

TABLES

	Page
1.1	Results of Sample Distribution and Collection A11
1.2	Characteristics of Samples A12
1.3	Seriousness of Problems between Sectoral Relations A14
1.4	Degree of Seriousness by Kind of Urban Problem and by Province A16
1.5	Degree of Seriousness by Kind of Urban Problem and by Municipality A21
2.1	Criteria of Ranking in Mobility of Overland Transportation A25
2.2	Scoring of Facilities for Regional Service A26
2.3	Items and Score for Research and Development Function Evaluation A27
2.4	Items and Score for Historical Evaluation A28
2.5	Items and Score for Strategic Industrialization/Development Potentials A29
2.6	Evaluation Items and Score for Spatial/Structural Significance A30
2.7	Center Analysis by Evaluation Factors A33

FIGURES

	Page
1.1	Deviation Pattern of Serious Problems by Province A14
2.1	Relation between Per Capita GDP of Urban Economy and Population Growth A24

ANNEX I. TERMS OF REFERENCE FOR PROPOSED FEASIBILITY STUDIES

1. TERMS OF REFERENCE FOR FEASIBILITY STUDY ON SURAT THANI URBAN DEVELOPMENT (DRAFT)

A. BACKGROUND

The Upper South is a priority subregion for the regional development toward the year 2000. Based on its resource advantage of having resource-rich hinterland and locational advantages of being at the mid-point between Bangkok and the South as well as facing both the Gulf of Thailand and the Andaman Sea, the subregion is expected to contribute significantly to expanding, industrializing and decentralizing the national economy. Under this perspective, urban development is very important particularly in linking primary resource-based activities in the hinterlands and external markets and capitals.

In the meantime, several regional cities have been growing steadily despite the persistent dominance of Bangkok over the national spatial system. It is in this context that the timely government input is awaited to make this new trend a turning point to the population decentralization. In the South, a "three growth poles structure" centering on the major urban centers of Songkhla/Hat Yai, Surat Thani and Phuket is recommended as a strategy for national urbanization.

In relation to the prospects of the Upper South subregional development and the national/regional urbanization, Surat Thani-Phun Phin Urban Area has a number of development potentials. First, it is situated at the center of existing and possible transport links, including the National Highway Route 41, many provincial highways converging into Surat Thani-Phun Phin Urban Area, the Southern Railway Line with a branch line starting at Phun Phin up to Khirirathanikom which is on the way to Phuket, Tha Thong Port and possible development of Khanom Deep Seaport. With this transport advantage, transport and distribution-related activities have been growing rapidly. Second, Surat Thani Urban Area has easy access to its hinterland endowed with various resources, including land, water and coast. Vast cultivated and cultivable lands are suitable for expanded oil palm plantations, rubber replantation, irrigation and other agricultural activities such as fruit and livestock production. The Tapi-Phun Duang River which flows across Surat Thani-Phun Phin Urban Area is the largest among rivers in the South. Fish farming productivity is high in Ban Don Bay because of fertile silt from the Tapi-Phun Duang Rivers. These potentials form a strong advantage of Surat Thani-Phun Phin Urban Area to attract the industries of resource-based type and those of which production is directed toward the whole southern market.

However, this Urban Area has many weaknesses mainly because it has grown rapidly only in a short period of time as road transport network was developed in the Upper South recently. Urban infrastructures are inadequate especially in water supply, drainage and urban streets.

Urban functions such as goods distribution, administration and education are not strong for the size of itself and its large hinterland. Surat Thani and Phun Phin at the distance of 12 kilometers each other have grown similarly as centers of goods distribution but on different transportation bases of Ban Don Port in Surat Thani and a railway station in Phun Phin. These two urban centers have not form a division of work yet to be a functionally unified twin city as a center of the Upper South.

It is, therefore, necessary to develop and expand Surat Thani-Phun Phin Urban Area with an emphasis or strengthening distribution function of the city by integrating existing and forthcoming transport facilities such as highways, by-passes, railroad and port. Development of efficient transport system such as truck terminal, warehouses, depots and bus terminal are needed for this purpose as well as for overcoming limited capacity of Tha Thong Port and stimulating industrial investments. Planned Urban Area will have to be expanded/improved to cover about 1,900 hectares of lands, or nearly two times as much the very limited space of existing Surat Thani Municipality and Phun Phin Sanitary District.

B. OBJECTIVES

It is the purpose of the Government of Thailand to strengthen the urban functions and physical structures of Surat Thani-Phun Phin Urban Area for the Upper South subregional development as well as the national urbanization strategy.

The main policy strategies of the Government are:

- 1) To develop the Surat Thani-Phun Phin Urban Area to function as an industrial and distribution center of the South by making use of locational advantage;
- 2) To strengthen industrial, urban economic and housing bases of the Surat Thani-Phun Phin Urban Area to be able to accommodate the urban population of 150,000 to 200,000 in the year 2000; and
- 3) To improve and enhance the urban attractiveness to induce investments and populations from outside the subregion.

Within this context, the basic objectives of the study is to determine the engineering, economic and financial feasibilities of the following urban projects to be implemented in the short/medium run:

- Distribution Business Center at Phun Phin Highway Junction,
- Tha Thong Port Supporting Area Development,
- Areal Prioritization in Telecommunication Development,
- Housing Complex Development,
- Interregional Bus Terminal Development,
- Redevelopment of Ban Dong Port Area,
- Urban Utility Systems Development, and
- Urban Streets Development.

C. SCOPE OF WORK

With reference to the projects specified above, the Consultant shall conduct the following works:

1) Plan Review

A number of studies have been undertaken for Surat Thani City, Changwat Surat Thani and the Upper South. The consultants shall familiarize themselves with previous studies and the contents of the structure plan for Surat Thani-Phun Phin Urban Area.

2) Survey and Data Collection

Information already available will be supplied to the Consultants. The Consultants shall undertake surveys necessary to determine scale, contents, location and layout of the projects. Data to be collected through the surveys include commodity flows, distribution and activities of establishments engaged in the transportation and trade activities, income distributions, housing market, existing land use and inventory of public facilities and utilities.

3) Preparation of Basic Design

Layout plans will be prepared for each project. Recommended layouts should be supported by calculations and stated design standards in order to justify the chosen design option.

4) Cost Estimates

Cost estimates shall be prepared based on estimated quantities and unit rates for all components. Costs shall be disaggregated between local and foreign portions.

5) Economic Analysis

The economic and social benefits attributable to the projects shall be identified and calculated. Many of the projects will have an impact extending over a wide area and many of the potential benefits will not be readily quantifiable in money terms. Where nonquantifiable benefits have been omitted from the analysis, they should be fully described.

6) Land Acquisition

A rolling program for land acquisition for the implementation of the projects shall be prepared. Where there are impediments to land acquisition by relevant agencies, these shall be clearly described and proposals for overcoming the identified constraints shall be formulated.

7) Project Implementation

The Consultant shall prepare a project implementation program with an emphasis on the allocation of responsibility for implementation and operation of the projects or components of the projects to appropriate agencies, including those at the local level and in the private sector.

8) Manpower and Training

The Consultants shall identify the manpower and staffing requirements of relevant agencies. Staffing, shortcomings and requirements for training programs shall be identified.

9) Financial Analysis

The financial analysis should include:

- (1) Financing plans showing the sources and uses of funds.
- (2) A pricing policy and cost recovery analysis indicating the rationale for setting charges and estimates of capital and recurrent costs to be recovered. The affordability of components to project beneficiaries shall be assessed.
- (3) An estimate of the financial rates of return.

10) Environmental Impact Evaluation

The environmental impact of projects shall be evaluated in accordance with the National Environmental Board's Manual of Guidelines. These Guidelines call for an initial environmental examination followed by preparation of an environmental impact statement if it is apparent that significant impacts will accompany a project.

D. STAFFING

The Study Team shall consist of experts at least in the following fields:

- (1) Regional planning
- (2) Urban planning
- (3) Transportation planning
- (4) Land use planning
- (5) Civil engineering
- (6) Architectural design
- (7) Regional/urban economic analysis

- (8) Project analysis
- (9) Sociology
- (10) Environmental assessment

2. TERMS OF REFERENCE FOR FEASIBILITY STUDY ON PHUKET URBAN DEVELOPMENT (DRAFT)

A. BACKGROUND

The Upper South is a priority subregion for the regional development toward the year 2000. Based on its resource advantage of having resource-rich hinterland and locational advantages of being at the mid-point between Bangkok and the South as well as facing both the Gulf of Thailand and the Andaman Sea, the subregion is expected to contribute significantly to expanding, industrializing and decentralizing the national economy. Under this perspective, urban development is very important particularly in linking primary resource-based activities in the hinterlands and external markets and capitals.

