

ANNEX II TECHNICAL PAPER

1. TRANSPORTATION SURVEY

1.1 KIND OF SURVEY

The following kind of transportation surveys were carried out by the Team to supplement the lack of transportation data of the Upper South.

- 1) Roadside OD Survey with Traffic Count
- 2) Traffic Count Survey on the Boundary of Urban Area
- 3) Bus (Grade 2 & 3) Terminal Survey
- 4) Bus (Grade 4) Terminal Survey
- 5) Railway Station Survey
- 6) Airport Survey
- 7) Seaport Survey
- 8) Home Interview Survey

1.1.1 Roadside OD Survey with Traffic Count

1) Method

A driver of a vehicle, which is stopped by policeman's instruction, is interviewed by an assigned surveyor in accordance with the Interview Sheet FORM-1. Interview should be made as much as possible within the limit of not causing traffic jam extremely. At the same time with the interview, all the vehicles passing the survey station should be counted by vehicle type and recorded on the Traffic Count Sheet FORM-2.

2) Location

11 Stations as shown in Location Map.
 Surat Thani : 5 ; Phangnga : 3 ; Phuket : 1 ; Krabi : 2

3) Interviewing/ Counting Period

12 hours from 7:00 to 19:00 on one day during a week excluding Saturday and Sunday.

4) Arrangement of Surveyors in a Survey Station

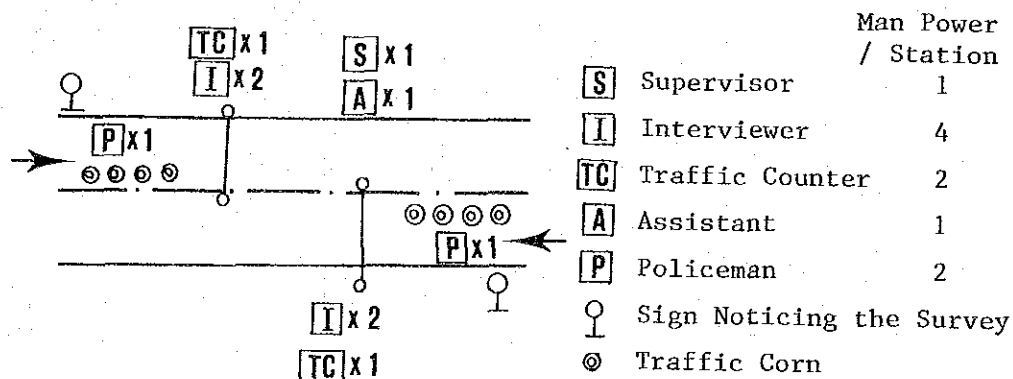
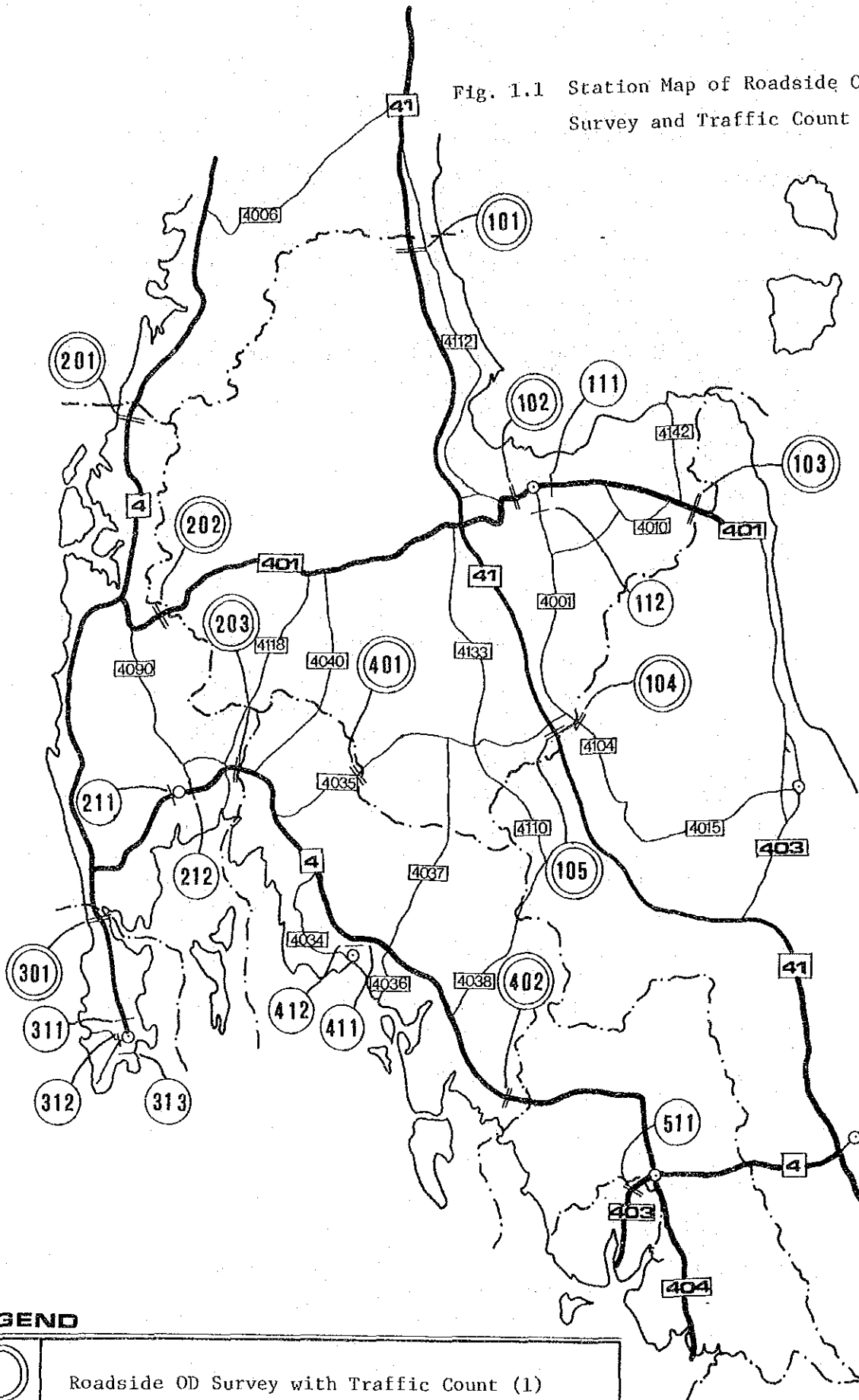




