as workers involved in engineering need to have certain skills and proficiencies, the industry or the government should train them properly.

Conditions for industries include industrial sites, industrial water, energy source, a communication system, traffic and transportation systems, marketable urban population, presence of agriculture and other related industries, existence of local resources such as mineral products, agriculture, forestry, stock breeding and fishery, workforce mentioned above, natural environment and landscape, measures such as a tax incentive plan by administrative body, measures such as grants by local governments, presence of college and research laboratory, adequate living environment such as housing and a hospital. Although the current situation is not satisfactory in the Central Region, these items need to be prepared according to a plan in order to promote future industrial location (see Table 8-19).

Table 8-19 Location Directivity of Industry (1/2)

Kind of Industry	Location Directivity	Basic Facilities for Industry				Market			Resources					Labor Force
		Port	Land	Water	Electric Power	City & Population	Industry	Agriculture	Mineral Products	Agricultural Products	Seafood Products	Forestry Products	Livestock Products	
Food Manufacturing	Livestock products					◎		◎					◎	
	Canned & preserved fruit & vegetable					◎		◎		◎				
	Bakery & confectionery products					◎								
	Beverage					◎		◎		◎				
	Prepared animal feeds							◎						
	Animal & vegetable oil					◎		◎		◎				
	Seafood processing products					◎					◎			
	Seasonings					◎					◎			
	Flour & grain mill products									◎				
	Sugar processing products					◎								
						◎				◎				
Textile mills & Miscellaneous textile mills products	Textile mills products					◎								◎
	Spining mills					◎								◎
	Woven fabric milk					◎								◎
	Dyed & finished textiles													
						◎								◎
Lumber & wood products include furniture	Saving & planning mills & wood products	◎										◎		
	Plywood & prefabricaton wood products	◎										◎		
	Furniture					◎								
	Sliding doors & screens					◎								
Pulp paper & pulp products	X Pulp		◎									◎		
	X Paper		◎									◎		
	paper containers					◎								
Chemical & allied Products	Chemical fertilizers							◎						
	Industrial inorganic chemicals: Chemical soda, etc.	◎	◎	◎	◎				◎					
	Industrial organic chemicals:	◎	◎	◎	◎									
	Petrochemicals, etc.					◎		◎						
	Soaps, detergents, paint, etc.					◎							◎	
	Drug & medicines					◎								
Petroleum & coal, rubber products	X Petroleum refinery	◎	◎	◎	◎	◎	◎		◎					
	X Cokes								◎					
	Tire & inner tubes					◎								
	Rubber belt					◎								
	Rubber hose					◎								
	Industrial rubber products					◎	◎							
Leather	Leather products					◎							◎	
Ceramic stones & clay products	Cement		◎	◎		◎			◎					
	Cement products					◎								

Source: JICA Study Team

Table 8-19 Location Directivity of Industry (2/2)

Kind of Industry \ Location Directivity	Basic Facilities for Industry				Market		Resources					Labor Force
	Port	Land	Water	Electric Power	City & Population	Industry	Agriculture	Mineral Products	Agricultural Products	Seafood Products	Forestry Products	Livestock Products	
Iron & steel													
Iron industries with blast furnaces	●	●	●	●				●					●
Steel materials processing					●	●							●
Steel forgings & castings					●	●							●
Iron casting					●	●							●
Alloy iron				●		●		●					●
Non-ferrous metals													
X Primary smelting & refining of copper	●	●	●	●				●					●
X Primary smelting & refining of lead	●	●	●					●					●
X Primary smelting & refining of zinc	●	●	●	●				●					●
Primary smelting & refining of aluminum	●	●		●				●					●
Secondary smelting & refining of alumina	●	●	●					●					●
Electric wire & cable													●
Nickel								●					●
Aluminum processing					●								●
Fabricated metal products	Fabricated metal products for construction use				●								●
	Agricultural tools				●		●						●
General machinery													
• Agricultural machines & equipment					●		●						●
• Construction & mining machines					●								●
• Industrial machines					●	●							●
Electrical machinery													
• Industrial electric machines					●								●
• Communication equipment					●								●
• Electronic equipment					●								●
Transportation machinery													
• Motor vehicles components					●								●
• Steel shipbuilding & repairing	●	●											●
Precision instruments													
Measuring instruments					●								●
Surveying instruments					●								●
Others													
Plastics processing					●	●	●						●

Note:
● : Very important
• : Include components
X : This kind of industries has possibility of industrialization, if its good condition of deposits & good quality.
Road in common factor of location directivity in all kind of industries.

(1) Industrial Site

A site should have a flat terrain, be durable and easy to obtain.

(2) Industrial Water

Water must not contain iron and a sufficient quantity should be secured. Drainage of water after use should be easy, and clear standards for drainage should be established.

(3) Energy

Sufficient quantity should be secured. Construction of transmission facility should be easy and steady voltage should be ensured.

(4) Communication System

Stable use of a means of communication such as telephones, facsimile, communications satellite and so on should be ensured. This requirement will be increasingly important from now on.

(5) Traffic and Transportation System

Developed roads and freight cars should be available internally and externally and run on a regular schedule. A port with sufficient water depth and a ground warehouse is needed. A large port and airport suitable for freight transport are desired. A sufficient number of flights is important. Location in the vicinity of a highway, railway station in case of railway, public wharf in case of port and airport is necessary.

(6) Marketable Urban Population

Proximity to a local main city and its dense population are major factors for market expansion.

(7) Presence of Agriculture and Other Related Industries

Availability of subcontractors and related corporations is necessary to expand the market. The number of competitors in certain industries should also be noted.

(8) Presence of Local Resources

Mineral products and primary products are extremely useful for local resource utilized industry and are highly evaluated.

As for labor, a workforce other than expert engineers and technicians should be secured easily. Research and development-oriented corporations show an interest in colleges and research laboratories in the region.

These conditions should be satisfied so that the Central Region can develop into a region which promotes industry in the future. However, they are the essential conditions and to be prepared gradually as the industrial structure of the Central Region changes. It is predicted that they will be improved by 2000 to 2010 and will be generally satisfactory for companies. Administrative agencies such as the national and local governments should work toward improvement.

8.7.3 Targeted Region

Judging from the conditions for industrial sites above, the program is carried out in the primary

area which covers a 30 minute radius from each district in population density districts (DID) in Da Nang City, Quang Ngai City, Hue City, Dong Ha City and the secondary area within a 60 minute radius. The primary area is in the vicinity of a dense area in each city and workers can commute there easily. As various infrastructures can be built relatively easily, it is advantageous for industrial sites. In the secondary area, location of the appropriate industries will be promoted after the primary area has been developed. Industries have been smoothly located when an independent new community development program or a new industrial park program are drawn up.

Mining or industries which develop mining products should be located at the foot of a mountain or at the seaside where railway and roads with regular schedules are developed in consideration of material storage and pollution. Location of mining related industries should be dealt with separately from the ordinary industries in the primary and secondary areas.

8.7.4 Targeted Industry

Suitable industries should be selected in determining the industries to be located in the Central Region. However, it is recently thought that suitable industries should be decided depending on which site the corporation itself finds ideal. With the recent globalization of corporations, more industries are situated from entirely different view points.

However, as many suitable industries are still associated with local characteristics originated from the local industrial structure, suitable industries should be selected mainly from labor intensive, urban oriented, road using, air transportation using and high value added industries.

When selecting suitable industries in the Central Region, selection should be made considering basic resource utilized industrial regions such as Ha Noi, processing and assembly industrial regions such as HCMC and local resource oriented industrial regions such as Can Tho.

Conventionally, the Central Region is specialized in the primary industry and there are many local resource utilized industries. The Central Region is similar to the region surrounding Cantho in nature. The program to locate basic resource utilized industries in Dung Quat in Quang Ngai province will be implemented before long. Therefore, industries to be located in the Central Region are categorized broadly into industries targeted for IE and EPZ, mentioned later and industries planned to be located in the large scaled seaside industrial base. In other words, industries for the promotion of local resource utilized industries in the established site and light industries manufacturing electric and electronic products and textiles and garments are selected. The industries to be located in the large scaled seaside industrial base are those that manufacture plastics, iron and steel products, chemical products (detergents and insecticide), and machinery and equipment. Light industries and some local resource utilized industries are encouraged to replace import industries to some degree.

To summarize, the Central Region is comprised of local product supply industries, basic resource utilized industries evolved from the development of large scaled seaside industrial bases, light industries, and processing and assembly industries utilizing some of its downstream products. One of the adjacent provinces and to develop them as regions contributing to the promotion of these industries.

(1) Labor Intensive Industry

There are approximately 80 labor intensive industries. When we select labor intensive industries as the industries for the program, most of them fall into local resource utilized industries and light industries.

1) Food manufacturing

Livestock products, seafood processing, canned and reserved fruits and vegetables, seasoning,

sugar processing, flour and grain mill products, bakery and confectionery products, animal and vegetable oil and fats, miscellaneous food and related products, soft drinks and carbonated water, alcoholic beverage, tea and coffee, manufactured ice, prepared animal feeds and organic fertilizers, tobacco manufactures.

2) Textile mills products

Silk reeling plant, spring mills, twisting and silky yarns, woven fabric mills, dyed and finished textiles, ropes and netting, lace and other textile goods, miscellaneous textile mill products, outer garment, white shirts and underwear, hats, fur apparel and apparel accessories, miscellaneous textile, apparel, clock and parts, miscellaneous fabricated textile products.

3) Lumber and wood products

Saving, planning mills and wood products, plywood and prefab-wood products, wooden containers wooden footwear, miscellaneous wood products, furniture, furniture for religious purpose, sliding doors and screens, miscellaneous furniture and fixtures.

4) Rubber products

Tires and inner tubes, rubber and plastic footwear, industrial rubber products, miscellaneous rubber products.

5) Ceramic stones and clay products

Glass and its products, cement and its products, structural clay products, pottery and related products, carbon and graphite products, abrasive products, aggregate and stone products, other ceramic stone and clay products.

6) Fabricated metal products

Tin cans and other plated sheet products, tableware, cutlery, hand tools, heating apparatuses and plumbing supplies, stamped and pressed products, powder metallurgy, plating and heat treating, fabricated wire products, bolts and nuts, rivets, screws and wood screws, miscellaneous fabricated metal products.

7) Machinery

Boilers, engines and turbines, agricultural machinery and equipment, construction and mining machine, metal working machinery, textile machinery, special and general industry machinery and equipment, office equipment and household machines, miscellaneous machinery and machine parts.

8) Electrical machinery equipment and supplies

Electrical generator, household electric appliances, electric bulbs and lighting fixtures, communication equipment and related products, computer equipment and accessories electronic equipment, electric measuring instruments, various electronic parts, other electrical machinery.

9) Transportation equipment

Motor vehicles, parts and accessories, railroad equipment and parts, bicycles and parts, ship building, repair and marine engine, aircraft and parts, miscellaneous transportation equipment.

10) Precision instruments and machinery

Measuring instruments, surveying instruments, medical instruments and apparatus, physical and chemical instruments, optical instruments and lenses, ophthalmic goods, including frames watches.