In the meantime, several regional cities have been growing steadily despite the persistent dominance of Bangkok over the national spatial system. It is in this context that the timely government input is awaited to make this new trend a turning point to the population decentralization. In the South, a "three growth poles structure" centering on the major urban centers of Songkhla /Hat Yai, Phuket and Surat Thani is recommended as a strategy for national urbanization.

In relation to the prospects of the Upper South subregional development and the national/regional urbanization, Phuket Urban Area has a number of development potentials. First, Phuket is the largest city among those on the coast of the Andaman Sea. It can be a gateway of Thailand to the overseas west. It will have an international deep seaport by the end of the Fifth Five-Year Plan period. The port will serve for the Upper South in the short-run and possibly the whole country in the long-run as far as the goods to and from the overseas west are concerned, thereby attracting goods flows and business opportunities. In addition, Phuket Urban Area has, in its vicinity, an international airport with direct access to Bangkok, Singapore, Penang and Songkhla. It is a source to attract tourists and such potential activities as international trading, export industries and technology research development.

Second, Phuket Island has the natural environment of high quality together with decent amenity of Phuket Urban Area. This is a substantial advantage over other parts of the South not only for tourism development but for attracting investors, managerial people, researchers and engineers.

Third, there is already an accumulation of international business experiences based on the trade of tin, rubber, oil palm and other products. This accumulation makes the urban economic base of Phuket different from those in other cities.

However, this Urban Area has bottlenecks, too, to its development. First, it is situated at the deadend of land transport network and thus rather isolated. For this reason, the interactions between Phuket and other cities as well as the extent of its hinterland have been limited compared with other major urban centers. Second, the space of Phuket Island is limited and the existing Phuket Municipality is the only primary center in the Island. In the limited space, conflicts tend to emerge among different activities such as tin mining, tourism, fishing and urban expansion. The conflict will be intensified without proper spatial management if industrial development is accelerated. Third, Phuket is limited by water resources. It suffers from supply shortage already.

It is, therefore, necessary to develop and expand Phuket Urban Area with an emphasis on strengthening trade and other central urban service functions of the city by integrating existing and forthcoming transport facilities such as the deep seaport, highways, airport and possible railway. To foster Phuket City as a regional urban growth center specialized into international trade, goods distribution, tourism, financial activities, technology development and other service functions, within a limited space of Phuket Island, physical expansion of urban area should be guided properly with special attention to upgrading efficiency and attractiveness for international functions, grouping industrial and distribution activities and securing proper residential area without causing conflict with area for other uses. In order to support these urban functions, basic infrastructures and utilities should be reinforced substantially.

B. OBJECTIVES

It is thus the purpose of the Government of Thailand to strengthen the urban functions and physical structures as well as to upgrade the urban attractiveness and amenities of Phuket Urban Area for the Upper South subregional development as well as the national urbanization strategy.

The main policy strategies of the Government are:

- (1) To develop the Phuket Urban Area and its surroundings including the intensive tourism development areas such as Patong, Karon and Kata beaches and the deep seaport area so as to foster a regional growth center with international functions.
- (2) To strengthen urban economic, tourism, industrial and housing bases of Phuket Urban Area to be able to accommodate the urban population of about 150,000 in the year 2000, and
- (3) To improve and enhance the urban attractiveness to induce tourists, investments and populations from outside the subregion.

Within this context, the basic objectives of the study is to determine the engineering, economic and financial feasibilities of the following urban projects to be implemented in the short/medium run:

- Urban Water Distribution System Development,
- Flood Control in the Urban Area,
- Khlong Tachin Port Supporting Area Development,
- Small Industrial Complex Development for Relocating Existing Small/Medium Scale Industries,
- Deep Seaport Supporting Area Development,
- Housing Complex Development,
- Urban Streets Development,
- Environmental Upgrading of Thalang Road, and
- Goods Distribution Center Development,

C. SCOPE OF WORK

With reference to the projects specified above, the Consultant shall conduct the following works:

1) Plan Review

A number of studies have been undertaken for Phuket City, Phuket Island and the Upper South. The consultants shall familiarize themselves with previous studies and the contents of the structure plan for Phuket Urban Area.

2) Survey and Data Collection

Information already available will be supplied to the Consultants. The Consultants shall undertake surveys necessary to determine scale, contents, location and layout of the projects. Data to be collected through the surveys include commodity flows, distribution and activities of establishments engaged in the transportation and trade activities, income distributions, housing market, existing land use and inventory of public facilities and utilities.

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The Study Team shall consist of experts at least in the following fields:

- (1) Regional planning
- (2) Urban planning
- (3) Transportation planning
- (4) Land use planning
- (5) Urban Water Supply Planner
- (6) Civil engineering
- (7) Architectural design
- (8) Regional/urban economic analysis
- (9) Project analysis
- (10) Sociology
- (11) Environmental assessment

ANNEX II TECHNICAL PAPER

1. IDENTIFICATION OF URBAN PROBLEMS (Based on the Results of Questionnaire Survey)

Prior to the discussion about urban development planning, the actual urban problems with which each municipality is faced were identified based on an analysis of the questionnaire survey to the administrative officers in both provincial and municipal government officers.

The results are summarized as follows :

1.1 OBJECTIVES OF THE SURVEY

This survey was carried out under the following objectives :

- To identify the current and actual problems on urbanization through the opinions expressed by the government officers who live in the Study Area, and
- To measure the degree of serious problems to be solved urgently.
- To get basic materials for planning considerations through their answers.

1.2 OUTLINE OF THE EXECUTION

The Survey was carried out in July, 1983. The samples were selected by the officers in charge of comprehensive planning at the provincial and the municipal offices so as to minimize the deviation of distribution.

The results of distribution and collection are as follows :

TABLE 1.1 RESULTS OF SAMPLE DISTRIBUTION AND COLLECTION

		No. of Distribution	No. of Collection	Collection Rate (%)
Provincial Offices	Surat Thani	50	40	80
	Phuket	50	41	82
	Phang-Nga	30	20	67
	Krabi	30	26	87
	Sub-Total	160	127	79
Municipal Offices	Surat Thani	30	22	73
	Ban Na San	30	30	100
	Phuket	30	27	90
	Phang-Nga	30	25	83
	Takua-pa	30	24	80
	Krabi	30	25	83
	Kantang	30	25	83
	Sub-Total	210	178	85
Total		370	305	82

The general characteristics of the samples are as shown in Table 1.2. Generally the deviation of samples is supposed to be small since the samples cover various groups such as sex, age groups, length of stay and so on.

In the questionnaire about fifty(50) urban problems were listed up and they were classified into five(5) major categories : A ; Urbanization, B ; Housing, C ; Social Services, D ; Transportation and E ; Industrial Activities.

The Study Team obtained their feeling on whether a problem is serious, slightly serious or not serious.

TABLE 1.2 CHARACTERISTICS OF SAMPLES

	TOTAL	SEX		AGE				TERM OF RESIDENT			POSITION *1		
		M	F	-30	-39	-49	50-	-5	5-9	10-	(I)	(II)	(III)
				years old				years					
<u>PROVINCES</u>													
SURAT THANI	40	31	9	7	12	17	4	13	10	17	35	5	0
PHUKET	41	27	14	10	15	10	6	18	7	16	34	4	3
PHANG-NGA	20	16	4	1	5	5	9	13	1	6	13	4	3
KRABI	26	23	3	8	7	6	5	18	2	6	14	9	3
TOTAL	127	97	30	26	39	38	24	62	20	45	96	22	9
<u>MUNICIPALITIES</u>													
SURAT THANI	22	14	8	5	9	6	2	5	3	14	18	1	3
BAN NA SAN	30	19	11	10	7	7	6	5	3	22	24	1	5
PHUKET	27	23	4	1	15	7	4	7	2	18	15	5	7
PHANG-NGA	25	8	17	14	7	1	3	7	1	17	22	2	1
TAKUA-PA	24	12	12	1	13	6	4	4	4	16	22	0	2
KRABI	25	16	9	9	10	2	4	5	5	15	21	1	3
KANTANG	25	15	10	4	12	5	4	4	4	17	17	5	3
TOTAL	178	107	71	44	73	34	27	37	22	119	139	15	24

NOTE: *1 (I):STAFF
(II):CHIEF OF DIVISION
(III):UPPER CLASS

1.3 PROBLEMS FELT SERIOUS BY PROVINCIAL OFFICERS

First of all, from Table 1.3 and Fig. 1.1 which indicate the degree of seriousness by category, it can be seen that there exist particular characteristics in each province.