Fig. 1.1 Station Map of Roadside OD Survey and Traffic Count Survey



LEGEND

	Roadside OD Survey with Traffic Count (1)
	Traffic Count Survey on the Boundary of Urban Area

5) Necessities

- (1) Interview Sheet FORM-1
- (2) Traffic Count Sheet FORM-2
- (3) Traffic Counting Device
- (4) Writing Board
- (5) Pencil/Eraser
- (6) Sign Noticing the Survey
- (7) Traffic Corn
- (8) Rain Coat
- (9) Drinking Water/Food
- (10) Vehicle

1.1.2 Traffic Count Survey on the Boundary of Urban Area

1) Method

All the vehicles passing the survey station should be counted by vehicle type and recorded on the Traffic Count Sheet FORM-2.

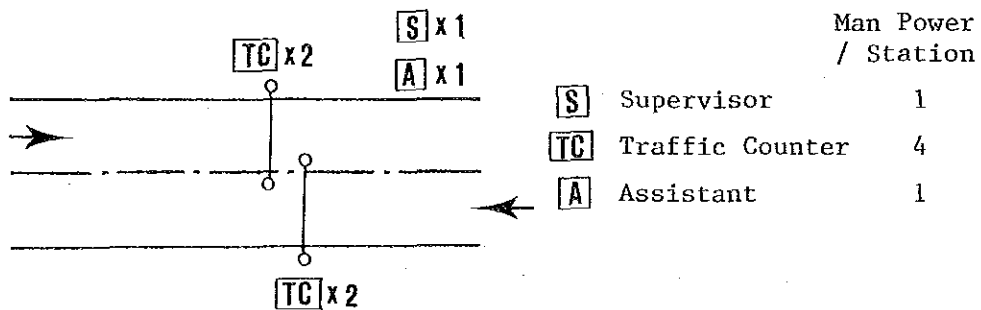
2) Location

10 Stations as shown in Location Map.
 Surat Thani 2; Phangnga 2; Phuket 3; Krabi 2; Kantang 1

3) Counting Period

12 hours from 7:00 to 19:00 on one day during a week excluding Saturday and Sunday.