11) Miscellaneous manufacturing industries

Precious metal products, musical instruments and photograph records, toys and sporting goods, pens, pencils and stationery, costume jewelry, and lacquer ware, plus other types of manufacturing 1 through 9 and 11 are selected in the Central Region. The following industries will be reinforced intensively from now on as mentioned before: Transportation equipment: motor vehicles, parts and accessories, bicycles and parts, ship building and repair and marine engines, electronic equipment, cement and clay products (bricks), timber and wood products, various food and foodstuffs, textiles and garments, silk reeling plant, toys and sporting goods, lacquer ware and so on.

(2) Urban Oriented Industries

Urban oriented industries utilize the concentrated population mainly in the local core cities and approximately 50 industries are categorized as such. Many of them engage in more sophisticated processing operations compared with labor intensive industries indicated above. Final assembly and processing industries manufacturing local resource oriented industrial products and light industrial products are included. Therefore, many of them are also classified as labor intensive industries. The following publishing printing and allies industries are added to the industries mentioned above.

Newspaper industry, publishing industry, printing except mimeograph printing, plate making for printing, book binding and printed matters, service industries related to printing trade.

In Da Nang City in the Central Region, plastic utensils, garments, fish sauces, sugar and sugar syrups, fabrics and beer are included. In Hue City, textile products and traditional handicraft goods are included.

(3) Road Oriented Industries

Road oriented industries means to transport raw materials and final products by highways and there are approximately 35 kinds of such industries. They are similar to railway and port oriented industries.

Industries highly dependent on roads are as follows: prepared animal feeds and organic fertilizers, glass products, fabricated metal products. Industries relatively dependent on roads are as follows:

Plywood and prefab-wood products, furniture and fixtures, animal and vegetable oils and fats, tires and inner tubes, fabricated wire products, power metallurgy, plating and heat treating, fabricated wire products, metal working machinery, special and general industry machinery and equipment, household electrical appliances, motor vehicle parts and accessories, medical instruments and apparatus, optical instruments and lenses, watches, clocks and parts.

However, as sensors are integrated into products such as electronic machines lately, many so-called high technology based industries are switching their transportation method to railway or air cargo. In the Central Region, current road conditions should be improved and railway transportation capability should be reinforced.

(4) Air Transport Oriented Industries

Air transport oriented industries use air cargo and approximately 40 industries are included. Many of these are local resource oriented industries and light industrial product manufacturing industries in general and are characterized by their high value added products. They are divided into export and import based industries. Air transport of electronic products and marine products of quality fish and so on is increasing lately.

Their prospects depend on the improvement of the airport, especially on the increase of international flights in the Central Region.

(5) Value Added Industries

These are high technology industries that manufacture high quality products and products with high performance, multi-functions and customized features. On the process of the development of the industrial structure in the Central Region, it is necessary to invite these industries aggressively from now on. However, since most of them are technology intensive and require expert engineers rather than a general workforce, it is requested a suitable workforce in the region in order to invite them as well as establishment of colleges and research laboratories.

In the Central Region, it is desired to promote the EPZ in Da Nang City and IE which is to be located in the vicinity of the airport in Hue city for the present.

Most of these industries are highly competitive throughout the world and their products are commercially available in the global market. Electronic products are their mainstay and foreign companies are located generally in the EPZ as their overseas development activities. There are many cases of export processing oriented industries performing stable operations in EPZs, which are seen in the Philippines, Indonesia, China, Korea, and so on as stated above.

8.7.5 Targeted Industrial Site

In the four provinces in the Central Region, industrial estates are being developed based on respective industrial development programs. Some have already been completed and corporations have moved in and started operations.

(1) Quang Nam-Da Nang

There are three industrial estates in the province, Lien Chieu-Hoa Khanh IE, Dien Nam-Dien Ngoc IE and Da Nang EPZ. The most prospective of all are Lien Chieu-Hoa Khanh IE and Dien Nam-Dien Ngoc IE. EPZ in Da Nang City needs to be improved according to the plan and completed from now on.

(2) Quang Ngai

Three industrial zones are located to the north, south, and west sides of Quang Ngai Town. All of them need to be redeveloped. However, the Dung Quat project, as the large scaled seaside industrial base construction concept, should be top priority. Then three other industrial zones should be launched after that.

(3) Thua Thien - Hue

Hue City has been growing as a tourist city and industrial development is its future agenda. Therefore, when planning development taking its characteristics into account, it is preferable to construct IE mainly comprised of research and development-oriented corporations in the vicinity of inland Phu Bai airport and develop the Chan May port as a commercial and

distribution base and use it as a free port.

(4) Quang Tri

Factories located independently are scattered in the environs of Dong Ha Town in particular and the concept of IE development is not established. Therefore, it should be concentrated on an international road construction program connecting Viet Nam and Laos to establish an international distribution center in Dong Ha Town. This area needs to be developed as the distribution base from the northeast part of Thailand and Laos. It should depend on the Chan May port in Hue city for the use of a port and takes charge of distribution for the four provinces in the Central Region. Before construction of Chan May Port, it is available to use the Cua Viet Port.

In conclusion, development of IE including EPZ in Da Nang, Hoa Khanh IE, Dien Ngoc-Dien Nam IE, Phu Bai airport IE in the vicinity of Hue City, a large-scale seaside industrial base in Dung Quat and an international distribution center in Dong Ha Town and Lao Bao-Ban Den FTZ should be established.

8.7.6 The Direction of Development of Industries which utilize Regional Resources

The industry utilizing regional resources is one of the most important areas in the development of the industries of the central districts. Regional resources, in general, means regional resources required in the production, processing and distribution of agriculture, forestry, livestock and fisheries.

The scope of regional resources, therefore, extends from agricultural lands, forestry, stock farms and fishing banks as production base to technologies, machinery, facilities, animals and plants held by the regions and required in processing. They can be grouped under the following three categories:

(1) Regional Resources

They include meat products, liquor, dairy products, bread & confectionery, fruit wine, tea, livestock products, biscuits and dried sweets, canned vegetables and fruits, keep able foods, pickled vegetables, soy sauce and cooking amino acids, Japanese(unbaked) cakes, noodles, rice cakes and crackers, other kinds of bread and confectionery, plant oils, organic fertilizers, animal oils, agar, starch, malt and bean sprouts, sugar, grape sugar and thick malt syrup and simple feed.

(2) Sundries

They include leather gloves, straw hats, furs and brooms.

(3) Basic Resources

They include fermented products and spices, and fall into two broad categories: raw material-products and processing crops.

Edible crops:

- Land-dependence, rural areas: mass production type
- Land-independence, suburban areas: R&D type
- Manual manufacturing techniques, rural areas: raw material-first processing type, and

- Mass production-technologies, suburban areas: raw material-second processing type.

As for the utilization requirements of regional resources, the availability of the following conditions should be confirmed:

- Local land conditions of cultivable acreage, suitable climate and ensured water for irrigation
- Agri-social conditions of equipment, facilities, farmers, agricultural experts(including regional supervisors), specialties (including the market), and
- High technology-related conditions of research and training agencies organized by the national government, ministries, and universities, industrial integration related to the second industries, industrial sites and sophisticated techniques.

The term of the mentioned industry means local industries utilizing mainly regional capital, techniques, human resources and materials, and consisting of a group of medium sized and smaller companies in given areas. The aim of promoting this type of industry is to identify a new regional industry, inject vitality into existing local industries, increase regional employment opportunities and contribute to the development of regional economy:

- To promote local medium-sized and smaller companies leading regional economy
- To create attractive local companies by developing and utilizing regional resources and traditional techniques
- To intensify regional employment and encourage the core companies, and
- To develop and enhance activated local companies suitable for changing economic climates, diverse demands and rapid technology innovation.

It is necessary to perform innovation and sophistication of technologies, mechanization and automation of production, formation of added value products and liberalization of dealing in edible crops and processing crops.

In the Central Regions, there are rice, maize, barley, millet, sweet potato, potato and cassava as edible crops, soybean, peanut and sugar cane as processing crops, coffee, rubber, pepper and tea as plantation crops, and coconut, cashew, pineapple, mango, banana and grape as fruit crops. The promising crops in those areas, in particular, are sugar cane, tea, coffee, rubber, pepper. Furthermore there are sea pine, sandal wood, pine tree, cinnamon tree, bamboo, firewood, eucalyptus and rubber tree as forest products, and cinnamon tree, eucalyptus and rubber tree are encouraging. In the field of fishery products, shrimp culture is extensively carried on in river mouth, lagoons, swamps, and a variety of marine products, such as cattle fish, squid, sardine, tuna and bonito, are landed in sea areas. On the other hand, there are minerals including lime stone, white clay, graphite, zinc, titan, mica, mineral water and silica sand, and limestone, silica sand and mineral water is mainly known among them.

Industrialization by utilizing these various resources is proceeding, but it is important to systematically review them and aim at becoming the largest producer of these items.

8.7.7 The Direction of Development of Value-Added Industry

In the Central Region, most industrial types are industries utilizing regional resources, but little integration of value-added industries. The future industrial development is certainly moving toward value-added industrialization, heavily depending on the nationwide change of industrial structures.

In these areas, therefore, it is necessary to foster the value-added industrialization of those conventional industries, and develop the industries supporting the desired added values and adopt value-added industries on the basis of a well-worked -out plan.

In the light of a value-added industry's location requirements, however, this industrial type might be developed in main provincial capitals, such as Da Nang, Quang Ngai, Hue and Dong Ha, at least for the time being. As for the value-added industrialization of conventional industries and other urban industries, it is necessary to provide techniques for encouraging the sophistication of existing products and the development of new ones, offer funding policies and economic aid by carefully inquiring current business status as top priority and giving regional or central experts advice and instruction for promoting value-added industrialization. When it is difficult to raise and upgrade conventional industries with the aim of realizing such industrialization, most of them are often broken up, shut down or merged into new value-added industries.

The most desirable measure is to realize a given sophistication of conventional industries, invite new value-added companies to set up their plants and encourage them to do local operation as business mergers or partners.

The local-side selection of value-added industries is usually carried out on a given base. It is important to select only industrial types meeting individual requirements in terms of software, system, specialty, fashion, feedback and flexibility. The following industrial types are promising;

(1) Software

(a) To provide high-quality, multi-featured and individual products, which attach greater importance to service

(b) To promote intensive, systematized and energy-saving manufacturing process.

(c) To enhance performance and function of hardware by advancing other available technologies.

(2) System

To create new capabilities by linkage and combination among heterogeneous industries and technologies.

(3) Specialty

To demonstrate its own quality, performance and function by intensive-technologies.

(4) Fashion

To produce marketable goods on the basis of sophisticated sense in response to changing public awareness and living environments.

(5) Feedback

To intensify organized relationship between the final demand segment and the intermediate materials and raw materials segment in order to fulfill the planning of new products and technological development.

(6) Flexibility

To assembly and process a wide variety of products flexibly and automatically based on the variety of needs or to develop a production method which enables manufacturing and processing.

Various firms separated by industry, can evaluate themselves using these types of standards. This type of self-evaluation can also be done even on a regional level. Clarify the classifications of firms within the region. The introduction of other firms and industries which can aid enterprises already located in the region and lure interested exterior firms, and plan on where to locate within the region. For the purpose of inviting them, the local government, the chamber of commerce and other organizations should do research to identify corporate performance in the region, compile the findings into a list of value-added industries and make the best use of it for broad propaganda.