In Surat Thani, the problem categories of A : Urbanization, B : Housing and C : Social Services are predominantly serious, while Phuket has serious problems in the categories of A : Urbanization, B : Housing and D : Transportation System.

The province which has serious problems in all the categories is Phang-nga, while Phangnga and Krabi have more serious problems in E : Industrial Activities, compared with the other provinces.

Secondly, a detailed observation of the serious problems by category and by province can be given by Table 1.4. This table shows the value which indicates a comparative degree of seriousness of each problem item. The item with the value of 1.0 and over is assumed to be comparatively serious problem, while the item with the value of 1.0 or less is not so serious.

According to this table, the followings can be identified :

Firstly, regarding the category of Urbanization, the most serious problems are,

- Surat Thani : 1) Insufficient well-developed infrastructure;
2) Illegal occupancy/slums;
3) Poor control system for land development;
and
4) Shortage of work places.
- Phuket : 1) Urban sprawl;
2) Illegal occupancy/slums;
3) Shortage of work places;
4) Inadequate landuse pattern; and
5) Poor control system for land development.
- Phang-nga : 1) Inadequate landuse pattern;
2) Urban sprawl;
3) Shortage of factory land; and
4) Insufficient well-developed infrastructure.
- Krabi : 1) Insufficient well-developed infrastructure;
2) Shortage of work places; and
3) Poor control system for land development.

Secondly, regarding the category of Housing,

- Surat Thani : 1) Poor piped water supply system
2) Low-incomers houses
3) Shortage of green/environment amenities
- Phuket : 1) Low-incomers houses
2) Shortage of potable water
3) Poor piped water supply system
- Phang-nga : 1) Shortage of potable water
2) Poor piped water supply system
3) Low-incomers houses
- Krabi : 1) Low-incomers houses
2) Streets/collector roads in housing area
3) Housing shortage

All over the provinces, the items of "Low-incomers housing supply" and "Water supply system" were raised as the most serious problems.

Some substantial countermeasures against these two basic problems are required to be established as soon as possible.

TABLE 1.3 SERIOUSNESS OF PROBLEMS BETWEEN SECTORAL RELATIONS (UNIT : %)

PROBLEM SECTOR	SURAT THANI	PHUKET	PHANG-NGA	KRABI
A. URBANIZATION	39.3	41.5	40.0	20.3
B. HOUSING	46.5	40.4	34.2	26.0
C. SOCIAL SERVICES	41.9	24.9	39.4	35.9
D. TRANSPORTATION SYSTEM	25.9	33.8	43.2	36.7
E. INDUSTRIAL ACTIVITIES	27.8	21.6	40.6	29.3

NOTES: The figures show the percentage of total answers of serious problems in the category,

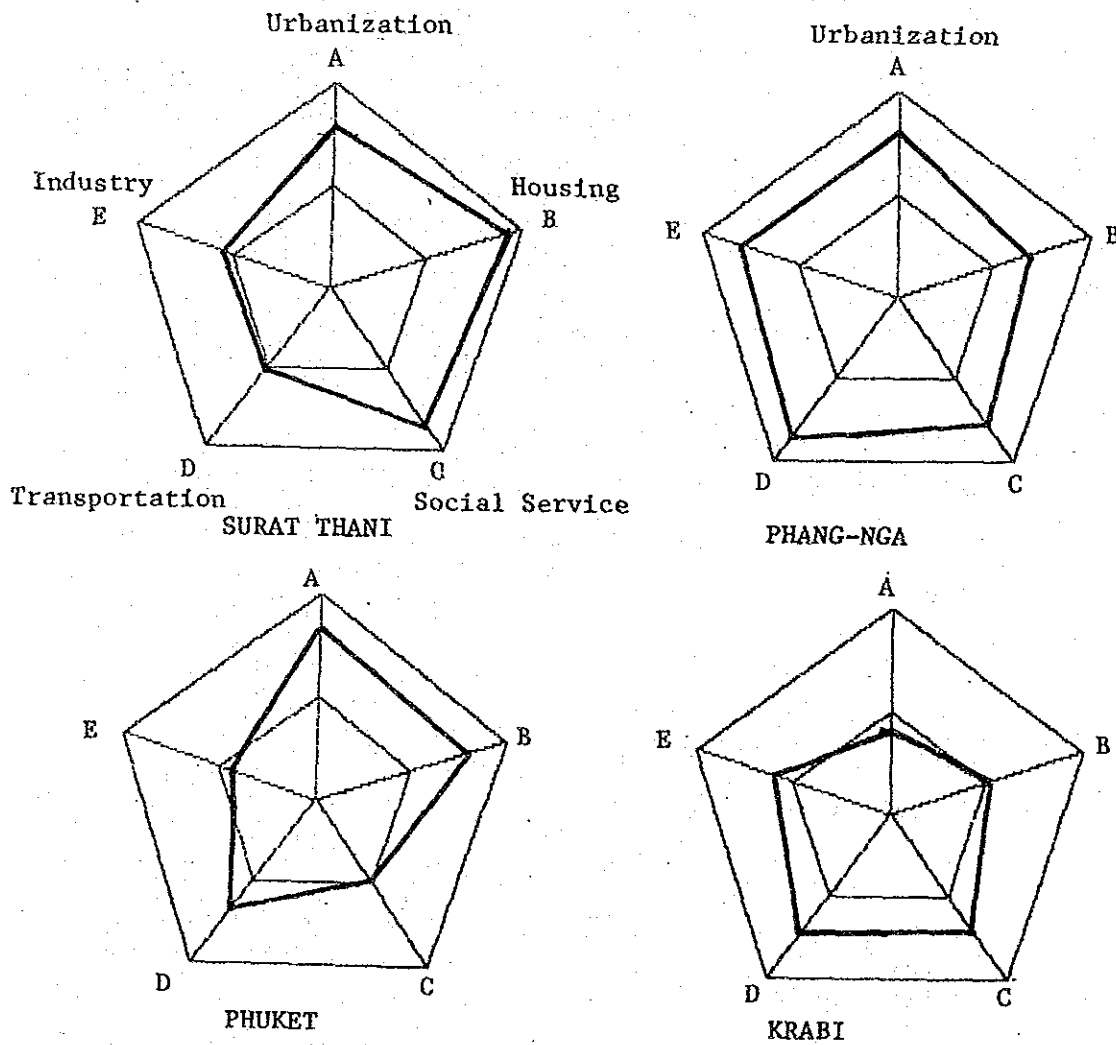


Fig. 1.1 DEVIATION PATTERN OF SERIOUS PROBLEMS BY PROVINCE

Thirdly, the common serious problems for Social Services through all provinces were not the problems on educational facilities but on poor medical, social welfare and cultural facilities, and then, it should be taken note that a necessity of vocational facilities development is confessed by a large number of officers.

Fourthly, regarding the category on Transportation System, the problems on the road network system linking with peripheral communities of the urban center is serious in Surat Thani and Phuket. A great serious problem on the linkage with Bangkok can not be recognized in the Study Area except in Krabi.

It can be noted that the problems on inter-regional road network linking with other major centers is not serious in most provinces.

The most great concerns lie on the developments of railway system, goods transport system and international port all over the areas. Especially, the problem on inconvenient railway system predominantly emerges in Surat Thani and Krabi, the problem on lack of international port in Phuket and Phang-nga, and the problem on inefficient goods transport system in Phang-nga and Krabi. Serious problem on airport development is recognized in Phang-nga and Krabi.

Lastly, as to seriousness of the Industrial Activities, the problem on lack of large investment in private sector seems to be the most significant controversy in terms of industrial activities. Especially Phang-nga and Krabi seem to have the most earnest desire to induce some large private investments.

A serious problem on depression of marketing and commercial activities is possessed by Phuket.

In order to facilitate an industrialization, to ensure industrial water is commonly recognized to be one of crucial measures, however, the problem of shortage of water is remarkably serious in Phuket, compared with the other provinces.

