

CHAPTER 1

INTRODUCTION

Background

Pattani Province is situated on the east coast of the Malay Peninsula facing the Gulf of Thailand, between the latitudes 6° 35' N and 6° 52' N and the longitudes 100° 01' E and 101° 45' E, and 1,100 kilometers south of Bangkok. Pattani covers a total area of 1,940 square kilometers. It is administratively divided into 12 districts (Amphoe), 2 municipalities (Thesaban) and 10 sanitation districts (Sukhaphiban) as shown in Table I.

Table 1 The administrative divisions of Pattani Province.

No	Districts	No. Subdistricts	No. Villages	No. Thesaban	No. Sukhaphiban
1	Muang Pattani	10	63	1	-
2	Saiburi	10	59	1	-
3	Yaring	18	79	-	3
4	Nongchik	12	70	-	2
5	Kokpho	12	74	-	2
6	Yarang	12	70	-	1
7	Mayor	13	57	-	1
8	Panarea	10	52	-	1
9	Maikean	4	17	-	-
10	Tungyangdang	4	21	-	-
11	Kaphor	3	27	-	-
12	Malan	4	22	-	-
	Total	112	611	2	10

Source : Five-year Development Plan of Pattani (1997 - 2001), 1996.

The population of Pattani as of December 1994 was 563,159 including a total of 95,764 households, with an average of five people per household. 9.87 % of the household inhabitants were living in the municipal areas, 10.76 % in the sanitation district areas, and the majority, 79.37 % in the rural areas. Of the total 1,940 square kilometer area, Pattani's municipalities (Thesaban) cover 23.34 square kilometers, the sanitation districts (Sukhaphiban) cover 24.45 square kilometers and the rural areas cover 1,892.21 square kilometers. The average density of population throughout the province is 283.84 persons per square kilometer, with the density of population in the municipal areas being 2,573.86 persons per square kilometer and in the rural areas 234 persons per square kilometer.

The Development Strategies for Pattani Province

Since Pattani is situated very close to the Thai-Malaysian border, the Thai government has set forth development strategies to make Pattani a principal city, central for the regional development of Lower Southern Thailand according to the Seventh Development Scheme for Southern Border Provinces (1992 - 1996). Under this scheme, the aim is to make Pattani an industrial estate with a number of industrial development goals in mind, in areas such as the fishing industry, agro-industry, food industry, chemical products industry and the derived manufacturing activities of the mining industry.

Table 2 The number of manufacturing plants in Pattani over a period of years.

Industry	1985	1987	1989	1994
Fishing industry	32	32	39	38
Agro-industry	567	545	538	562
Wood products industry	46	34	33	36
Food products industry	19	11	14	10
Service industry	135	123	137	104

Source: A directory of manufacturing plants in Pattani, Office of Provincial Industry, Pattani, 1996.

In addition, the government has set forth some guidelines for the development plans of Pattani as follows

1. The Industrial Estate of Pattani

This is located at the end of Highway No. 4210, in Moo 8, Bana Sub-district or Commune (Tambon), Muang District (Amphoe Muang), Pattani Province (Changwat Pattani) on a land plot of 882 rais (approx. 1.6112 sq. km.). It was established to serve as a production base, especially for fishing boat construction, manufacturing, chemical products, electronic parts, food and beverage products, as well as other industries. Various infrastructure facilities that have been provided include electricity, feeder roads, sewage systems, waste water treatment systems, etc.

2. The Project for a Special Economic Zone for the 5 Southern Border Provinces

This is a special project concentrating on encouraging investment in local areas, with special privileges granted by the government for investment in plans and projects, proposed and drafted by a Special Economic Promotion Committee of Southern Border Provinces for the development of the 5 southern border provinces.

3. The Project for Indonesia-Malaysia-Thailand Growth Triangle (IMT - GT)

IMT-GT is an international cooperative project between Indonesia, Malaysia and Thailand. It has the goal of jointly linking and utilizing natural resources among the participating members, with an emphasis on the promotion of cooperation in the industries of tourism, manufacturing, public utility systems and international trade.