The high value-added industrial sector has a great difference of price between raw materials and intermediate and final products dealt by the business line. If it meets the above requirements, it will be the most ideal sector. In practice, however, it is such business line is limited. The one challenge for Viet Nam is to ensure employment opportunities and jobs. In general, the high amount of added value and the low one are estimated respectively on a per-business basis, on a per-sales of products basis, on a per-employee basis or on a per-plant's floor space basis. For exsample, Japan's case, the ranking is shown by the amount of added value (see Table 8-20). Also in Viet Nam, in future, it may be desired to focus on carefully inquiring with the manufacturing industry, identify what sector of industry produces high value added, and utilize the findings as information for a sophisticated extension of the industrial structure.

Table 8-20 Ranking of each Kind of Industries with Added Value per Employee

No.	Item	No.	Item	No.	Item
1	Petroleum refinery	50	Pulp	99	Clay refractors
2	Tobacco manufacturing	51	Non-ferrous foundries	100	Miscellaneous non-ferrous metal products
3	Soft drinks and carbonated water	52	Iron castings	101	Measuring instruments, etc.
4	Drugs and medicines	53	Textile machinery	102	Leather tanning and finishing
5	Animal and vegetable oils and fats	54	Secondary non-ferrous metals smelting	103	Miscellaneous rubber products
6	Industrial organic chemicals	55	Air craft and parts	104	Stamped and pressed products
7	Alcoholic beverage	56	Coated and glazed paper	105	Pens, pencils, and stationery
8	Miscellaneous chemical and allied products	57	Plastic plates, bars, tubes etc.	106	Electric generator, etc.
9	Iron industries with blast furnaces	58	Non-ferrous metals rolling mills	107	Miscellaneous fabricated metal products
10	Publishing industry	59	Compounding plastic materials	108	Bakery and confectionery products
11	Newspaper industry	60	Paper products	109	Lace and other textile goods
12	Soaps detergents, paints, etc.	61	Special industry machinery	110	Plywood and prefab-wood products
13	Sugar processing	62	Fabricated wire products	111	Dyed and finished textile
14	Industrial inorganic chemical	63	Miscellaneous chemical and allied products	112	Powder metallurgy, plating and heat treating
15	Steel with rolling facilities	64	Bolts, nuts, rivets screws and wood screws	113	Woven fabric mills
16	Seasonings	65	Electric bulves and lighting fixtures	114	Saving and planning mills and wood
17	Computer equipment and accessories	66	Railroad equipments and parts	115	Electronic equipment
18	Ordnance and accessories	67	Heating apparatus and plumbing	116	Various electronic parts
19	Prepared animal feeds and organic	68	Miscellaneous plastic products	117	Surveying instruments
20	Boilers, engines and turbines	69	Plastic films, etc.	118	Ophthalmic goods, including frames
21	Tin cans and other plated sheet products	70	Miscellaneous iron and steel	119	Pottery and related products
22	Flour and grain mill products	71	Abrasive products	120	Sliding doors and screens
23	Tires and inner tubes	72	Other manufacturing 1, 2	121	Handbags and small leather goods
24	Toys and sporting goods	73	Medical instrument and apparatus	122	Miscellaneous fabricated textile products
25	Chemical fibers	74	Foamed and reinforce plastics products	123	Plate making for printing
26	Paper	75	Coke	124	Twisting and bulky yarns
27	Chemical fertilizers	76	Agricultural machinery and equipment	125	Watched, clocks and parts
28	Bicycles and parts	77	Other electrical machinery	126	Watches, clock and parts
29	Steel materials and rolling mills	78	Communication equipment and related products	127	Fur apparel and apparel accessories
30	Household electric appliances	79	Paper containers	128	Optical instruments and lenses
31	Glass and its products	80	Miscellaneous transportation equipment	129	Seafood processing
32	Coated steel	81	Steel forging and casting	130	Furniture for religious purposes
33	Fabricated metal products	82	Miscellaneous furniture and fixtures	131	Miscellaneous food and related products
34	Musical instruments and phonograph records	83	Electric wire and cable	132	Luggage
35	Manufactured ice	84	Publishing industry	133	Leather footwear
36	Tea and coffee	85	Miscellaneous machinery and machine parts	134	Canned and pressed fruit and vegetable
37	Cement and its products	86	Metal working machinery	135	Miscellaneous wood products
38	Construction and mining machine	87	Electric measuring instruments	136	Iron casting
39	Aggregate and stone products	88	Live-stock products	137	Wooden containers
40	Ship building and repair and marine engine	89	Electric measuring instruments	138	Mechanical leather products
41	Primary non-ferrous metals smelting	90	Precious metal products	139	Lacquer ware
42	Iron smelting without blast furnaces	91	Physical and chemical instruments	140	Briquettes and briquette balls
43	Other ceramic stone and clay products	92	Miscellaneous textile mills products	141	Spinning mills
44	General industry machinery and machine parts	93	Office equipment and household machines	142	Knitting mills
45	Carbon and graphite products	94	Costume jewelry, etc.	143	Miscellaneous textile, apparel, etc.
46	Luggage	95	Furniture	144	Fur apparel and apparel accessories
47	Lubricating oils and greases	96	Tableware, cutlery, hand tools, etc.	145	Outer garment except Japanese style
48	Motor vehicles, parts and accessories	97	Industrial plastic products	146	Boot and shoe cut stock and findings
49	Paving materials	98	Structural clay products	147	White shirt and underwear

Average of total kind of industry 127,200 Ten thousand yen

* No.1 Petroleum refinery to No. Plastic plates, bars, tubes, etc. :More than average
* Petroleum refinery: US$ 613,500, Plastic plates, bars, tubes, etc. : US$ 127,400
* Minimum ranking: White shirt and underwear: 370 ten thousand yen

Source: JICA Study Team

8.8 MINERAL RESOURCES

The government expects that development of mineral resources could contribute to the socio-economic development in Viet Nam (see Figure 8-12). At present, most of the mineral resources are not developed with some exceptions.

The Vietnamese Government proclaimed the Ordinance on Mineral Resources and Concerning Regulation I as a decree of the Cabinet Minister's Council. In the decree, basic regulations on search, investigation, development, production and conservation are prepared, and foreign investment is introduced to development of the all types of mineral resources. In March 15, 1996, the National Assembly adopted the New Mining Law to promote mineral development. An outline of the Ordinance on Mineral Resources is shown in Table 8-21.

8.9 EDUCATION AND TRAINING OF HUMAN RESOURCES

8.9.1 Present Situation

Through industrial sector development, immediate effects on activation and promotion of regional economy and creation of employment are expected. Human resource development is a key for smooth industrial development.

The education system in Viet Nam comprises pre-school education (nursery, kindergarten), general education (primary school, junior-high school, senior-high school), higher-education (university, college). As to vocational education, there are Secondary Technical Schools, Vocational Training Schools and Vocational Training Centers. In 1994, the number of Secondary Technical School was 366, and Vocational Training Schools 203 (see Table 8-15). The 200 Vocational Training Centers are operated either by the public or private sector. The purpose of Secondary Technical Schools is to train engineers and skilled labors who work as site supervisors and middle management. General subjects of junior high schools are also taught as well as vocational training. The purpose of the Vocational Training Schools is also to train engineers and skilled labors, and an emphasis of the course is placed on site training. The training courses are as follows;

- Secondary Technical School; Agriculture/Fishery, Industry, Commerce, Pharmacy/Health and Physical Education, Education/Culture/Art.
- Vocational Training School; Agriculture/Fishery, Electric Machinery/Machinery, Construction, Commerce, Telecommunication/Post.

The diversified courses are offered in Secondary Technical Schools, while the courses in Vocational Training Schools, are for specific technical training, such as mechanical and metal processing, electricity, construction/wood processing and repair. The Vocational Training Centers aim to at diffusing an elementary level of vocational-technical training, and most of them are operated privately. Half of the Secondary Schools and the Vocational Training Schools belong to the relevant departments of the central government, and the rest belongs to the local governments.

Figure 8-12 Mineral Resources Location Map

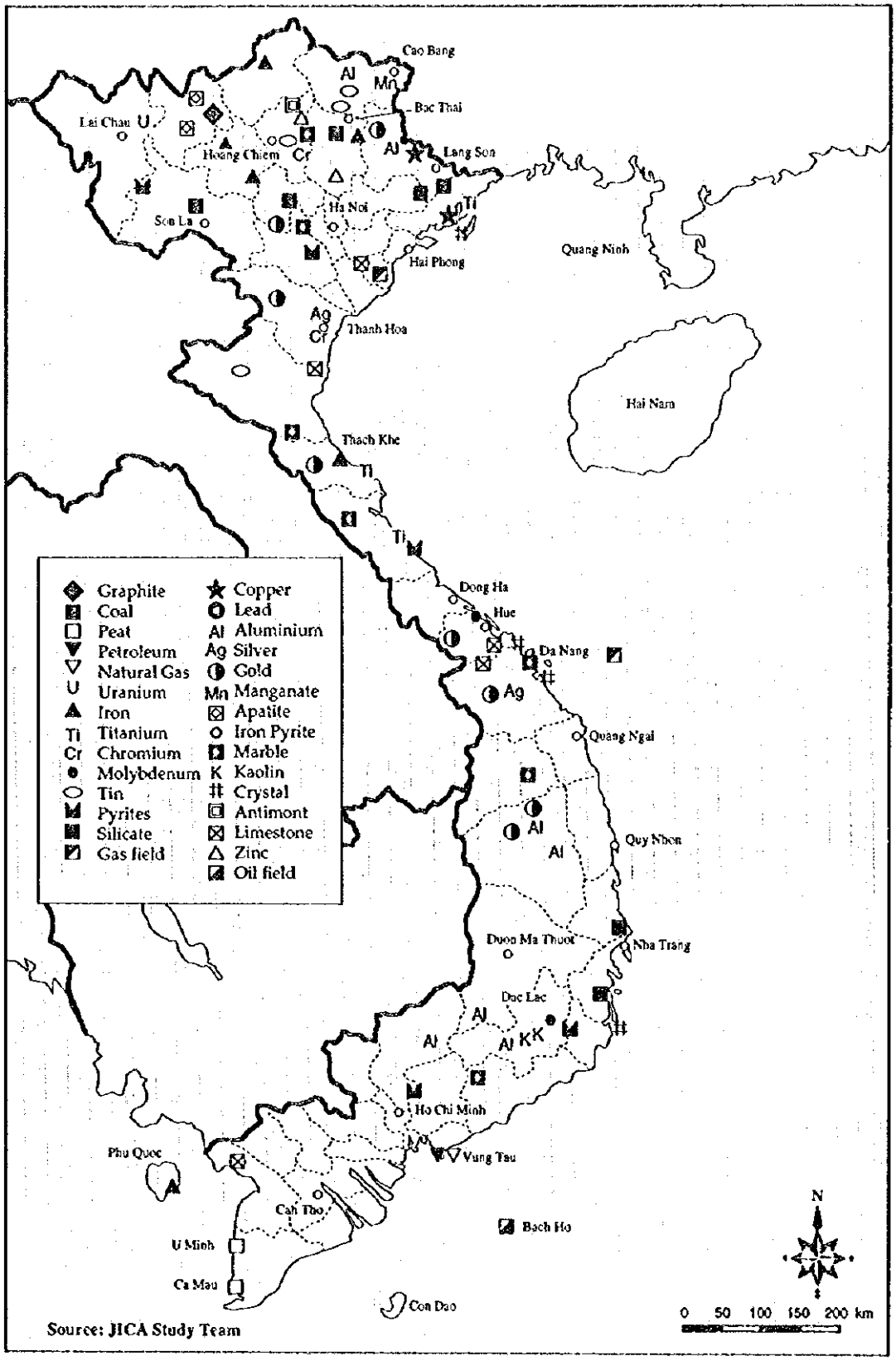


Table 8-21 Mineral Resources (1/2)