TABLE 1.4 DEGREE OF SERIOUSNESS BY KIND OF URBAN PROBLEM AND BY PROVINCE

PROBLEM ON URBANIZATION		PROBLEMS ON TRANSPORTATION SYSTEM			
PROBLEM		SURAT THANI	PHUKET	PHANG-NGA	KRABI
1) URBAN SPRAWL		1.0	1.2	1.5	0.8
2) MUCH INFLOW OF SEASONAL WORKERS		0.8	1.0	0.1	0.2
3) ILLEGAL OCCUPANTS/SUMMS		1.5	1.2	0.4	0.4
4) SHORTAGE OF WORK PLACES		1.3	1.2	0.9	1.5
5) INADEQUATE LAND/USE PATTERN		0.4	1.2	1.6	0.9
6) HOUSING LAND SHORTAGE		0.5	0.8	0.8	0.9
7) SHORTAGE OF FACTORY LAND		0.8	0.8	1.4	1.1
8) CONFUSION OF COMMERCE		0.5	0.6	1.3	0.4
9) POOR CONTROL SYSTEM FOR LAND DEVELOPMENT		1.4	1.1	1.1	1.5
10) INSUFFICIENCY OF WELL-INFRASTRUCTURE		1.7	1.0	1.3	2.5
11) DETERIORATION OF ENVIRONMENT		1.1	0.9	0.8	0.8

PROBLEM ON HOUSING AND LIVING		PROBLEM ON INDUSTRIAL ACTIVITIES			
PROBLEM		SURAT THANI	PHUKET	PHANG-NGA	KRABI
1) HOUSING SHORTAGE		0.8	0.9	1.0	1.3
2) LOW-INCOMERS' HOUSES		1.5	2.0	1.8	2.0
3) ELECTRIC POWER SUPPLY		0.9	0.8	0.3	1.2
4) FLOODING IN URBAN AREA		0.4	0.9	0.0	0.0
5) RUBBISH DISPOSAL		0.7	0.5	0.7	0.7
6) SEWERSAGE/TREATMENT		1.1	0.6	0.7	0.3
7) POOR PIPED WATER SUPPLY		1.7	1.5	1.8	1.2
8) SHORTAGE OF POTABLE WATER		1.2	1.9	1.9	1.0
9) TOO MUCH INTAKE OF WELL		0.2	0.2	0.4	0.0
10) STREET/CLECTOR ROAD IN HOUSING AREA		1.1	0.5	0.6	1.5
11) SHORTAGE OF GREEN/ENVIRONMENTAL AMENITIES		1.2	0.3	1.3	0.7

PROBLEM ON SOCIAL SERVICE FACILITIES		PROBLEM ON TRANSPORTATION SYSTEM			
PROBLEM		SURAT THANI	PHUKET	PHANG-NGA	KRABI
1) SHORTAGE OF PRIMARY SCHOOL		0.3	0.5	0.5	0.3
2) LOWER SECONDARY SCHOOL		0.4	0.3	0.3	0.1
3) UPPER SECONDARY SCHOOL		0.7	0.5	0.3	0.9
4) HIGHER EDUCATION		0.8	0.8	0.9	0.5
5) VOCATIONAL EDUCATION		1.1	1.0	1.0	1.3
6) RECREATIONAL/LEISURE		1.2	0.3	1.3	1.0
7) MEDICAL FACILITIES		1.5	2.2	1.6	1.9
8) SOCIAL WELFARE		1.6	2.0	1.8	1.5
9) CULTURAL FACILITIES		1.4	1.6	1.1	1.2

PROBLEM ON TRANSPORTATION SYSTEM		PROBLEM ON INDUSTRIAL ACTIVITIES			
PROBLEM		SURAT THANI	PHUKET	PHANG-NGA	KRABI
1) LOCAL ROAD LINKING WITH COMMUNITY CENTRES		1.9	1.3	0.8	1.0
2) TRAFFIC CONGESTION		1.9	1.5	0.3	0.3
3) LINKAGE WITH BANGKOK		0.5	0.6	0.7	1.2
4) LINKAGE WITH HAT YAI/SKR		0.2	0.5	0.2	0.4
5) LINKAGE WITH PHUKET/SURAT		0.3	0.7	0.2	0.4
6) LINKAGE WITH OTHER CITIES		0.3	0.1	0.6	0.3
7) INCONVENIENT BUS SYSTEM		0.6	0.6	1.0	0.9
8) INCONVENIENT RAILWAY SYSTEM		2.0	1.6	1.9	1.8
9) INEFFICIENT GOODS TRANSPORT		1.3	1.2	1.7	1.8
10) LACK OF INTERNATIONAL PORT		1.8	2.1	1.7	1.3
11) POOR AIRPORT		0.2	0.6	1.6	1.6

NOTES: THE ITEM WITH 1.0 AND OVER IS ASSUMED TO BE COMPARATIVELY SERIOUS PROBLEM, AND THE MORE THE NUMBER IS, THE MORE SERIOUS THE PROBLEM IS.
THE ITEM WITH LESS THAN 1.0 IS ASSUMED NOT TO BE SO SERIOUS.

CHARACTERISTICS OF URBAN PROBLEMS BY MUNICIPALITY

In order to see the comparative degree of seriousness of each problem item, the value of relative seriousness was calculated and summarized in Table 1.5.

Based on the results, the followings can be pointed out:

Surat Thani Municipality

As to the category of Urbanization, the problems of insufficient well-developed infrastructure, poor control system for land development and illegal occupancy/slums are considered to be the most serious, and among the category of Housing, the problems of low-incomers houses and poor piped water supply system are comparatively serious.

The serious problems in Social Services are represented by three items : lack of cultural, social welfare and medical facilities. The problem of traffic congestion in the urban area is the most predominant in the category of Transportation System. Besides that, poor local roads network and lack of railway system and international port are considered to be serious urban problem.

In terms of industrial activities, lack of large scale investments in private sector is the most serious problem, and it should be taken note that shortage of industrial water supply is recognized comparatively serious in spite of existence of abundant water resource.

Ban Na San Municipality

As a summerized result, the developments of medical and social welfare facilities and electricity supply system seem to be very crucial in this municipality, and it seems to be important not only to induce large scale investments in the private sector and but also to stimulate marketing and commercial activities in view of encouragement of industrial activities.

Phang-nga Municipality

In this municipality, many serious urban problems were listed up.

First of all, as to urbanization, the problems on seasonal workers' inflow and illegal occupancy/slums are slight, but other problem items are uniformly considered to be serious. Regarding the problems of Housing and Social Services, the poor piped water system and the shortage of social services such as higher educational, medical, socail welfare and cultural facilities are recognized serious.

Next, in the category of Transportation Network, a large number of officers expressed the seriousness of lack of international port, airport, railway, and efficient goods transport system. In terms of Industrial Activities, there are little answer that weakness of banking and financial function and shortage of retailers for durable goods are serious.

Takua Pa Municipality

The specific note should be given to this municipality in that the problems of flooding in the urban area and shortage of potable water are remarkably serious.

Like in the other municipalities, the seriousness of poor development of medical and cultural facilities comes up to be great. As to the transportation system, the lack of railway systems international port and airport are large urban problems.

Regarding industrial activities, the depression of marketing and commercial activities is more serious than lack of large investment, nature of the problem is quite different from the other municipalities except for Kantang.

Krabi Municipality

Seriousness of the urbanization problems seems to be comparatively less than the other problems in this municipality. As to the category of Housing, the problems on low-incomers houses and streets/feeder roads in the urban area are remarkably serious. As to the Social Service, the medical facilities as well as vocational facilities are desired to be developed.

As to Transportation System, lack of so-called major trunk infrastructures such as railway, international port, airport and goods transport system is serious as well. Most of items, except for weakness of retailers, banking and financial functions, are considered to be serious in terms of industrial activities.

As a whole, the characteristics of problems in Krabi is similar to those in Phuket.

Phuket Municipality

In this municipality the problems of Urbanization are generally serious, and the followings should be given attention similarly with Surat Thani Municipality:

- Insufficiency of well-developed infrastructure;
- Illegal occupancy/slums; and
- Poor control system for land development.

Regarding the category of Housing, especially the problems on low-incomers houses and shortage of potable water are expressed as the most serious problems, and the developments of medical, social welfare and cultural facilities seem to be strongly desired. The most predominant problems concerning Transportation System are centered on lack of international port, and in relation with this, lack of railway system and inefficient goods transport system are listed up as remarkably serious problems.

Lastly, most of officers answered that lack of large scale investment in private sector was the most serious as if all the considerations had been incorporated into this answer.

Katang Municipality

The problem on Urbanization does not seem so serious compared with the other items. Among the category of Housing, only the problems of low-incomers houses and housing shortage are remarkably serious but the other problems are not.

As to the problems of Social Service, most of officers, like in the other municipalities, answered that the developments of medical, social welfare and cultural facilities are strongly desired to be developed.

A serious problem of Transportation System is not realized in this municipality, except for the problems of international port and goods transport system. As a result, it seems to be important to establish an efficient goods transport system including measures to encourage truck companies and transport business.