The Policy on Infrastructure Development of Pattani Province

Since Pattani has been designated by the government as the principal city for development in the lower southern region, the capacity of its infrastructure and facilities

to accommodate various programs and projects has become especially vital. This had led to the drawing up of the following Policy.

1. Objectives

1.1. To enable the inhabitants of the city areas as well as the rural areas to have full access to all facilities and services, while at the same time accommodating Pattani's economic expansion and growth.

1.2. To facilitate and support the provincial development in other aspects as well.

2. Goals

2.1. The upgrading of the infrastructure to provide adequate facilities throughout both the city and the rural areas.

2.2. The upgrading of the infrastructure to adequately accommodate the province's economic expansion and growth, and to provide economic development in the rural areas as well.

3. Methods for the Development

3.1. Roads and feeder roads between villages, sub-districts (communes), districts and provinces will be constructed and upgraded to provide a network to accommodate transportation and communications at all levels.

3.2. Drainage and sewage systems will be constructed and upgraded throughout the city areas.

3.3. Water supply systems and the corresponding facilities will be upgraded to adequately cover the municipalities, sanitation districts and community areas. This will also include an increase in the standard of drinking water for safer consumption.

3.4. The telephone network will be expanded throughout the Pattani municipalities.

3.5. Telephone services will be expanded to adequately cover the sub-district (commune) areas.

3.6. Power lines will be extended to villages currently without electricity.

3.7. Electricity systems will be upgraded and made more efficient to accommodate the province's economic expansion and growth and to facilitate manufacturing investments in the province.

3.8. Public parks and recreational facilities will be constructed and upgraded in the city area.

3.9. Rock walls will be built to protect the shorelines from being eroded by sea-waves.

3.10. Dredging up of Pattani River and Saiburi River is to be carried out to achieve a standard that allows fishing boats and other vessels to travel through safely. This will also help alleviate damage and problems caused by floods in the rainy season.

3.11. Shallow canals and moats are to be dredged up for agricultural purposes and also to help alleviate damages and problems caused by floods in the rainy season.

3.12. Irrigation systems will be constructed and upgraded throughout the province to adequately serve agricultural activities.

3.13. The issuance of land deeds must be accelerated accordingly.

Items 6 and 7 of the Methods for Development indicate that electricity is a very important part of the infrastructure for developing many projects, so a study of the status of the electricity utilization of Pattani is necessary.