Resources	Coal	Petroleum
Eastimated Amount	(Gov't estimate) 3-3.5 billion tons (Confirmed Estimate) Quang Ninh: 65 billion ton, Nong Son: 25,000 thousound tons, Thai Nguyen: 90,000 thousand tons (Bituminous Coal) Nghe Tinh River & Da River : 25,000 thousand tons (Peat) South Mekon Delta : 5 million tons Tong King Bay: large amount, varieties of coals discovered, but the mining cost is too high	(IMF estimate) 25 billion barrels Total area: 500 thousand km2 Major field: Bach Ho (White Tiger), Red River, Mekong River, Chau Tho, Mekong River Delta, South Con Son Island, Vung Tau, Tonkin Gulf, Hue and Ha Noi
Production	Planned Capacity: 8.8 mill. tons/year 1988: 6.9 mill. tons/year 1989: 3.8 mill. tons/year 1981-1990: 4,500-6,000 thousand tons (total) Production Method: open cast: 60%, underground mines: 40% Reasons of lower production: outdated transport equipments, shortage in freight car, small port capacity Export: Japan, Korea: 500-700 thousand tons (to be increased to 1.2-1.5 mill. tons in the plan)	Production Agreement with USSR (1981) 1986: 40,000 tons, 1987: 280,000 tons, 1988: 680,000 tons, 1989: 15 mill. tons) 1990 target: 25 mill. tons, 1991-1995 target: 20 - 23 mill. tons Crude oil production: the initial stage JV (USSR & Petro Vietnam) : 5-6 mill. tons White Tiger oil field (1990: 90,000 BPSD, 1991: export 4 mill. tons) Dragon oil field (100,000 BPSD), Big Bear oil deposit (40,000 BPSD)
Demand	Domestic electricity: 6,000 thousand tons	Domestic Fuel Consumption: 5-5.3 mil. tons (1996) Oil Process Import: 2.5 mil. tons/year
Development Plan	Production: 8.5 mill. tons for export to E. Asia Investment cost for 5 years at main 3-5 mines: 250-300 mill.USD (for material handling, coal stacking transportation equipment, port development)	100% foreign capital approved: 12 foregin capitals have agreements with Petro Vietnam. 10 milti tons of production will be expected in the late 1990s. As production and export are in increse, profits are rising and infrastructure investment cost is recovered. Issues: Infrastructure for oil dev., especially port, is not sufficient.

Source: JICA Study Team

Table 8-21 Mineral Resources (2/2)

Resources	Natural Gas	Bauxite	Iron Ore
Eastimated Amount	(Gov't estimate) 110 bill. m3 (another estimate) 500 billion m3 Major field: Gulf of Siam (Foreign capital exports for industrial use) Tien Hai: Pipeline Red River Delta: Investigation planned	3 bill. tons 2 types of Bauxite in Viet Nam Field of Permian type: Lang Son, Cao Bang Field of Lateritic type: Buon Ma Thuot Majority of fields is in the south	7 billion tons 240 fields (total) : majority of fields is in the north Major fields: Ha Tinh/Ngh Tinh provinces Thach Khe: 544 mill. tons (confirmed) Quy Xa: 119 mill. tons (confirmed) 1979: 100,000 tons 1980: 60,000 tons 1989: 75,000 tons 1995 target production in the north: 200,000tons Actual production:150, 000-170,000 tons
Development Plan	The gov't intends to develop gas pipeline in south, requified facility, LPG storage by foreign investment. In special,development of gas for electricity use is expected.	Gov't has intention to contruct a plant (100-150 thousand t/d)	Gov't has a production plan to be 1 million tons/year with foreign investment. Foreign investments are already induce to large-sized mills in Haiphong (VINASTEEL), Ba Ria-Vung Tan (VINAKYOEI), Thai Nguyen, Can Tho: Total production in 4 mills will be 860,000 tons/y
Other	Issues: Infrastructure for gas dev. is not sufficient.	Quality is high (contains 40-45% of aluminum)	Import: 400,000 tons

Source: JICA Study Team

Table 8-22 Development of Vocational, Technical and High Education of the Key Central Coast Economic Region (KCCER)

(1994/1995 School year)

Item	Number of schools (unit)	Number of Students (persons)	Number of Graduates (persons)
I. Vocational Education			
1. Whole country	203	69,700	64,900
2. 4 provinces of the KCCER of which:	30	23,946	13,642
Quang Tri	2	360	360
Thua Thien-Hue	15	8,203	8,203
Quang Nam-Da Nang	6	8,383	3,249
Quang Ngai	7	7,000	1,830
II. Technical Secondary Education			
1. Whole country	266	156,000	49,000
2. 4 provinces of the KCCER of which:	20	12,471	6,921
Quang Tri	2	734	299
Thua Thien-Hue	4	1,382	889
Quang Nam-Da Nang	11	7,920	4,380
Quang Ngai	3	2,435	1,353
III. High Education			
1. Whole country	105	260,000	37,000
2. 4 provinces of the KCCER of which:	15	24,814	3,830
Quang Tri	-	-	-
Thua Thien-Hue	7	7,338	1.413
Quang Nam-Da Nang	6	14,804	1,797
Quang Ngai	2	2,672	620
IV. Other type of Education			
1. Whole country	-	-	-
2. 4 provinces of the KCCER of which:	30	15,963	9,431
Quang Tri	-	-	-
Thua Thien-Hue	11	1,393	561
Quang Nam-Da Nang	18	12,820	8,670
Quang Ngai	1	1,750	200

Source: Statistical Yearbook, 1995

The training period at Secondary Technical School is either 3 years for a person which has completed the first half of secondary education or 2.5 years for a person completed the latter half of secondary education. Similarly, the training period at Vocational Training School is 2 years for a person which has completed the first half of secondary education or 1.5 years for a person which has completed the latter half of secondary education. Although the training periods of the two above institutions are similar, the educational level of students differs. 90% of the students at the Secondary Technical Schools are graduates of junior high school, but at the Vocational Training School the students completed junior high school are only 45% of them. In case of the Vocational Training Center, the training period is less than 6 months and usually about 3 months.

8.9.2 Issues on Vocational Training

As the industry circle expects much from Vocational Training Schools and Vocational Training Centers, vocational training is very important for comprehensive industrial development. In short, establishment of the Vocational Training School and Vocational Training Center in order to meet the requirements of industry should be examined for human resource development. The following are issues on vocational training.

- Upgrade of Teacher Quality

  Since Vocational Training is in disorder and not well integrated into the educational system, many teachers are those, who changed their jobs from the industry circle and are not trained as teachers. The upgrade of teachers' quality through fulfillment of teacher's training schools/centers is critical.

- Update of Educational Equipment/Facility

  Educational equipment/facility is outdated and in short supply. It is necessary to be updated and sufficient numbers of equipment/facility should be provided.

- Linkage with Industry

  Because of no linkage between industry and vocational training, graduates from vocational training institutes are not well absorbed into industry. In vocational training institutes, equipment/facility and teacher's quality are too insufficient to meet the requirements of industry. Curricular contents are diversified, and do not meet the reality of industry. In future, characteristics of each vocational school and each center should be defined.

Ordinance of Mineral Resources and Concerning Regulation

General

1. The Law attempts to "cover the field" in relation to the regulation of "mineral activities". All prior regulations relating to this subject are repealed (Article 65.3).
2. Mineral activities include prospecting, exploring, mining and processing of minerals.
3. The State will create "favorable conditions" for State owned enterprises to "take the leading role in mining and processing important minerals" (Article 5.2).
4. The Government will announce lists of minerals which are banned from export or restricted from import in any certain period of time (Article 5.4).
5. Mining and processing projects must take into account the needs of the local communities; the State will appropriate revenue collected from such projects for the benefit of local communities (Article 7).
6. The Government will announce areas where mining activities are prohibited (or temporarily prohibited) due to national defense, security, historical, cultural or other reasons in the public interest (Article 14).
7. Organizations conducting mineral activities must protect and rehabilitate the environment at their own expense, in accordance with an environmental impact assessment study (Article 16). Organizations are required to deposit some security with a Vietnamese bank or a foreign bank doing business in Viet Nam. This security will cover the cost of rehabilitating areas which will be explored (Article 27) or mined (Article 16).
8. Organizations which mine or process minerals should enter into land lease contracts (and, presumably, must pay land rental in addition to permit fees). Such contracts must be amended if part of the leased land is relinquished (in the case of a mine) and will terminate upon the expire of the mining or processing license (Article 17.1).
9. Organizations which prospect or explore for minerals do not need to enter into land lease contracts, unless such activities require "frequent use" of the land. In any event, compensation must be paid for any damage caused to the land (Article 17.2).
10. Organizations permitted to conduct mineral activities may be required to invest in upgrading related infrastructure facilities in conformity with the approved exploration proposal or feasibility study (Article 19.2).

Prospecting permits

11. Prospecting permits may be issued for periods of up to 12 months and may be renewed for up to 12 months more (Article 21.1). Such permits may be surrendered, but are not transferable (Article 21.3).
12. Subject to any specific requirements, a holder of a prospecting permit may remove specimens from a prospecting area and take them out of the country for testing (Article 22.3).
13. A holder of a prospecting permit must pay permit fees and submit a report on the results of prospecting before the expiry of the permit (Article 23).

Exploration permits

14. Exploration permits may be issued for periods of up to 24 months and may be renewed for up to 24 months more (Article 25.3). Such permits may be surrendered or transferred, and areas under permit may be relinquished (Article 26).
15. Subject to any specific requirements, a holder of an exploration permit may remove specimens from an exploration area and take them out of the country for testing and analysis (Article 26).
16. A holder of an exploration permit has the special right to apply for a mining permit in respect of the area covered by the exploration permit, provided they have complied with the terms of the exploration permit and with the law, and that they apply for a

mining permit within 6 months of the expiry of the exploration permit (Articles 26.4 and 31).

17. A holder of an exploration permit must pay permit fees and submit a report on the results of exploration before the expiry of the permit (Article 27).

18. Estimated exploration costs must not be less than the minimum costs prescribed by the Government. In the event that actual costs are less than such prescribed minimum costs, the permit holder must pay the difference to the State (Article 28).

19. Exploration permits may be withdrawn if, amongst other things, the permit holder fails to commence exploration within 6 months of the date stipulated by the permit (Article 29).

Mining permits

20. For projects involving foreign investment, mining permits are issued by the Ministry of Industry concurrently with, or following, the issue of an investment license by the Ministry of Planning and Investment (Article 31.4). A mining permit may have a duration of up to 30 years, extendible by up to 20 years. Such permits may be surrendered or transferred, and areas under permit may be relinquished (Article 31.3).