1.5 EVALUATION OF SURVEY RESULTS

These results coincide mostly with the information the Study Team got from site reconnaissance and interview to the authorities.

The following facts found out through this questionnaire survey should be considered carefully in urban development planning :

- (1) A careful system for controlling land development is indispensable to be established in a proper manner as soon as possible.
- (2) The basic urban utilities supporting the urban activities should be developed above all such as :
 - Water supply system;
 - Electricity supply system; and
 - Other infrastructures.
- (3) The requirement of houses for low income people is remarkably large. A substantial measure should be established for this problem.

- (4) Major transport facilities to support regional industrial activities and to make the goods distribution efficient are strongly required to be developed in terms of industrialization.
- (5) Regarding planning of social services, the medical, social welfare and cultural facilities should be developed with a proper network system integrating general facilities down at the community level and specific facilities up at the level of urban centers. Furthermore it cannot be ignored that many people desire the establishment of high educational and vocational facilities.

Besides above, in this survey only few people express the seriousness of weakness of banking and financial functions, however, many managers of industrial companies pointed out this weakness as one of major obstacles to promote their industrial activities according to the results of questionnaire to factories carried out in this study. It was one of findings through this survey that there is a perception gap between administrative officers and entrepreneurs.

TABLE 1.5 DEGREE OF SERIOUSNESS BY KIND OF URBAN PROBLEM AND BY MUNICIPALITY

PROBLEM	PROBLEM ON URBANIZATION											
	SURAT	PHUKET	KRABI	PHANG-NGA	BAN NA SAN	TAKI-PA	THANI	PKT	KRR	FGA	ENS	TKP
1) URBAN SPRAWL	1.2	1.0	0.8	1.2	1.0	1.6	1.2	1.3	0.8	1.4	0.5	
2) MUCH FLOW OF SEASONAL WORKERS	0.6	0.4	0.6	0.5	0.8	0.9						
3) ILLEGAL OCCUPANTS/SULMS	1.5	1.4	1.3	0.4	1.3	1.9						
4) SHORTAGE OF WORK PLACES	0.7	1.3	1.5	1.4	0.9	1.5						
5) INADEQUATE LANDUSE PATTERN	1.0	0.8	0.6	1.3	0.3	0.7						
6) HOUSING LAND SHORTAGE	0.6	0.7	0.5	0.8	0.5	0.6						
7) SHORTAGE OF FACTORY LAND	0.6	1.1	0.9	1.3	0.9	0.4						
8) CONFUSION OF COMMERCE	0.6	0.9	0.6	0.9	0.7	0.6						
9) POOR CONTROL SYSTEM FOR LAND DEVELOPMENT	1.5	1.4	1.4	1.4	1.6	1.0						
10) INSUFFICIENCY OF WELL-DEVELOPED INFRASTRUCTURE	1.7	1.5	1.5	1.4	2.1	1.5						
11) DETERIORATION OF ENVIRONMENT	0.9	0.6	1.2	0.6	0.9	0.3						

PROBLEM	PROBLEMS ON TRANSPORTATION SYSTEM										
	SRT	PKT	KRR	FGA	ENS	TKP					
1) LOCAL ROAD LINKING WITH COMMUNITY CENTRES	1.7	1.3	1.3	0.8	1.4	0.5					
2) TRAFFIC CONGESTION	2.1	1.2	0.2	0.0	0.7	0.7					
3) LINKAGE WITH BANGKOK	0.7	0.1	0.5	0.7	1.1	0.0					
4) LINKAGE WITH HAT YAI/SKR	0.4	0.1	0.3	0.6	0.5	0.0					
5) LINKAGE WITH PHUKET/SURAT	0.7	0.0	0.2	0.4	0.5	0.5					
6) LINKAGE WITH OTHER CITIES	0.4	0.3	0.3	0.7	0.5	0.0					
7) INCONVENIENT BUS SYSTEM	0.6	0.4	0.7	0.6	1.3	0.5					
8) INEFFICIENT RAILWAY SYSTEM	1.6	2.3	2.0	1.7	1.7	3.0					
9) INEFFICIENT GOODS TRANSPORT	0.9	1.8	1.6	1.6	1.4	1.1					
10) LACK OF INTERNATIONAL PORT	1.7	3.1	1.9	2.2	1.5	2.5					
11) POOR AIRPORT	0.1	0.4	2.0	1.7	0.6	2.3					

PROBLEM	PROBLEM ON INDUSTRIAL ACTIVITIES										
	SRT	PKT	KRR	FGA	ENS	TKP					
1) LACK OF LARGE SCALE INVESTMENT IN PRIVATE SECTOR	2.2	3.0	2.0	1.6	1.7	2.1					
2) DEPRESSION OF MARKETING & COMMERCIAL ACTIVITIES	1.7	2.0	1.4	1.2	1.5	2.7					
3) SHORTAGE OF RETAILERS FOR DURABLE GOODS	0.3	0.3	0.4	0.5	0.5	0.4					
4) WEAKNESS OF BANKING & FINANCE FUNCTION	0.5	0.0	0.0	0.1	0.2	0.0					
5) WEAK WHOLESALE & TRADING FUNCTION	0.3	0.4	1.1	1.2	0.9	0.4					
6) TRUCK COMPANIES & TRANSPORT BUSINESS	0.2	0.4	1.2	1.3	0.9	0.4					
7) SHORTAGE OF INDUSTRIAL WATER SUPPLY	1.7	1.0	0.9	0.9	1.3	1.0					

NOTES: THE ITEM WITH 1.0 AND OVER IS ASSUMED TO BE COMPARATIVELY SERIOUS PROBLEM, AND THE MORE THE NUMBER IS, THE MORE SERIOUS THE PROBLEM IS.
THE ITEM WITH LESS THAN 1.0 IS ASSUMED NOT TO BE SO SERIOUS.

PROBLEM	PROBLEM ON HOUSING AND LIVING										
	SRT	PKT	KRR	FGA	ENS	TKP					
1) HOUSING SHORTAGE	0.4	1.2	0.9	0.5	0.7	0.0					
2) LOW-INCOMERS HOUSES	1.4	2.2	1.7	1.5	1.9	1.3					
3) ELECTRIC POWER SUPPLY	0.6	0.1	0.6	0.6	2.1	1.6					
4) FLOODING IN URBAN AREA	0.9	0.8	0.4	0.2	0.2	2.4					
5) RUBBISH DISPOSAL	1.2	0.6	1.0	0.6	0.8	0.4					
6) SEWERAGE/TREATMENT	1.2	1.0	0.9	0.8	0.9	0.6					
7) POOR PIPED WATER SUPPLY	1.8	1.5	1.3	2.1	1.5	1.1					
8) SHORTAGE OF POTABLE WATER	1.5	2.2	0.6	1.7	1.1	2.1					
9) TOO MUCH INTAKE OF WELL WATER	0.5	0.0	0.1	0.3	0.0	0.0					
10) STREET/COLLECTOR ROAD IN HOUSING AREA	0.6	0.6	1.7	0.6	0.3	0.6					
11) SHORTAGE OF GREEN/ENVIRONMENTAL AMENITIES	0.8	0.0	0.9	1.0	0.8	0.6					

PROBLEM	PROBLEM ON SOCIAL SERVICE FACILITIES										
	SRT	PKT	KRR	FGA	ENS	TKP					
1) SHORTAGE OF PRIMARY SCHOOL	0.3	0.3	0.1	0.1	0.3	0.4					
2) LOWER SECONDARY SCHOOL	0.3	0.0	0.0	0.1	0.0	0.0					
3) UPPER SECONDARY SCHOOL	0.8	0.7	0.2	0.2	0.4	0.2					
4) HIGHER EDUCATION	0.6	1.0	0.7	1.3	0.8	0.4					
5) VOCATIONAL EDUCATION	0.7	0.7	1.2	0.9	0.8	0.5					
6) RECREATIONAL/LEISURE	1.1	0.6	0.8	1.0	1.1	1.2					
7) MEDICAL FACILITIES	1.4	1.7	2.1	2.0	2.3	2.1					
8) SOCIAL WELFARE	1.7	2.1	2.0	1.5	1.9	1.6					
9) CULTURAL FACILITIES	2.1	2.0	1.8	1.9	1.4	2.6					

NOTES: THE ITEM WITH 1.0 AND OVER IS ASSUMED TO BE COMPARATIVELY SERIOUS PROBLEM, AND THE MORE THE NUMBER IS, THE MORE SERIOUS THE PROBLEM IS.
THE ITEM WITH LESS THAN 1.0 IS ASSUMED NOT TO BE SO SERIOUS.