4) Arrangement of Surveyors in a Survey Station



5) Necessities

- (1) Traffic Count Sheet FORM-2
- (2) Traffic Counting Device
- (3) Writing Board
- (4) Pencil/Eraser
- (5) Rain Coat

1.1.3 Bus (Grade 2 & 3) Terminal Survey

1) Method

Both departing and arriving bus passengers are interviewed by assigned surveyors in terminal area in accordance with the Interview Sheet FORM-3. At the same time with the interview, number of buses and passengers are counted and recorded on the Terminal Survey Sheet FORM-4.

Bus Grade 2 means buses operated between Bangkok and Province.

Bus Grade 3 means buses operated between Provinces.

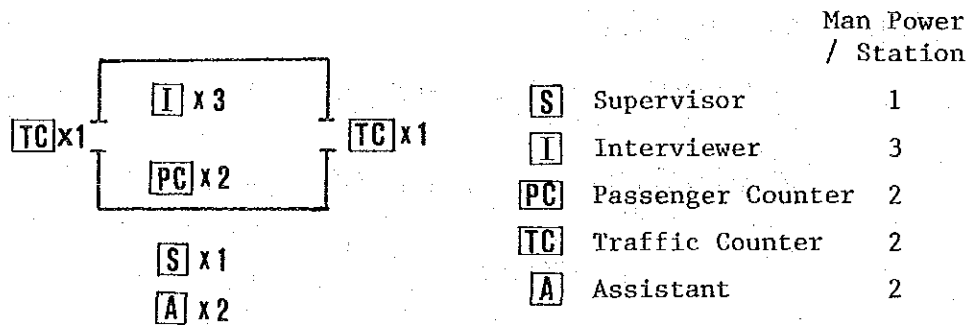
2) Location

4 Bus terminals in Surat Thani Phangnga, Phuket and Krabi.

3) Interviewing/Counting Period

12 hours from 7:00 to 19:00 on one day during a week excluding Saturday and Sunday.

4) Arrangement of Surveyors in a Survey Station



5) Necessities

- (1) Interview Sheet FORM-3
- (2) Terminal Survey Sheet FORM-4
- (3) Traffic Counting Device
- (4) Writing Board
- (5) Pencil/Eraser

1.1.4 Bus (Grade 4) Terminal Survey

1) Method

Both departing and arriving bus passengers are interviewed by assigned surveyors in terminal area in accordance with the Interview Sheet FORM-5. At the same time with the interview, number of buses and passengers are counted and recorded on the Terminal Survey Sheet FORM-4.

Bus Grade 4 means buses operated between amphoes/tambons in one province.

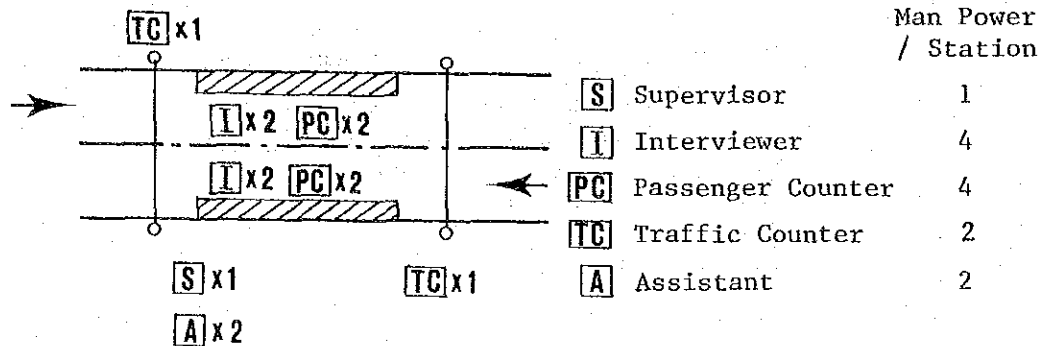
2) Location

4 bus terminals in Surat Thani, Phangnga, Phuket and Krabi.

3) Interviewing/Counting Period

12 hours from 7:00 to 19:00 on one day during a week excluding Saturday and Sunday.