21. A holder of a mining permit may mine, process and explore within the permit area (Article 32).

22. A holder of a mining permit must pay permit fees and royalties (Article 34), conduct mining operations in accordance with the feasibility study and the approved environmental impact assessment study and comply with certain reporting requirements (Article 33).

23. Mining permits may be withdrawn if, amongst other things, the permit holder fails to commence mining within 12 months of the date stipulated in the permit or if the investment license is withdrawn (Article 39).

24. A permit holder (whether prospecting, exploring, mining or processing) may lodge a complaint or commence legal proceedings in respect of a decision to withdraw a permit.

25. The mining of "common" construction minerals is subject to the provisions in the Law relating to mining, The Government will announce a list of common construction minerals and cases where the license on exploring these minerals is not required.

Processing permits

26. A processing permit authorizes the holder of such a permit to purchase minerals, import equipment, conduct processing activities and sell processed minerals within, and outside of, Viet Nam. Such permits may be surrendered or transferred (Article 45).

27. A holder of a processing permit must pay permit fees and taxes (Article 46).

Individual mining permits

28. Vietnamese organizations may be issued with an "individual mining permit" lasting 3 years, extendible by up to 2 years, in respect of areas where mining is considered to be commercially unviable.

Detailed implementing regulations and guidelines are require in order to clarify many details which are not addressed in the Mineral Law.

CHAPTER 9 FOREIGN DIRECT INVESTMENT

9.1 INTERVIEW SURVEY ON FOREIGN DIRECT INVESTMENT

9.1.1 Background to and Objectives for the Interview Survey

1) Background to the Interview Survey

Viet Nam is enjoying much foreign direct investment (FDI) after the Doi Moi Policy in 1986. This FDI is mainly towards to the southern part of Viet Nam, especially in Ho Chi Minh (HCM) and the northern part of Viet Nam, especially in Ha Noi. The reasons of the preference of FDI in the south are:

- The entrepreneurs are familiar with the market economy
- Market size of the southern part is very huge, and
- The infrastructure is well developed and/or under development.

The FDI to the northern part is led by the Vietnamese government. The industrial estates (IEs) and industries are under development in Ha Noi and Hai Phong.

Up to now, three out the four central provinces namely Quang Tri, Thua Thien-Hue and Quang Ngai have not received much FDI to their manufacturing industrial sectors. Most of the manufacturing investments have been made in either the south provinces or the north provinces.

2) The Objective of Interview Survey

Given that background, the central parts of Viet Nam should invite much more FDI for improving their economical base. The objectives of this interview survey have been establishment and creation of FDI circumstances in the Central Region and introducing more FDI into the Central Region.

9.1.2 Survey Contents and Method

The interview surveys have been conducted in Viet Nam and in Japan.

1) Interview Survey in Viet Nam

The survey's target areas in Viet Nam were Ha Noi, Quang Tri, Thua Thien-Hue, Quang Nam-Da Nang, Quang Ngai, HCM and Hai Phong. The target enterprises were selected from potential industries, namely machinery industries, metal processing industries, electrical and electronic industries, building material industries, textile and garment industries, chemical and plastic industries and so on. The legal forms of industries were mainly domestic enterprises, but also joint ventures (J/V) and foreign enterprises.

The interview survey was conducted by foreign staff directly through office and factory visits. The major questions were as follows:

- General information on the enterprise

- The management of the enterprise
- The production technology of the enterprise
- The market for their products
- The relationship with FDI, and
- The advantages and disadvantages of the Central Region.

2) Survey in Japan

The interview survey in Japan was conducted after the survey in Viet Nam in the same manner. The target enterprises were automobile industries, steel making industries, machinery industries, petroleum and petrochemical industries and business associations of the related industries.

9.1.3 Interviewed Enterprises and Associations

The interview surveys were undertaken in Viet Nam and Japan. The total number of interviews in Viet Nam was 60. Among those, machine and tool, metal processing, textile and garment and shoes' industries occupied 60 % of enterprises. In Japan, 30 enterprises and business association were interviewed. At that time, oil refinery industries, petrochemical and plastic industries, steel making industries and automobile assemblers were the main target, because there was a request from the Vietnamese side for these industries as a potential investment into the Central Region through the surveying in Viet Nam. The interviewed numbers in both countries are shown in Table 9.1 and Table 9.2.

Table 9.1 Interview Survey in Viet Nam

No.	Item	Number of enterprises
1	Oil	1
2	Chemical & plastic	6
3	Machine & tool	12
4	Metal processing	12
5	Electric & electronics	6
6	Building materials	4
7	Glass products	1
8	Foodstuffs	4
9	Textile, garment & shoes	11
10	Wood products	1
11	Developer	2
Total		60

Surce: JICA Study Team

Table 9.2 Interview Survey in Japan

No.	Item	Number of enterprises
1	Oil	3
2	Chemical & plastic	2
3	Steel	4
4	Car	1
5	Power	2
6	Service	5
7	Wood	3
8	Food	3
9	Textile	1
10	Electronics	1
11	Business Association	5
Total		30

Source JICA Study Team

9.2 EXISTING CONDITIONS AND CONSTRAINTS IN VIET NAM

During the interview survey in Viet Nam, nobody doubted that the Central Region of Viet Nam will become the third growth pole in the national development corridor. However, at this moment, entrepreneurs are trying to enter the south and north triangle potential market first.

Among the central four provinces, Quang Nam-Da Nang Province is practically the only province that received a significant amount of FDI in the manufacturing sector. According to the Industrial Department of Quang Nam-Da Nang, most of the FDI in this province is related to light industries, such as textile, garments, shoes, cigarette, soft drink and so on. A few heavy and chemical producers have also established J/Vs with foreign partners. Ship breaking, industrial plastic productions are examples. However, the total amount of FDI to these sectors is small.

The answers from the entrepreneurs in the interview survey are mainly divided into eight categories, namely, (1) market, (2) production, (3) products, (4) loan, (5) related contents with policy changes, (6) information, (7) business association and (8) comments on the Central Region.

9.2.1 Market

1) Competition with Chinese Products

Regarding the market situation, the main answers from entrepreneurs were related to cost competition with Chinese products. The Chinese products are cheaper than the Vietnamese made and some products are smuggled through the land border and seacoast border. The Vietnamese products are becoming weak in the competition with Chinese products. Some enterprises answered that they stopped producing their original products and changed their production lines to other consumer product. Even though the Chinese products are mainly consumer goods the market is filled with Chinese products.

2) Competition with Russian Products

There were three answers that imported products from Russia have increased recently, too. Iron and steel products are imported with dumping prices. This is because the Russian economy is in a difficult stage nowadays and their market is becoming very small. Some Vietnamese enterprises are trying to sell their products to the Russian market. However, actually they are facing difficulties in this market.

Enterprises developed their markets in the European Union (EU) and Asian countries instead of socialist countries. However, those enterprises are not so many. All most all enterprises aim at the Vietnamese market mainly at the southern and northern markets.

Other interesting answers on the market situation were as follows:

- After service is very important for expanding their market, and
- Production capacity should be decided by market demand.

9.2.2 Production

There are three main points, those are production facilities, production technology and production standard.

1) Production Facilities

The main answers on production technology were that enterprises are using old facilities imported from the former Soviet Union, Czechoslovakia, Poland and East Germany. These production facilities were introduced about twenty to thirty years ago. Those facilities are maintained well by the factory workers and they use that machinery well. However, it is impossible to compete with modern machinery that is imported from the EU, Japan and so on. Moreover, enterprises suggested that capability is very low and small.

2) Production Technology

Almost all entrepreneurs wish to enter into a J/V for getting production technology and capital. Some of the enterprises succeed in J/V with Japanese and Taiwanese enterprises. J/V is attractive in the southern region compared with the northern region, because there was an acceptance base for J/V in the southern regions.

3) Production Standard

Those J/V and technical cooperation companies are introducing new standards, such as company's technical standard, advanced countries' standard and International Organization for Standardization (ISO) 9000. In the production line, they are introducing technical meeting system, statistical quality control (SQC) system, training and vocational system and research and development (R&D) system. Those answers came mainly from the southern part of Viet Nam.

Other interesting answers on production were:

- Continuously receiving technical cooperation until stabilization of product quality
- The quality should be kept for succeeding in the competition with other enterprises
- Setting of emergency generator system
- Transportation cost is very high, and
- Workers hate dirty, hard work and dangerous jobs.

9.2.3 Products

Vietnamese are brand oriented people so they chose the company name and/or brand name when they buy products. People like Honda motorcycles very much, because of its quality and Honda's market share has increased to more than 80%. The Sony brand is also famous for its quality and high standard. That image is spread mainly by word of mouth communication.

The enterprises are always thinking about this brand oriented mind so that the original equipment manufacturing (OEM) is easy to adopt in Viet Nam. Some local enterprises are trying to supply their own brand. However, they are niche market oriented. They produce black and white televisions and simple televisions without any functions. However, new brands and new technology products are very difficult to introduced in the market and it is takes two to three years.

Other interesting opinions were as follows:

- Expecting to introduce export standards, and
- Introducing a development and import method (DIM).

9.2.4 Loan (Finance)

Nearly half of the enterprises have applied for loans and they enjoy financial cooperation with banks. The succeeded enterprises have no problems to obtain short term loans as a monthly rate of 0.7% to 0.8% from the investment bank or another commercial bank. International enterprises claim that long term loan is also available at an annual rate of 8% to 9% for a 5 year term. Those enterprises that enjoying the term loans are excellent enterprises and they have a good relationship with the bank.

On the other hand, weak enterprises could not find any financing sources. They borrow the money from their workers. So they are complaining about the financial system. The reasons of financial problems for weak enterprises are as follows:

- Limitation of the national budget for finance
- Limitation of the loan capacity of commercial bank
- Commercial bank can finance to the enterprises within only 10% of its own equity
- Loan procedure is very difficult to understand for entrepreneur
- Financial proposal is very difficult to make and there is not enough skill
- Hardly check the proposed items in the bank
- The bank requires securities
- Long term loan is very difficult to borrow as compared to short term loan, and
- It is necessary to have an approval from prime minister for over US$ 40 million investment.

Some enterprises proposed financing from foreign banks or international development banks, but this is also difficult under the credit system in Viet Nam and the financial procedures. The most successful enterprises use their own profit and retained earnings and reinvest in their production facilities. Another financial source is the relationship between Vietnamese abroad and Chinese abroad. Anyway they request that the finance is the important item for enterprise.

9.2.5 Items Related to Policy Changes

From 1986, the Viet Nam Government introduced the Doi Moi policy (renovation policy). Related with this new policy, state enterprises have a big change in their administrative organization and production system. Activities of enterprises, which are based on their own reliance, are as follows:

- Products should be decided by themselves
- New production technology and facilities should be introduced
- Market should be developed on their own responsibility, and
- Responsible for their total management.

Some enterprises lose their market and finally they change their product. In the worst case, the big engineering factory produces handmade rattan partition products as a side business. Before the adoption of the new policy, manufacturing industries only produced their product under the direction of the government decision. However, after introduction of this policy, they do not have any idea how to change their total system. They get into the vicious cycle of losing the market, reducing production and dismissing their laborforce like wise.