2 METHODOLOGY OF URBAN POTENTIAL EVALUATION

2.1 EVALUATION FACTORS APPLIED

Evaluation Factors is classified into two categories : the Existing Potential Evaluation Factor and the Intentional/Strategic Considerations Factor. The former, furthermore, consists of four sub-categories : Population, Regional Economy, Urban Mobility and Basic Urban Function, while the latter consists of three sub-categories : Historical Growth, Strategic Significance of Industrialization and Spatial/Structural Significance of Location. These sub-sectors are prepared as general view-points to evaluate the urban center. In order to explain the characteristics or the degree of potentials in each sub-category, several indicators were selected to evaluate the urban center itself. The indicators are selected so as to cover as many functions as possible within the constraints of data availability. Meanings of each indicator applied are mentioned as follows :

2.1.1 Indicators for Existing Potential Evaluation

1) Sub-Category of Population

Sub-Category of Population consists of the following three indicators :

Magnitude of Center : The degree of population size itself can be regarded as a scale to know the centrality. The more people settle in the center, the more urban activities are performed there. This is just a primitive idea. Hypothetically it can be generally recognized that there is a certain relationship between the magnitude of population and the urban center functions in correspondence to the levels. We considered that the criteria of decision to classify the levels are 250, 100, 50, and 20 thousand population.

This classification was based on the following reasons :

- The center with more than 250 thousand population is regarded as a mature urban center with self-sustaining urban economy.
- The center with 100 to 250 thousand population is found at previous stage to proceed into a mature urban center. This center is furnished with various basic functions to support the agriculture activities in its hinterland. An industrialization is proceeding along with a change of industrial structure and some accumulation of urban functions to support the industrialization is maturing.
- The center with 50-100 thousand population will require some strategical push to get self-sustaining development of the urban economic functions.

- The center with 20-50 thousand population is still lying at the level of service center supporting the hinterland based on agricultural activities unless some specific urban function such as an industrial center, a housing center or a tourism development pole center is given to this center.
- The center with less than 20 thousand population is a service center without many basic urban functions. Like the preceding center, some specific policies are necessary for this center to enhance a development capability to foster a center with basic functions.

Urbanization Potential : The growth rate of urban population during the 1970s can become a good indicator to explain the urbanization potentials because the growing center is conceivable to be generating its influence power to the hinterland.

Evaluation criteria can be set up as follows :

- 6.0 percent/year : Maximum growth rate of a city which can get an appropriate urban growth
- 4.5 percent/year : Average of the South
- 3.6 percent/year : Average of the whole Regions
- 2.6 percent/year : Average of the rural areas in the South

Regional Centrality : The magnitude of centrality itself is a result of the degree of urbanization potential. Generally speaking, there must be a certain relationship between the urban population and the rural population in a certain regional economy. If the ratio of urban population to the rural population in its hinterland is comparatively large, the urban center is likely to be endowed with the power to serve not only its hinterland limited by the administrative boundary but also the hinterland beyond. The average ratio of the South is 9.0 percent, based on the National census, 1980. The standard deviation of the data is calculated at about 10 percent. Therefore, a decision whether the regional centrality is larger or not can be made based on the ratio of 9 percent, and the decision of the largest centrality can be given by about 20 percent.

2) Sub-Category of Economy

Sub-Category of Economy is explained by the following four (4) indicators :

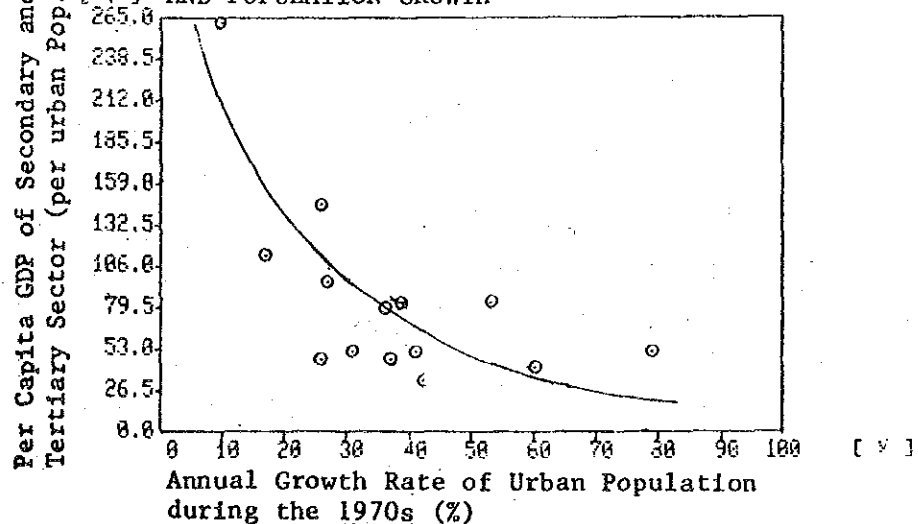
Magnitude of Urban Activities : Basically the urban economy is sustained by activities of Secondary and Tertiary sectors which are composed of Manufacturing, Construction, Electricity and Water, Transport and Communication, Wholesaling/retail and Trading, Banking and Insurance, Ownership, Administration and Defense, and Services. Magnitude of GDP through these activities was applied as a measure to identify the degree of urban economy. However, such economic data as GDP is available by province but not by municipality. Therefore, if the province has two municipi-

palties and over, the provincial data was broken down to them in consideration of the degree of differential of urban population and their urbanity. The average GDP of Secondary and Tertiary sectors of municipality in the South is about 3 billion baht at 1980 price and the standard deviation is computed at about 1 billion baht. From this result, if a certain municipality reaches the level of 5 billion baht, it can be evaluated that the municipality possesses an extremely high potential of urban economic activity.

Sustainable Capacity of Primary Sector : The structure of industrial inter-relation is not so simple, but basically it is conceivable that there is a relationship of $Y = 0.87X$ between the GDP of Primary sector (Y) and the GDP of Secondary and Tertiary sectors (X) in the South based on the data at 1980 price. In other words, it can be said that 1 billion baht of GDP of Secondary and Tertiary sectors sustains 0.87 billion baht of GDP in Primary sector. If the above equation is transformed to $E = 0.87X - Y$, the variable of E means the affordable capacity of Secondary and Tertiary sectors, which we said "Sustainable Capacity of Primary Sector". The bigger the value of E is, the larger the capacity of the center to sustain the economic activities in Primary sector or the hinterland must be. If the value of E is calculated to be a negative number, it means that the center depends on an external urban economy.

Intensity of Urban Service Activities : Per Capita GDP of Secondary and Tertiary sectors (per urban population) is likely to indicate the degree of efficiency of urban economy, and that is evaluated to become one of urban potentials. This value is not necessarily dependent on the size of urban center but on the urban character. Within the South, the municipalities in Phangnga, Ranong, and Chumphon get extremely high value, on the contrary those in Yala and Songkhla get low value comparatively. Probably, the centers specialized to particular functions might get high value, while the centers with experience of rapid urban growth are subject to low value. In this, the coefficient of correlation between this value and the urban growth rate was 0.598 as shown in Figure 2.1. The average value in the South is about 78 thousand baht at 1980 price and standard deviation is 62 thousand baht at 1980 price, so that, 140, 110 80 and 50 thousands baht were set up as the criteria.

Fig. 2.1 RELATION BETWEEN PER CAPITA GDP OF URBAN ECONOMY [Y] AND POPULATION GROWTH



Industrial Supporting Basis : The four sectors of Construction, Electricity and Water, Transportation and Communication, and Banking and Insurance, can be regarded as the basic sectors to support industrial activities and investments. In other words, a proper industrialization cannot be achieved unless these four sectors are well-developed. The amount of GDP of these four sectors, herein, was called "Industrial Supporting Basis". The average of this amount in the South is about 364 thousand baht and the standard deviation is 280 thousand baht at 1980 price per municipality. Therefore, the criteria of decision whether the basis is comparatively strong or not is given by the level of 340 thousand baht.

3) Sub-Category of Urban Mobility

The indicators to evaluate the urban mobility are composed of the following three issues :

Mobility of Overland Transportation : The existence of overland transportation infrastructure itself becomes the criteria of decision of overland mobility in the center. The criteria of ranking was assumed in consideration of roads and railway system as shown in Table 2.1.