The Status of the Electricity Utilization of Pattani Province

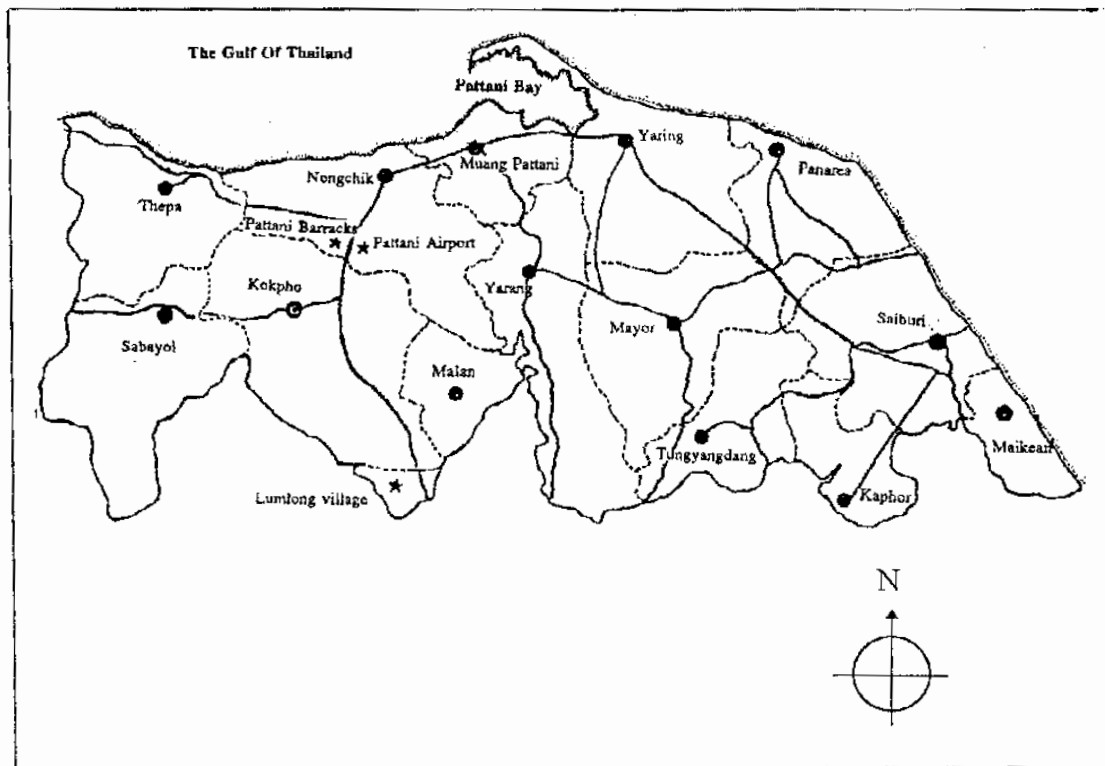
The Electricity Authority of the Regional Office in Pattani has divided the electricity feeders covering the areas throughout the provincial territory and some parts of Songkhla Province into 6 main feeder lines as shown in Table 3.

Table 3 The capacity status of electricity distribution in Pattani.

Adapter		Security tool		Feeder	Area
Code	Size(MVA)	Kind	Code		
KT2A +3	(15/20/25) x2 OA/FA/FA 115-33KV MITSUBISHI	MOCB	PTN3322	INC	Main line 33 KV
		BOCB	PTA1B-01	PTA1	Ramkomut Rd. ,Yaring Panarea
		BOCB	PTA2B-01	PTA2	Nongchik, Pattani Barracks Kokpho,Thepa , Sabayoi Lumlong village,Pattani Airport
		BOCB	PTA3B-01	PTA3	Yarang,Mayor, Tungyangdang Saiburi, Maikhan, Kaphor
		MOCB	PTABB-01	Spare	
KT1A	15/20/25 AO/FA/FA 115-33KV MITSUBISHI		MOCBPTN	3312	INC Main line 33 KV
		BOCB	PTA6B-01	PTA6	Left side of Naklua Rd.
		BOCB	PTA7B-01	PTA7	Muang Pattani, Prince of Songkla University
		BOCB	PTA8B-01	PTA8	Right side of Naklua Rd., Pattani Industrial Estate,Pattani Jail