Hence, enterprises are facing many problems:

- Issue of the industrial policy that does not fully support the enterprises
- Unclear policy and/or regulation
- Issue of the management staff

- Issue of the industrial production hierarchy
- Issue of market development, and
- Issue of job creation.

According to foreign investors, there are some difficulties:

- FDI law is not clear and it changes so many times
- Regulation is not clear and not the same interpretation with each People's Committee
- Local contents is unrealistic, and
- Suddenly change the taxation system and lose their profit.

However, there are active and lively enterprises. Those enterprises aim at changing to a new enterprise by business process re-engineering. Other enterprises aim at technical cooperation, J/V and the establishment of group enterprises.

9.2.6 Information

Regarding to the information items, partner and market is very important information for entrepreneurs.

1) Partner

The important information which they wish to have is information for the introduction of J/V partners. Some enterprises wish to cooperate with foreign partners through the economic relations office, planning division and Chamber of Commerce and Industry of Vietnam (VCCI). However, it is very difficult to have a J/V partner. Some enterprises already give up to find partners. Generally, those enterprises are weak one under any kind of activities.

2) Market

Market information for their products is the next important. Their market information sources are business relationship, customers, VCCI, sales office and so on. Also they are using those sources for their advertisement and mass communications network. Especially, electric and electronic industries are eager to obtain market information. However, new market development can not be obtained easily.

The remaining interesting replys from entrepreneurs were as follows:

- Wish to establish market and product information network
- Wish to make new market through information network, and
- Aiming to new technology information from the network.

9.2.7 Business Association

The business association is very useful for introduction of new technology, development of new products, development of the market and policy making for each industry in advanced countries. In Viet Nam, there are some business associations, namely plastic industries, telecommunications and electronics, fiber and synthetic fiber, vehicle industries, leather shoes and so on. Some business associations have many activities. However, more than half of the associations have no activities.

Details of the activities of associations in Viet Nam are as follows:

- Supply of product information
- Open the meeting and seminar for exchanged entrepreneurs opinions

- Publishing of specific magazines
- Hold exhibitions, and
- Supporting activities for investment.

9.2.8 Comments on the Central Region

The comments that relate to the Central Region from the local enterprises were collected through an interview survey. Nobody doubts that the Central Region is becoming important to the national economy as a one of the three growth poles in Viet Nam.

However, enterprises which are located in the north and south regions are very busy with their own activities and the economy of the Central Region is still very small. Some enterprises have conducted feasibility studies (F/S), but with no good result. However, they think that the Central Region will become great market within the next decade.

The comments on the Central Region from north and south entrepreneurs are mainly divided into four topics. Those topics were:

- Typhoons always hit and make a flood in this region
- Market capability in the Central Region is very low
- Lack of infrastructure, especially transportation and information networks, and
- The Central Region is the next national growth pole.

If the economy of the Central Region develops, as a first step, the entrepreneurs wish to establish their sales office in the Central Region.

9.3 TREND OF JAPANESE FDI BY INTERVIEW AND MOVEMENT OF ASIAN REGION

From January to February 1996, we conducted an interview survey with manufacturing enterprises and related associations for the foreign direct investment (FDI) to Viet Nam. From this interview survey, we could find the following issues and requests:

- Lack of adequate infrastructure, especially in the North and Central Region
- Director of enterprise should have economical knowledge
- Desire to large market and/or demand of products, and
- Desire for a clear legal frame.

Of course, these issues and requests of industries depend on the type of industries, but almost all investors have demands on these factors. The Japanese investors have a lot of information from various sources, such as tie-up bank, trading company, fellow company and investment related agency. This information of investment correspondence is spreaded by word of mouth easily and fast and it determines the way of thinking about Viet Nam.

The circumstance of the investment trend is not the same as that for the Asian Newly Industrialized Economies (NIEs) and the Association of Southeast Asian Nations (ASEAN). According to the interview survey in Japan, we could find that the trend of FDI has clearly changed with its background of investment circumstance. Hence, it is better to look carefully at FDI from Japan in the Asian region.

Including the past trend and new direction, the contents of the FDI interview survey results are classified into 12 categories. Those categories are (1) images of Viet Nam by Japanese investor, (2) investment mission from Japan, (3) investment condition in Viet Nam, (4) international specialization in the Asian region, (5) AFTA/CEPT, (6) automobile industries, (7) FDI by raw material industries, (8) market size and enterprise's size in the world, (9)

reinvestment in the Asian region, (10) product life circulation cycle of new products, (11) attraction of FDI of Japanese SMI, (12) trend of FDI from Japan and (13) FDI policy.

9.3.1 Images of Viet Nam by Japanese Investor

For Japanese entrepreneurs, Viet Nam and HCM is the same word. So if we are talking about Viet Nam, everybody is talking about HCM without any doubt. Compared with HCM, the next is Ha Noi and Hai Phong. However, only few investors are thinking about a central province such as Da Nang. The preference for investment location of the Japanese entrepreneur is to concentrate in the south.

The first image of a person is made by a lot of information of written material and oral communication. Before leaving their countries, investors have an image of their expectation. It is therefore needed to establish a good impression of the Central Region first.

9.3.2 Investment Mission from Japan

There are a lot of investment missions from Japan to Viet Nam, but the missions always skip the Central Region. Although they visited the Central Region, they did not come back again. This is because, there are few quantities of resources for economic scale of production for export and there is insufficient infrastructure. Japanese enterprises always think about scale merit, but unfortunately there are no natural resources and facilities which agree with their commercial production for export.

More infrastructure development is required for the introduction of investment and moreover the Central Region should send a lot of information to the outside, including foreign countries.

9.3.3 Investment Condition in Viet Nam

There is an investment law and regulations, but final investment conditions are decided by negotiations and sometimes the result are out of standard. This makes a complicated image of the law and the regulation for the investor. Moreover, it makes no clear image for foreign investors.

It is necessary to establish clear and fair investment conditions.

9.3.4 International Specialization in the Asian Region

1) Area Production and International Specialization

The NIEs and the ASEAN region received much investment from Japan. Among that regional investment, there are some investment from the same enterprises and/or same business group enterprises. Those group enterprises located in the different countries are producing specific products and there are specific functions by cooperation between group enterprises. In other words, one assembling enterprise collects raw materials, parts and components from different factories in the Asian region.

A few years ago, the production base was the point that one country has complete production line as an assembler. Japan plays as a supplier of the raw materials, parts and components. However, as mentioned before, the production base is becoming an area production system, such as international specialization.

Enterprises are becoming to play specialized function for the production system in the Asian region. Some electronic enterprises already established their own international production system in the Asian region. That is why, new investment from Japan has its own limitations.

2) Re-location Needs

Division of labor in the Asian region for each commodity item is developed by each manufacturing enterprise, especially in the household electric appliances industries. Maybe in the near future, household electric appliances industries will reach their peak investment in the Asian region. However, some relocation requirements remain.

The type of the relocation is as follows:

- Relocation towards the cheap labor cost countries
- Relocation for the change of production item to high value added products, and
- Concentrate as one special factory to reach the scale merit of the production process.

9.3.5 AFTA/CEPT

In the Association of Southeast Asian Nations (ASEAN) region, there is the ASEAN Free Trade Area (AFTA) concept and Viet Nam has registered with the Common Effective Preferential Tariff (CEPT) scheme. In CEPT, Viet Nam agreed to reduce their customs duties to between 0 % and 5 % until 2006 except for agricultural products.

Foreign enterprises for assembling are investing to Viet Nam and using their low labor advantage in the ASEAN region. The parts and components are available from other ASEAN countries nearly duty free in the near future. Also the, Japanese group enterprises encourage to establish their international production region and Viet Nam is becoming one of the production and/or assembling bases for international specialization.

Viet Nam has a chance to establish herself as an assembling base in the Asian region under the AFTA concept and introduces relocation industries.

9.3.6 Automobile Industries

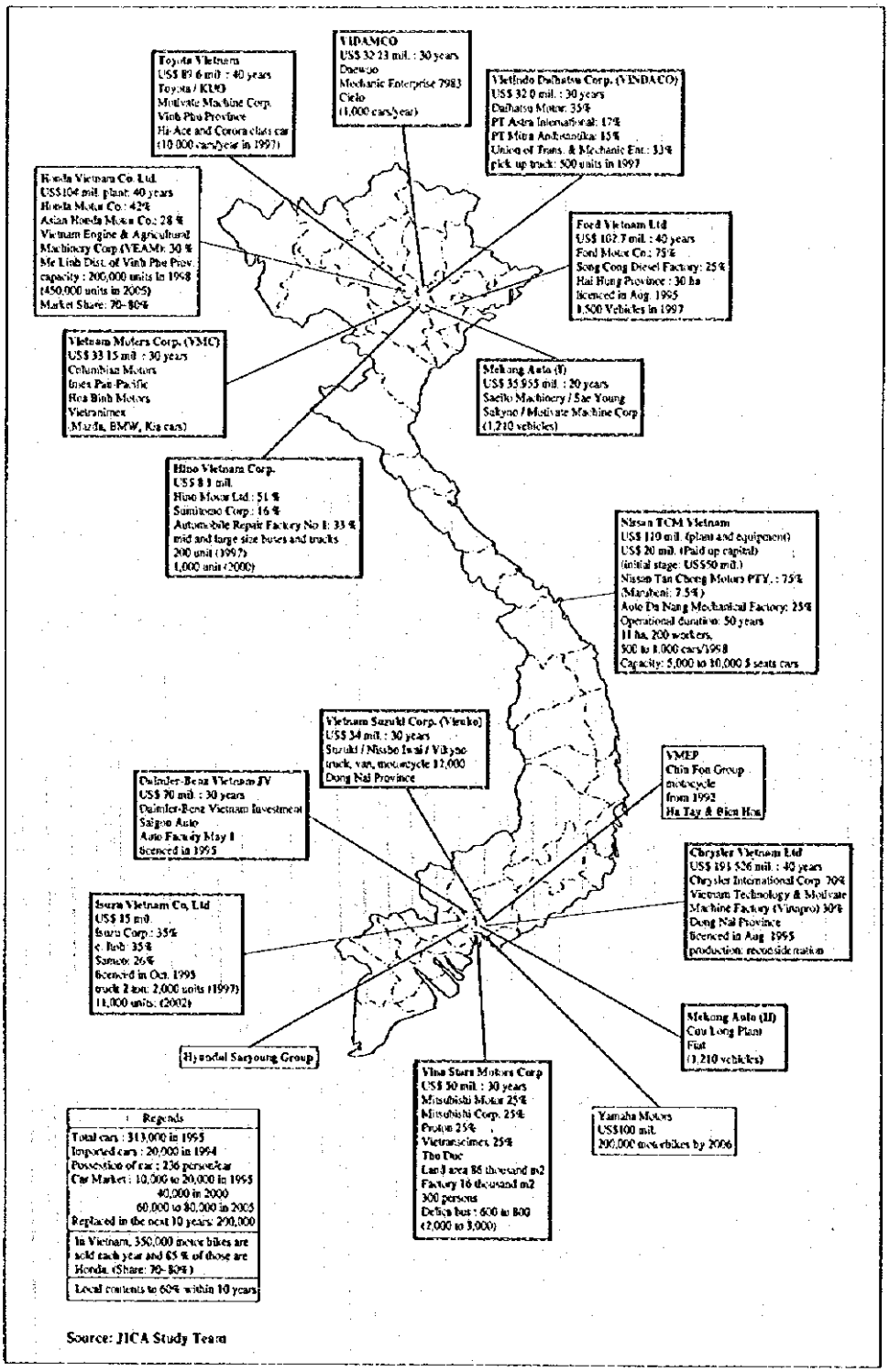
The automobile industries are the leading national industries in the world. However, there is a limitation of the automobile market size in the advanced countries and the market cannot be expected to expand in the advanced countries. So automobile makers are aiming at the Asian countries as a next growth region. Although they wish to sell their product to the Asian region, the market does not expand and grow rapidly. They are prospecting the long term future market in the Asian region.