Table 2.1 CRITERIA OF RANKING IN MOBILITY OF OVERLAND TRANSPORTATION

	Located at Road Transportation Node		
	National Highway (N) x N	N x Provincial Highway (P)	P x P
<u>Railway System</u>			
Located on the Main Line :	I	II	III
Located on the Feeder Line:	II	III	IV
None :	III	IV	V

Mobility of Sea Transportation : The convenience of sea transportation itself means an opportunity to challenge the external economy. Endowment of deep sea port for international trade can be evaluated to be a big possibility to expand the regional economy wider, and endowment of coastal port can be regarded as a possibility to create the inter-regional economic relations. Fishery port formed historically has a potential to foster an intra-regional economic relation not only through fishery industry but also through daily goods transport. The above considerations affected the ranking criteria as follows :

- Rank I : Deep Sea Port;
- Rank II : Coastal Port;
- Rank III : Major Fishery Port/Minor Coastal Port;
- Rank IV : Fishery Port; and
- Rank V : None

Mobility of Air Transportation : The degree of air transportation mobility is basically decided by the existence of airport and the service area. The service area taken into account was defined to be 100 km from the international airport and 50 km from the domestic airport. The ranking criteria of evaluation is as follows :

- Rank I : International Airport (IA);
- Rank II : Located within 100 km from IA;
- Rank III : Domestic Airport (DA)
- Rank IV : Air Field for Private Use/located within 50 km from DA; and
- Rank V : None

4) Sub-Category of Basic Urban Function

Generally, the urban function is classified into two categories :

- Basic Function and
- Non-Basic Function.

The basic function means the wide-regional function and mainly involves some industrial and economic function, while the nonbasic function is equivalent to the residential function serving the communities' activities.

When the urban center is discussed in the context of regional development, the basic function of urban center should be considered, because the basic function is formed on the basis of inter-regional activities. Therefore, the degree of accumulation of the following two major functions, herein were focused on :

Facility of Regional Services : The following five (5) kinds of facilities were applied for evaluation of regional service functions possessed by the urban center. These facilities are located to serve the certain areas centering on that urban center. The score for evaluation was assumed in response to the functional level as follows :

Table 2.2 SCORING OF FACILITIES FOR REGIONAL SERVICE

Facility Item	Score
- Central Government Division of Head Quater	: 3
- Changwat Administration	: 2
- Telephone Exchanger	: 2 or 1 <u>1/</u>
- Oil Depot/Oil Distribution Center	: 2
- Branch of ETO (Express Transportation Organization)	: 1
Maximum Score Aggregated	: 10

1/ Maintenance Center Exchange is given the score of 2 and Exchange in Service, the score of 1.

The aggregate of score was classified into five (5) ranks as follows :

- Rank I : 8 and Over
- Rank II : 6 or 7
- Rank III : 4 or 5
- Rank IV : 3 or 2
- Rank V : 1 or 0

Facilities of Research and Development Functions : A correspondent capability to requirements for industrial and social diversification was measured by means of the scoring method same as the above. Facilities applied and the assumed score given are shown in Table 2.3.

Table 2.3 ITEMS AND SCORE FOR RESEARCH AND DEVELOPMENT FUNCTION EVALUATION

Facility Item	Score
- University	: 3
- Technical College	: 2
- Vocational College	: 2
- Agricultural College	: 2
- Other Institute	: 2
- General Medical Center (Hospital)	: 2
Maximum Score Aggregated	: 13

The aggregate of score was classified into five (5) ranks as follows :

- Rank I : 10 and Over
- Rank II : 7 to 9
- Rank III : 4 to 6
- Rank IV : 2 or 3
- Rank V : 1 or 0

2.1.2 Indicators for Intentional/Strategic Consideration Factors

1) Sub-Category of Historical Growth

A historical significance in the process of urban growth is necessary to be taken into account in the urban/regional planning, because it is conceivable that some latent ability, even if it is timeworn, is subject to becoming a motivation for catch-up. Furthermore, some attractions accumulated historically which are worthy of tourism will give a chance of new developments. Based on the above considerations, the degree of historical significance possessed by each center was evaluated by means of the following two items : historical and cultural heritages, and function as old trading centers. The former is based on the evaluation

mentioned in "National Plan on Tourism Development, May 1976" by TAT and the latter is based on the information of "The Five Faces of Thailand" by Wolf Donner and the interview to some scholars. The evaluation with four (4) ranks was carried out in accordance with the following chart and Rank V was not set up herein because all centers have somewhat historical significance.

Table 2.4 ITEMS AND SCORE FOR HISTORICAL EVALUATION

Evaluation Factors	Score
I. Historical and Cultural Heritages	
- (H) x (i)	: 3
- (H) x (d) or (M) x (i)	: 2
- (M) x (d), (L) x (i) or (L) x (d)	: 1
II. Function as Historical Trading Center	
- In Pre-Historic Era (Befor 2nd Century), Major	: 2
Minor	: 1
- In Historic Era Major	: 2
Minor	: 1
Maximum Score Aggregated	: 7

Notes : (H), High Interest; (M), Moderate Interest;
(L), Low Interest ; (i), International Tourism;
(d), Domestic Tourism.

Rank I : 5 and Over
Rank II : 4 or 3
Rank III : 2 or 1
Rank IV : 0

2) Sub-Category of Strategic Significance of Industrialization

This focuses on the evaluation of strategic significance for industrialization by urban center. The centers/areas to be strengthened intentionally are regulated by the Fifth Five-Year Development Plan and the Board of Investment (BOI). Adding to the above strategy, the investment potential was taken into account for evaluation by the accomplishments of BOI privileges issued.

The factors applied and the score assumed are summarized in Table 2.5 and overall evaluation was carried out in accordance with the following ranking by score aggregated.

Rank I : 10 and Over
Rank II : 7 to 9
Rank III : 4 to 6
Rank IV : 1 to 3
Rank V : None

Table 2.5 ITEMS AND SCORE FOR STRATEGIC INDUSTRIALIZATION/
DEVELOPMENT POTENTIALS

Items to be taken into account	Score
1. The Fifth Five-Year Development Plan	
- Regional Growth Center	: 3
- Second-Generation Growth Center	: 2
- Lower Order Center	: 1
2. Industrial Investment Potential & Promotion Strategy	
2.1 Investment Promotion Zone by BOI	
- Regulated	: 2
- None	: 0
2.2 No. of Licence of BOI Privilege during past two decades (1960-81)	
- 15 and Over	: 5
- 10 to 14	: 4
- 5 to 9	: 3
- 2 to 4	: 2
- 0 to 1	: 1
2.3 Ammount of Registered Capital	
- 1,000 mill. baht and Over	: 5
- 500 - 999	: 4
- 200 - 499	: 3
- 50 - 199	: 2
- less than 50	: 1
Maximum Score Aggregated	: 15

3) Sub-Category of Spatial/Structural Significance

There are several ideas for the regional structure of the South, i.e., the growth pole policy in the Fifth Five-Year Development Plan, Land Bridge Concept and so on. The Study Team proposes the two major spatial frameworks in the Study : one is the "Three Growth Poles Structure", and another is the "Axis and Ladder Structure". These ideas are not necessarily given apriori, but rather derived from considerations of geopolitical or locational advantages with the centers as well as of general evaluation on urban potentials and centrality.

Above all, such a macro concept like regional structure naturally affects significance of the location of center itself, and simultaneously that center should be appreciated in regional planning. Based on the above considerations, an evaluation with rank was given to all centers in the meaning of locational/geopolitical advantage.

Table 2.6 shows the items using for evaluation and the score assumed in response to the degree of significance of those items, and overall appraisal was based on the following ranking score aggregated.