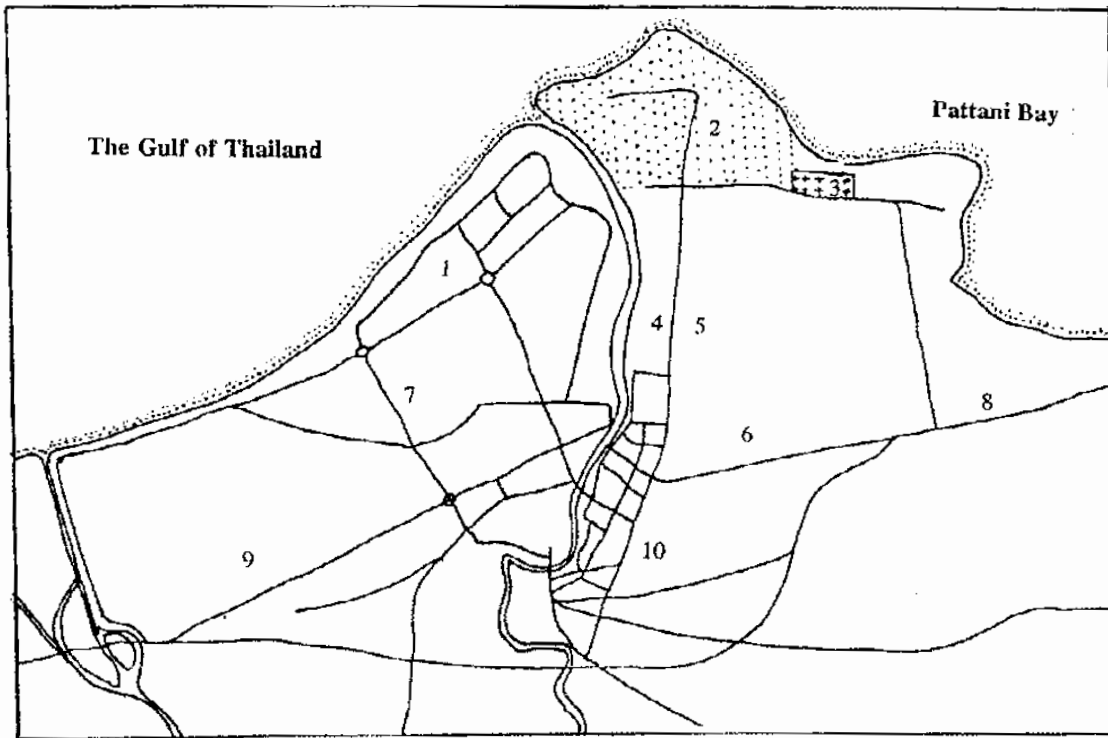
Source : Reports of the Electricity Authority of the Regional Office, Region 3, Yala Province, 1996.

Figure 1 Catchment area for all feeders.

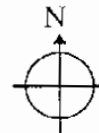


Source: Pattani Office of Town and Country Planning, 1997.

Figure 2 Map showing District of Pattani.



1. Prince of Songkla University
2. Pattani Industrial Estate
3. Pattani Jail
4. Left side of Naklua Rd.
5. Right side of Naklua Rd.
6. Ramkomut Rd.
7. Chareonpradit Rd.
8. Pattani-Naratiwat Rd.
9. Pattani-Hatyai Rd.
10. Pattani city boundary



Source: Pattani Office of Town and Country Planning, 1997.

Electric power and currents are distributed to 7 categories or types of user-groups.

1. Residential households, which include residential houses and other living compounds, such as Buddhist monasteries and buildings for religious activities, etc. Residential households may be subdivided into two categories according to the volume of electricity use.
 - 1.1. Those with a volume of less than 150 units per month of electricity use,
 - 1.2. Those with a volume of over 150 units per month of electricity use.
2. Small-scale business establishments, which include businesses in homes, manufacturing businesses owned by government agencies and state enterprises, which consume no more than 30 units of electricity per month. If electricity use exceeds 30 units per month, the business is re-categorized into user-group 3.
3. Medium-scale business establishments, which include businesses in homes and manufacturing businesses owned by government agencies and state enterprises, which consume 30 - 2,000 units of electricity per month .
4. Large-scale business establishments, which include large-scale businesses and manufacturing businesses owned by government agencies and state enterprises, which consume over 2,000 units of electricity per month , with a total three-month consumption of no more than 355,000 units of electricity.
5. Business activities of a particular kind, which include hotel businesses, rental houses, guest houses and the related businesses thereof, which consume approximately 30 units of electricity per month.
6. Government agencies and non-profit organizations, which include government offices and departmental agencies and offices of local administration, which may consume no more than 250,000 units of electricity over a 3-month period. User-groups of this type may also include non-profit organizations other than government agencies, but exclude state enterprise agencies, embassies, offices of foreign countries and offices of international agencies.

7. Groups pumping water for agricultural purposes. This includes electricity utilized for agricultural purposes under government agencies, agriculturist-groups registered as agricultural-group establishments and/or agricultural cooperatives.

In Pattani itself, the volume of electricity used by the various groups over the month of February 1997 is shown in Table 4.