The Vietnamese market is in the same condition, even though the population scale is 75 million people. The government of Viet Nam introduced fourteen car assembling industries. However, those manufactures are reconsidering their production schedule.

The automobile industries also make the division of their manufacturing system in the Asian region, but the demand of automobile is only 10,000 to 20,000 in Viet Nam. The automobile assembling industries in Viet Nam suffer from a small market and some automobile makers reduce their production volume. Moreover, the government of Viet Nam licensed fourteen automobile enterprises. Half of the automobile makers will be selected by the market within 2 to 3 years and finally the car assemblers will become 2 to 3 makers (see Figure 9-1). Also, the requested local contents of 60 % is very unrealistic.

Careful attention to the automobile industries is needed and full support by government assistance, because this industries could become the next important industries in Viet Nam.

Figure 9.1 Location of the Automobile Assemblers in Viet Nam



9.3.7 FDI of Raw Material Industries

The assembling industry for household electric apparatus is rushing to invest abroad and raw material makers lose their customers in Japan. The raw material supplier such as plastic and iron and steel industries are therefore relocating to the Asian countries. These industries are trying to find a relocation place, where there are huge markets for them. Those raw material industries are following the end user, such as automobile assemblers and plastic industries and so on.

There are two objectives of investment abroad by the basic chemical industries. One is obtaining raw materials and the second is to have an end user. Oil refinery is the former case and basic chemical industries are the latter case.

Steel making industries is investing abroad following the users, too. The biggest users are automobile industries followed by electrical industries. However, the establishment of iron and steel factory is difficult because of the huge capital requirements, so that, they invested downstream, such as reinforcement bars making plant. In developing countries, there is a lot of demand of this reinforcement bars for construction materials.

So there is a chance to introduce those raw material industries into Viet Nam.

9.3.8 Market Size and Enterprise's Size in the World

From 1980 up to now, there are lots of markets in advanced countries, because enterprises produce continuously high quality products and new concept products. Early adopters always support those new commodities and are leading the market. From the 1990s, China is becoming the latest huge market, because of her population. Asian countries aim at those markets. However, the market size is becoming limited. Consequently, hard competition prevails in each market and trade friction is also appeared. In those markets, there is severe competition.

Hence, each enterprise wishes to win this competition and they are changing their way of activity. They are looking for the scale economy in each industrial field. So that there are some movements that business cooperation between same business field, combination and merger and acquisition (M&A) such as aiming to the scale merit in each special field. Those movements appear one after another. Japanese giant Mitsubishi Chemical Co., Ltd. is one of those cases, however, American petrochemical industry is still a giant enterprise in the world.

9.3.9 Reinvestment in the Asian Region

Japanese companies were suffering from decreasing exports caused by the high Japanese Yen and they are advancing to invest abroad. Real internationalization takes place among Japanese companies. Also they understand that the enterprises should be internationalized.

They remit their profit to Japan. However, 43.3% of corporate tax is very high in Japan. So they are trying to reinvest their profit outside of Japan.

Large and advanced enterprises in the Asian region also reinvest their profit to the developing countries without remittance of profit to Japan. Corporate tax of Asian countries is lower than the Japanese one and more over they are trying to reinvest in the Asian region and make another profit.

9.3.10 Production Life Circulation Cycle of New Products

The market of consumer goods and/or livelihood products is very huge. Televisions and video recorders are included in those products. The products have adopted high technology and are

normally produced in Japan. Television took about twenty years to transfer its production line to Asian countries. However, the video tape recorder took only five years. Accordingly, the production base of high quality products is moving to the Asian countries, except for high technology and potential products.

Nowadays, high quality products are being manufactured in Asian developing countries. Because, production technology is advanced, it is very easy to make those products in every Asian country if they have good infrastructure, certain production facilities and knowledge.

Viet Nam also has a chance to invite those industries, if she concentrates on developing infrastructure in certain places.

9.3.11 Attraction of FDI of Japanese SMI

There are lot of small and medium scale industries (SMI) in Japan. The SMI produce many parts and components for large scale assemblers. The Japanese production structure system is made upon SMI. The Japanese SMI have much technology and techniques to manipulate the production machinery and produce parts and components. However, the most attractive industries invested already abroad so that the remaining SMI are mainly weak enterprises in Japan.

In the Asian countries, entrepreneurs understand that even if Japanese assembling maker invest in the countries, parts and components should be imported from Japan. If they introduce new parts production technology from Japanese SMI and facilitate new equipment, they could reduce production cost.

Recently, Japanese SMI that produce parts and components have been invited by the Newly Industrialization Economies (NIEs) and the Association of Southeast Asian Nations (ASEAN). If they could invite these SMI, they could have part of production technology and they can reduce their production cost and keep their competitiveness.

Those basic industries support big assembley makers. If one could introduce those basic industries to Viet Nam, they could support assembling industries in Viet Nam.

9.3.12 Trend of FDI from Japan

1) Overall Trend of Japanese FDI

There was some boom of FDI from Japan. From 1950 to 1970, Japanese enterprises were investing to the NIEs region. In the late 1980s, Japanese enterprises were investing to the ASEAN region, especially to Thailand.

Major enterprises invested abroad together with their business groups and/or subcontract enterprises. Nowadays, the investment boom has changed its direction to Viet Nam and China. The investment activities abroad from Japan are:

- In 1980's to now to ASEAN
- In early 1990's to now to China, and
- In mid of 1990's to now to Viet Nam, India and Myanmer.

China is the final biggest market of this century, so that foreign market oriented enterprises are investing to the coastal economic zones. Their absorptive capacities are very huge and market oriented industries are continuously investing in China. The other market oriented industries will move to India nowadays.

Viet Nam also experiences a FDI boom from NIEs, ASEAN and Japan. For the beginning, labor intensive industries invest to Viet Nam especially in the southern part. However, labor

costs are increasing and labor intensive industries are hesitant from high cost salary level. Hence, some of those enterprises evaluate the future perspective of labor costs between Viet Nam, Myanmar and other south Asian countries.

The labors intensive industries and agro based industries are starting to invest into Myanmar. Myanmar is the next investment target in the Asian countries. Myanmar is becoming the limelight for Japanese investors and Asian NIEs. The reasons of Japanese enterprises to invest in Myanmar are:

- The political problem is not so hard
- Cheap labor cost
- English is widely spoken in the country
- The regulation is not so difficult, and
- Some Japanese industrial estates (IE) have began to be established.

2) Japanese FDI by Business Group

Regarding large scale industries, they start their investment into Viet Nam. Those enterprises aim at the international specialization, the Vietnamese market and natural resources.

Among these activities in Viet Nam, there are some final huge movements that some group enterprises and major trading companies establish their IEs in Viet Nam. Those enterprises wish to invite business group enterprises and so on. Japanese major investors are already investing to the Asian region and making their production area network and international specialization including major SMI. These IEs movements are the final big investment from Japan and it is meeting the investment peak in Viet Nam within few years.

Nomura Hai Phong Industrial Zone is the first IE of those Japanese IE, so that every Japanese investor is watching their activities. However, Nomura was finally requested to invest into an additional power station, which was to be provided by the government before.

The movement of Japanese IEs development is generating the biggest and peak investment from Japan. It is therefore required to study the trend of Japanese investment and select the best industries that Viet Nam wishes to introduce.

9.3.13 FDI Policy

The foreign investment law was published by the government in 1986. At first, this law was similar to the one's of the Asian region. But later this law had a lot of minor changes. Entrepreneur mentioned in the interview survey that the law is very complicated, mixing the old and the new version.

Even there is a FDI law, the investment conditions and contents are decided by negotiation between the Vietnamese government and enterprises. That results sometimes in conditions less than required by the regulations. For example, sometimes the salary is less than the minimum wage regulation.

A clear and fair FDI policy would induce considerable amounts of investment.

9.4 PRESENT STATUS OF FDI

9.4.1 Trend of FDI

In 1988, FDI in Viet Nam comprised only 37 projects worth US$ 359 million. However in 1995 it increased to about eleven times of 404 projects and US$ 6,616 million (see Table 9.3).

Table 9.3 Investment Trend in Viet Nam

Year	No. of Project (nos.)	Accumulated (nos.)	Total Investment Capital (US$ 1,000)	Accumulated (US$ 1,000)
1988	37	37	359,000	359,000
1989	70	107	519,000	878,000
1990	109	216	592,000	1,470,000
1991	98	314	974,000	2,444,000
1992	193	507	1,926,100	4,370,100
1993	261	768	2,615,400	6,985,500
1994	340	1,108	3,721,700	10,707,200
1995	404	1,512	6,616,000	17,323,200
1996 (as of September 14 accumulation)	-	1,528	-	22,000,000

Source: Ministry of Planning and Investment

Especially, total investment capital of heavy industries is very high with about US$ 1.5 billion, second is tourism & hotel industries with US$ 882 million and third is light industries with US$ 549 million (see Table 9.4).

Total FDI as of September 1996 is 1,528 projects with US$ 22 billion total investment capital. The FDI in Viet Nam is increasingly headed by Taiwan with 260 projects and US$ 4 billion total capitals as of September 1996 (see Table 9.5). These investment activities are lead by Tan Thuan Export Processing Zone (EPZ). There are 118 committed enterprises with 36 operation and 22 under construction.

The second is Japanese investment with 156 projects and US$ 2.4 billion total capital. Japanese enterprises are investing into the Tan Thuan EPZ with 49 enterprises.

9.4.2 FDI to the Four Central Provinces

Viet Nam is attracting a lot of investment, however, the Central Region could not have enough FDI. Among those, Quang Nam-Da Nang attracted 46 projects worth US$ 557 million total capital as of September 1996. Meanwhile, Thua Thien-Hue received 6 projects and US$ 97 million total capital, Quang Ngai received 2 projects with US$ 5 million and Quang Tri received only 1 project with US$ 3.2 million.

Quang Nam-Da Nang is practically the only province that received a significant amount of foreign investment into the manufacturing sector. According to the Industrial Department of Quang Nam-Da Nang, most of foreign investments in this province is related to light industries, such as textile, garments, shoes, cigarette, soft drink and so on. A few heavy and chemical industries are established as a joint venture with foreign partners. Assembly of automobile, ship breaking and industrial plastic productions are examples, even though the total amounts of foreign investment to these sectors are small.