- Rank I : 9 and Over
- Rank II : 7 or 8
- Rank III : 5 or 6
- Rank IV : 3 or 4
- Rank V : 0,1 or 2

Table 2.6 EVALUATION ITEMS AND SCORE FOR SPATIAL/STRUCTURAL SIGNIFICANCE

Items to be taken into account	Score
1. Three Growth Poles Structure	
- Growth Pole	: 4
- Intermediate located Center	: 2
2. Axis and Ladder Structure	
- Major Node of Ladder Structure	: 3
- Intermediate Located Center of E-W Linkage	: 2
- Intermediate Located Center of Axis Corridor	: 1
3. Strategic Important Center	
- For Establishment of In-Land Transport Network	: 3
- For Establishment of Coastal Sea-Transport Network	: 2
- For Establishment of Air-Transport Network	: 1
Maximum Score Aggregated	: 10

2.2 OVERALL EVALUATION

The criteria for evaluation are summarized in Table 2.6 in Chapter 2.3.1 of this main volume. According to this criteria, the value and rank by indicator were examined and the results are summarized in Table 2.7. The notable centers which are involved in the high rank I or II are listed up as follows :

<u>A. Existing Potential Evaluation Factors</u>	<u>Rank I</u>	<u>Rank II</u>
A.1 Magnitude of Center	: Hat Yai	Songkhla Nakhon Si Thammarat(NST)
A.2 Urbanization Potential	: Satun Hat Yai	<u>Krabi</u> NST Pak Preak (Thung Song) Songkhla Yala
A.3 Regional Centrality	: <u>Phuket</u>	Ranong Yala
A.4 Magnitude of Urban Activities	: <u>Phuket</u> Hat Yai	<u>Surat Thani</u> NST
A.5 Sustainable Capacity of Primary Sector	: <u>Phuket</u> Hat Yai	Ranong
A.6 Intensity of Urban Service Activities	: <u>Phangnga</u> <u>Takua Pa</u> Ranong	Chumphon Lang Suan
A.7 Industrial Supporting Basis	: <u>Phuket</u> NST Songkhla Hat Yai	<u>Surat Thani</u> Trang
A.8-1 Mobility of Overland Transportation	: <u>Surat Thani</u> Thung Song Phatthalung Hat Yai	Trand Chumphon Lang Suan Sadao Talu Ban Yala
A.8-2 Mobility of Sea Transportation	: <u>Phuket</u> Songkhla	<u>Surat Thani</u> <u>Krabi</u> <u>Kantang</u> Chumphon Ranong Pak Panang Satun Pattani
A.8-3 Mobility of Air Transportation	: <u>Phuket</u> Hat Yai	<u>Phangnga</u> Phatthalung Songkhla Sadao

<u>A. Existing Potential Evaluation Factors</u>	<u>Rank I</u>	<u>Rank II</u>
A.9 Regional Service Functions	: <u>Phuket</u> Chumphon NST Songkhla Yala	<u>Surat Thani</u> Thung Song Hat Yai Pattani
A.10 Research and Development Functions:	<u>Surat Thani</u> NST	<u>Phuket</u> Songkhla Hat Yai Pattani Narathiwat
<u>B. Intentional/Strategic Consideration Factors</u>		
B.1 Historical Growth	: NST	<u>Phuket</u> <u>Krabi</u> Trang Chumphon Songkhla Pattani
B.2 Strategic Significance of Industrialization	: <u>Phuket</u> Hat Yai	<u>Surat Thani</u> <u>Krabi</u> Chumphon Thung Song Songkhla
B.3 Spatial/Structural Significance	: <u>Phuket</u> <u>Surat Thani</u> Songkhla Hat Yai	<u>Krabi</u> <u>Kantang</u> Trang NST Thung Song Phatthalung

Table 2.7 CENTER ANALYSIS BY EVALUATION FACTORS

		Population						Regional Economy							Basic Urban Function															
		1. Magnitude of Center (population in 1980 1/ thousand)		2. Urbanization Potential (Urban Pop. Growth Rate 1970-80% per annum)		3. Regional Centrality (% Urban Pop./Rural Pop)		4. Magnitude of Urban Activities 2/ (bills baht at 1980 price)		5. Sustainable Capacity of Primary Sector 3/ Baht at 1980 price)		6. Intensity of Urban Service Activities (Per Capita GDP of Secondary Tertiary Sector, thousand Baht at 1980 price)		7. Industrial Supporting Basis (Mill. Baht at 1980 4/ price)		Regional Service					Research and Development									
																Central Gov't Division of Head Quarter (3)	Changwat Gov't (2)	Telephone Exchange (2/1)	Oil Depot (2)	ETO Branch (1)	Total Score	Rank	University (3)	Technical Collage (2)	Vocation Collage (2)	Agricultural Collage (2)	General Hospital (2/1)	Other Institute (2)	Total Score	Rank
Phangnga	Phangnga (M/M)	6.76	V	1.7	V	4	V	1.8	IV	-2.2	V	261	I	157	V		2	2			4	III		2		2	2		6	III
	Takua Pa (M/M)	8.29	V	0.6	V	5	IV	2.2	III	-1.8	V	260	I	192	V			1				1	IV				2		2	V
Phuket	Phuket (M/M)	45.06	III	2.7	IV	53	I	4.3	I	2.5	I	95	III	729	I	3	2	2	2	1	10	I		2	2		2	2	8	II
Surat Thani	Surat Thani (M/M)	35.98	III	3.7	III	7	IV	3.4	II	-0.1	IV	93	III	537	II		2	2	2	1	7	II		2	2	2	2	2	10	I
	Ban Na San (T/M)	16.78	IV	3.3	IV	3	V	0.7	V	-0.4	IV	45	V	751	IV			1				1	V				1		1	V
Krabi	Krabi (M/M)	14.65	IV	5.3	II	7	IV	1.2	IV	-0.1	IV	82	III	295	IV		2	2			4	III		2		2	2		6	III
Trang	Kantang (T/M)	12.81	IV	3.3	IV	3	V	0.6	IV	-0.4	IV	44	V	136	V			1	2			3	IV				1		1	V
	Trang (M/M)	48.06	III	3.8	III	12	III	2.1	III	-0.1	IV	44	V	512	II		2	2		1	5	III		2		2	2		6	III
Chumphon	Chumphon (M/M)	13.78	IV	1.7	V	5	IV	1.5	IV	-0.1	IV	112	II	278	IV	3	2	2	2	1	10	I		2		2	2		6	III
	Lang Suan (T/M)	4.68	V	1.5	V	2	V	0.5	V	-0.3	IV	112	II	95	V			1		1	2	IV						0	V	
Ranong	Ranong	13.31	IV	2.6	IV	19	II	1.9	IV	0.6	II	145	I	297	IV		2	2			4	III		2		2	2		6	III
Nakhon Si Thammarat	Nakhon Si Th. (M/M)	63.16	II	4.5	II	6	IV	3.6	II	0.3	III	56	IV	718	I	3	2	2		1	8	I		2	2	2	2	2	10	I
	Pak Panang (M/M)	16.42	IV	1.9	V	1	V	0.5	V	0.1	III	31	V	186	V			1	2			3	IV				1		1	V
	Pak Preak (T/M)	22.54	IV	4.6	II	2	V	1.2	IV	0.1	III	51	IV	256	III	3		2		1	6	II				2		2	IV	
Phatthalung	Phatthalung (M/M)	19.61	IV	3.9	III	5	IV	1.6	IV	0.1	III	83	III	436	III		2	1		1	4	III		2		2	2		6	III
Satun	Satun (M/M)	15.65	IV	7.9	I	11	III	0.8	V	-0.2	IV	52	IV	150	V		2	1			3	IV		2		2	2		6	III
Songkhla	Songkhla (M/M)	67.95	II	5.1	II	11	III	2.4	III	0.7	II	36	V	900	I	3	2	1	2	1	8	I			2	2	2	2	8	II
	Hat Yai (M/M)	93.52	I	6.9	I	14	III	4.2	I	1.2	I	45	V	1,240	I	3		2		1	6	II	3	2			2	2	9	II
	Sadao (T/M)	8.36	V	1.3	V	1	V	0.3	V	0.1	III	41	V	112	V			1			1	V				2		2	IV	
Pattani	Pattani (M/M)	29.29	III	2.9	IV	8	IV	1.3	IV	0.2	III	46	V	399	III	3	2	1			6	II		2	2		2	2	8	II
	Talu Ban (T/M)	8.36	V	1.3	V	2	V	0.4	V	0.1	III	46	V	115	V			1			1	V				2		2	IV	
Yala	Yala (M/M)	47.17	III	4.6	II	23	I	1.6	IV	0.1	III	33	V	416	III	3	2	2		1	8	I		2			2	2	6	III
	Betong (T/M)	16.37	IV	3.0	IV	8	IV	0.5	V	0.1	III	33	V	144	V			1			1	V				2		2	IV	
Narathiwat	Narathiwat (M/M)	27.60	IV	2.6	IV	8	IV	1.4	IV	-0.3	IV	51	IV	308	IV		2	2		1	5	III		2		2	2	2	8	II
	Su Ngaikolok (T/M)	21.34	IV	3.7	III	6	IV	1.1	IV	-0.4	IV	51	IV	241	IV			1		1	2	IV				2		2	IV	

Notes : (M/M) indicates Muang Municipality and
 (T/M) Tambon Municipality
 1/ : Population and Housing Census 1980 (NSO)
 2/ : GDP excluding Agriculture and Mining Sectors
 3/ : 0.87 x (Secondary and Tertiary Sectors GDP) - (Primary Sector GDP)
 4/ : GDP of Construction, Electricity/Water, Transport/Communication, and Banking/Insurance

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