Table 4 The volume of electricity used by different groups over February 1997.

Type of user-group	Units	%
Residential households:		
-- under 150 volume-units	2,031,808	14.34
-- over 150 volume-units	975,512	6.88
Small-scale business establishments	830,629	5.86
Medium-scale business establishments	5,269,085	37.18
Large-scale business establishments	3,417,066	24.82
Business activities of a particular kind	137,205	0.97
Government agencies and non-profit organizations	1,409,947	9.95
Water pumping for agricultural purposes	0	0
Total	14,172,746	100

Source : Reports of the Electricity Utilization Record for February 1997, Electricity Authority of the Regional Office, Pattani Province, 1997.

The number of electricity users in Pattani as of December 31, 1996 is shown in Table 5.

Table 5 The number of electricity users as of December 31, 1996

Area	Number of users	%	Large-scale users	%
Muang Pattani District	19,384	17.59	124	45.25
Yaring District	5,835	5.29	18	6.60
Pooyud Subdistrict	3,783	3.43	1	0.36
Nongchik District	8,304	7.53	45	16.42
Yarang District	8,217	7.46	5	1.82
Kokpho District	8,979	8.15	9	3.28
Napradoo Subdistrict	3,395	3.08	2	0.73
Lumplai Subdistrict	3,087	2.80	2	0.73
Thepa District	4,305	3.9	20	7.30
Malan District	3,642	3.30	3	1.10
Sabayoi District	7,817	7.0	9	3.28
Saiburi District	8,457	7.67	9	3.28
Maikhan District	2,260	2.05	1	0.36
Tungyangdang District	2,578	2.34	10	3.65
Kaphor District	2,388	2.17	1	0.36
Palus Subdistrict	9,162	8.31	12	4.38
Panarea District	4,238	3.85	2	0.73
Mayor District	4,406	3.99	1	0.36
Total	110,207	100	274	100

Source : Report of the Electricity Users in Pattani for December 1996, Electricity Authority of the Regional Office, Region 3, Yala Province, 1996.

Table 6 shows the extent of electricity distribution at the household level in various districts of Pattani as of December 1996.

Table 6 The number of households and extent of electricity distribution in various districts of Pattani.

District	No. households			No. village		
	Total	Electricity	No electricity	Total	Electricity	No Electricity
Muang Pattani	22,850	22,629	221	63	63	0
Saiburi	9,765	8,925	840	60	60	0
Nongchik	9,854	8,126	1,728	72	72	0
Kokpho	10,659	10,333	326	75	75	0
Yarang	10,914	8,081	2,833	70	70	0
Yaring	15,920	14,521	1,399	79	79	0
Panarea	7,285	6,729	556	52	52	0
Mayor	6,654	6,081	573	58	58	0
Maikean	3,018	2,301	717	17	17	0
Tungyangdang	3,098	2,582	516	21	20	1
Kaphor	2,980	2,433	547	27	27	0
Malan	2,762	2,626	136	22	22	0
Total	105,759	95,367	10,392	616	615	1

Source : Reports of the Number of Households with Electricity in Pattani, Electricity Authority of the Regional Office, Region 3, Yala Province, 1996.

In order to achieve the objectives of the policy set forth by the government for Pattani to become the principal city in the development of lower southern Thailand, with the proposals of various development programs and projects as mentioned before, the construction of infrastructure for the mass public must be vital. Electricity, as one of the

public utilities, plays a very important role in development and is essential in making all programs and projects possible. At the same time, the volume of electricity used for lighting purposes among Pattanian residents will become greater and greater as shown in preceding tables.

Study Design

Cross- sectional

Research Questions

1. How does the electricity usage differ between feeders in Pattani ?
2. How does the electricity usage differ from day to day in Pattani ?
3. What trends are there in the electricity usage in Pattani ?

Objectives of the Research Project

1. To investigate the status of electricity use in Pattani.
2. To study the trends of electricity use in Pattani.
3. To provide some useful findings to assist efficient provision of electricity for Pattani in the future.