9.4.3 Present Condition of IEs and EPZ

There are many IEs and EPZs in Viet Nam. The attractive IEs and EPZs are mainly located in the southern region such as Tan Thuan EPZ, Bien Hoa IE and so on. (see Figure 9.2).

Table 9.4 Investment Trend by Line of Business in Viet Nam

Line of Business	1990		1991		1992		1993		1994		1995	
	No. of projects (nos.)	Investment Capital (US$ 1,000)	No. of projects (nos.)	Investment Capital (US$ 1,000)	No. of projects (nos.)	Investment Capital (US$ 1,000)	No. of projects (nos.)	Investment Capital (US$ 1,000)	No. of projects (nos.)	Investment Capital (US$ 1,000)	No. of projects (nos.)	Investment Capital (US$ 1,000)
Heavy Industry	-	-	-	-	39	617,600	51	769,500	59	578,000	80	1,510,889
Agriculture & Forest	37	173,000	49	493,000	20	73,600	35	73,500	34	220,200	39	277,199
Tourism & Hotel	36	245,000	58	512,000	27	301,400	33	585,800	29	583,500	23	882,363
Service	-	-	-	-	12	23,000	15	187,700	41	1,023,100	11	26,142
Transportation & Telecommunication	13	52,000	58	196,000	7	29,900	13	294,600	22	104,500	12	384,793
Light Industry	24	42,000	38	72,000	55	251,000	69	446,800	100	610,900	71	549,438
Aquaculture	9	115,000	31	174,000	7	16,600	9	13,600	9	52,000	12	28,691
Petroleum & Natural Gas	14	471,000	16	479,000	10	502,400	3	94,600	2	72,500	-	-
Machinery	12	19,000	15	54,000	-	-	-	-	-	-	-	-
Electric & Electronic	9	6,000	12	11,000	-	-	-	-	-	-	-	-
Mining	8	12,000	11	13,000	-	-	-	-	-	-	-	-
Construction	-	-	-	-	6	7,100	22	97,000	31	425,800	42	643,548
Finance	-	-	-	-	8	101,000	6	40,600	2	1,600	5	14,500
Culture & Education	-	-	-	-	1	100	5	11,700	10	19,600	14	121,778
Export & Import	-	-	-	-	1	2	-	-	-	-	-	-
Others	32	21,000	0	32,000	0	2,398	0	0	1	30,000	95	2,176,659
	194	1,156,000	238	2,036,000	193	1,926,100	261	2,615,400	340	3,721,700	404	6,616,000

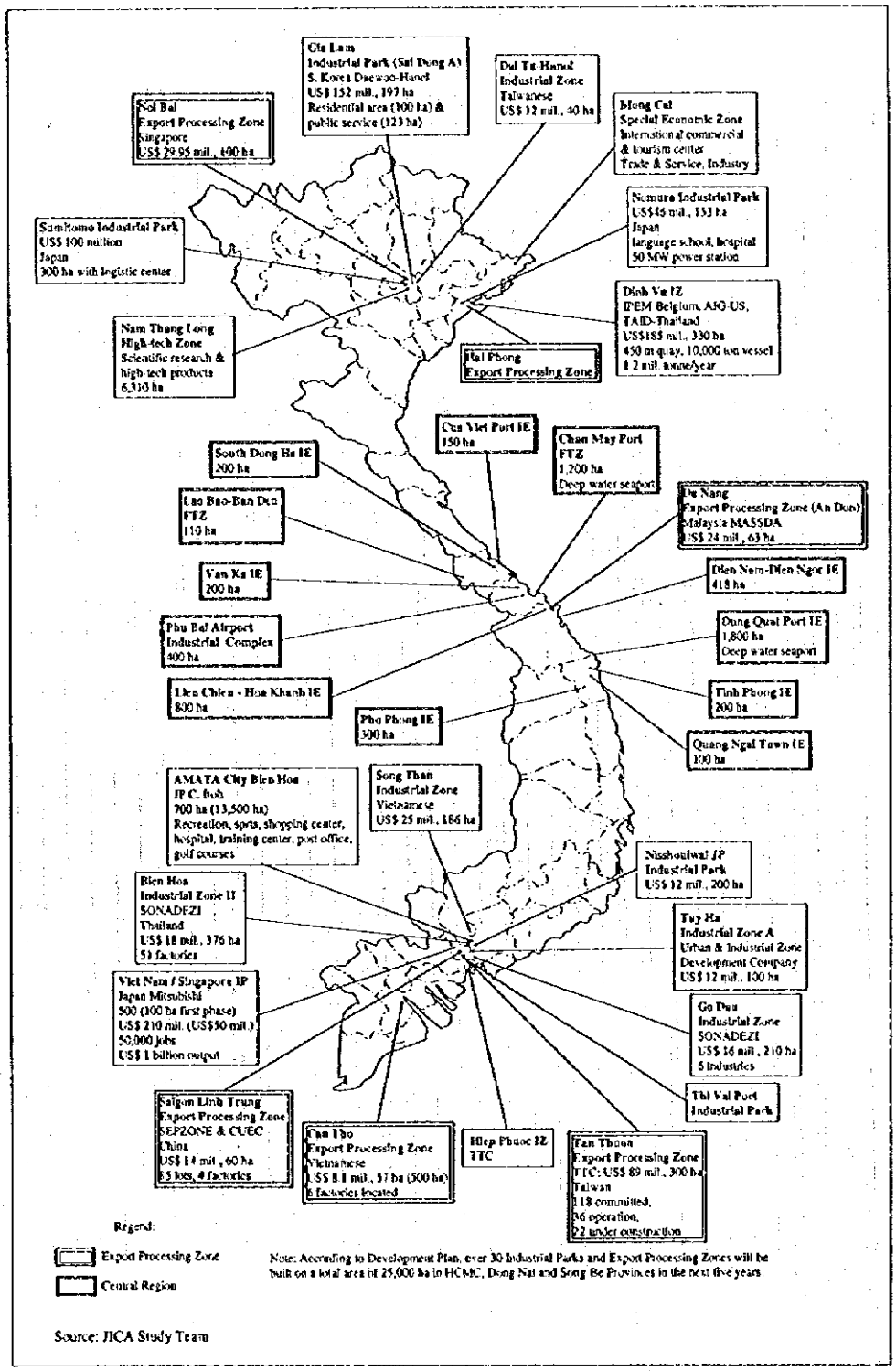
Source: Ministry of Planning and Investment

Table 9.5 Investment Trend by Countries in Viet Nam

Countries Name	1990		1991		1992		1993		1994		1995		1996 (as of September accumulation)	
	No. of projects (nos.)	Investment Capital (US$ 1,000)	No. of projects (nos.)	Investment Capital (US$ 1,000)	No. of projects (nos.)	Investment Capital (US$ 1,000)	No. of projects (nos.)	Investment Capital (US$ 1,000)	No. of projects (nos.)	Investment Capital (US$ 1,000)	No. of projects (nos.)	Investment Capital (US$ 1,000)	No. of projects (nos.)	Investment Capital (US$ 1,000)
Singapore	1	16,000	7	116,607	15	77,900	26	249,600	29	597,700	37	488,065	140	2,400,000
Hong Kong	61	134,900	69	273,600	40	219,200	35	402,100	48	546,800	-	-	187	2,300,000
Taiwan	14	69,600	33	441,000	26	529,600	44	403,600	64	365,400	53	1,152,305	260	4,000,000
Japan	11	89,200	18	96,100	11	220,700	15	76,200	27	332,500	46	1,145,833	156	2,400,000
S. Korea	1	4,000	6	40,078	9	77,900	37	371,100	42	265,200	46	557,851	166	2,000,000
USA	1	625	-	-	2	73,536	1	200	20	219,900	22	531,250	62	1,300,000
Malaysia	-	-	-	-	8	20,900	12	347,300	11	126,300	12	96,197	49	930,000
France	17	234,900	25	274,100	9	124,900	18	167,800	17	109,900	14	123,860	78	664,000
Australia	11	126,800	16	278,300	9	115,900	14	158,400	11	49,700	11	233,017	49	621,000
Netherlands	2	118,000	3	124,000	2	5,700	2	9,300	6	45,500	9	108,327	27	447,000
England	8	143,900	10	143,900	4	166,500	1	1,100	2	900	3	116,969	19	485,000
Vietnamese in Abroad	-	-	-	-	2	700	-	-	-	-	-	-	-	-
Former USSR	13	81,200	24	123,300	-	-	-	-	-	-	3	12,320	31	110,000
Canada	10	112,100	10	112,160	-	-	-	-	-	-	4	5,532	14	60,000
Others	44	147,575	67	89,115	56	292,664	56	428,700	63	1,061,900	484	2,044,474	290	4,283,000
Total	194	1,278,800	288	2,112,200	193	1,926,100	261	2,615,400	340	3,721,700	744	6,616,000	1,528	22,000,000

Source: Ministry of Planning and Investment

Figure 9.2 Major Industrial Estates and Export Processing Zones in Viet Nam



Source: JICA Study Team

In Da Nang City, there is one Export Processing Zone (EPZ) operated by a Malaysian management firm. The Da Nang EPZ is still under construction, but the first phase of the construction will be finished by October 1996. Currently one Malaysian candle producer has invested in Da Nang EPZ and already started operating. According to the management firm of the EPZ, over 100 foreign enterprises have shown some interests in the Da Nang EPZ, but until now only four enterprises have shown interest for application.

9.5 THE ISSUES AND CONSTRAINTS OF FDI IN THE CENTRAL REGION

Although, the Da Nang EPZ does not work well, other IEs and EPZs in Viet Nam are attracting FDI a lot. Those issues of FDI in the Central Region are related in (1) foreign investment law, (2) issue of the EPZ, (3) one stop service system and (4) technology with J/V.

9.5.1 Foreign Investment Law

The foreign investment law is changed too often and issue information is not submitted finally in written form. Every enterprise request written material. However, normally oral information is available to investors, so that each investor has a different impression and understanding.

That situation makes it more difficulty for attracting continuous FDI. Information is spread by word of mouth, and nobody is interested in this situation without any written material. Other IEs and/or EPZ is in the Asian region prepare well-coordinated systems and pamphlets.

It is requested that Viet Nam study those investment laws clearly and prepare proper information material. Such material should be delivered to the investors through a one stop window.

9.5.2 Issues of the EPZ

There is the Da Nang EPZ for export oriented manufacturing industries among six EPZ in the country. However this EPZ has only one candle industry located in it.

The performance of this EPZ is very low and the reasons are as follows:

- Approval of the project license was delayed
- Developing pace is very slow
- Handling capacity of Tien Sa Port is very low
- Access road condition to this EPZ is not good enough
- Required renovation and/or new bridge on the Han River from Da Nang City for commuter and access road, and
- Han river bridge is becoming bottle neck for using the Da Nang Airport.

9.5.3 One Stop Service System

Investment missions sometimes go to neighboring countries, such as Thailand, Myanmer and so on. For example, in Thailand, they have prepared complete investment information materials for investors through one stop service windows. They can collect such material easily and they can easily compare with each IEs and EPZs. Comparing with each item, the condition of Viet Nam is less attractive except for labor cost.

Reception windows for FDI in Viet Nam are difficult to understand for investors, because of few advertisements in Viet Nam and abroad. Even there is a EPZ Authority, there are other