4) Arrangement of Surveyors in a Survey Station



5) Necessities

- (1) Interview Sheet FORM-3
- (2) Terminal Survey Sheet FORM-4
- (3) Traffic Counting Device
- (4) Writing Board
- (5) Pencil/Eraser

1.1.5 Railway Station Survey

1) Method

Both departing and arriving railway passengers are interviewed by assigned surveyors in railway station in accordance with the Interview Sheet FORM-3. At the same timewith the interview, number of passengers are counted and recorded on the Terminal Survey Sheet FORM-4.

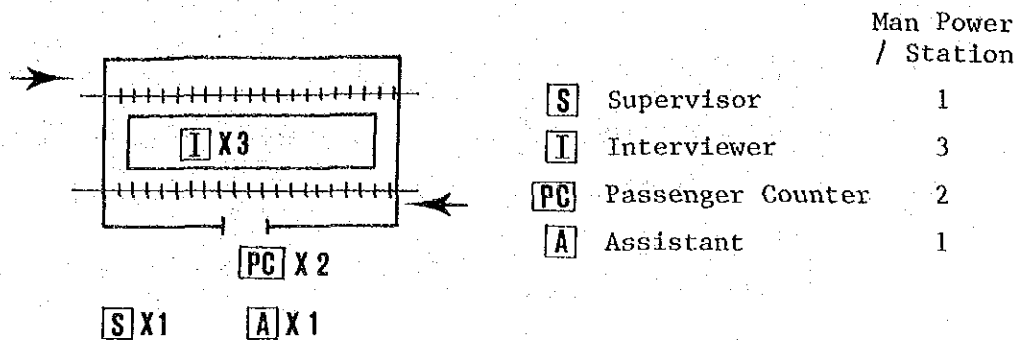
2) Location

3 railway stations of Surat Thaini, Chaiya, Ban Na San

3) Interviewing/Counting Period

12 hours from 7:00 to 19:00 on one day during a week excluding Saturday and Sunday.

4) Arrangement of Surveyors in a Survey Station



5) Necessities

- (1) Interview Sheet FORM-3
- (2) Terminal Survey Sheet FORM-4
- (3) Traffic Counting Device
- (4) Writing Board
- (5) Pencil/Eraser
- (6) Vehicle

1.1.6 Airport Survey

1) Method

Both departing and arriving airline passengers are interviewed by assigned surveyors in airport in accordance with the Interview Sheet FORM-3. At the same time with the interview, number of passengers are counted and recorded on the Terminal Survey Sheet FORM-4.

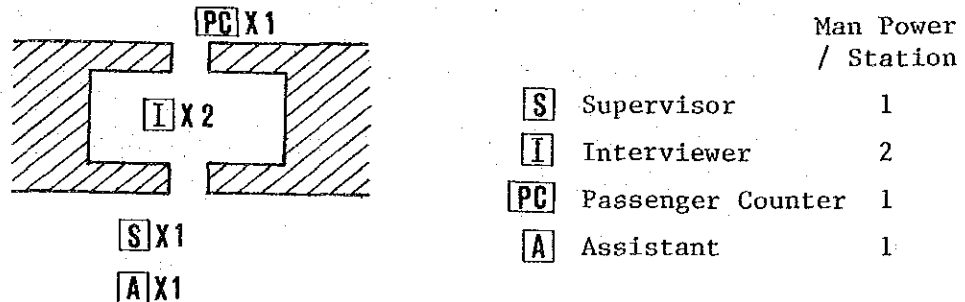
2) Location

2 airports of Surat Thani and Phuket

3) Interviewing/Counting Period

12 hours from 7:00 to 19:00 on one day during a week excluding Saturday and Sunday.

4) Arrangement of Surveyors in a Survey Station



5) Necessities

- (1) Interview Sheet FORM-3
- (2) Terminal Survey Sheet FORM-4
- (3) Traffic Counting Device
- (4) Writing Board
- (5) Pencil/Eraser
- (6) Vehicle

1.1.7 Seaport Survey

1) Method

Both departing and arriving trucks are interviewed by assigned surveyors at the entrance/exit of seaport in accordance with the Interview Sheet FORM-6. At the same time with the interview, number of trucks are counted and recorded on the Truck Count Sheet FORM-7.

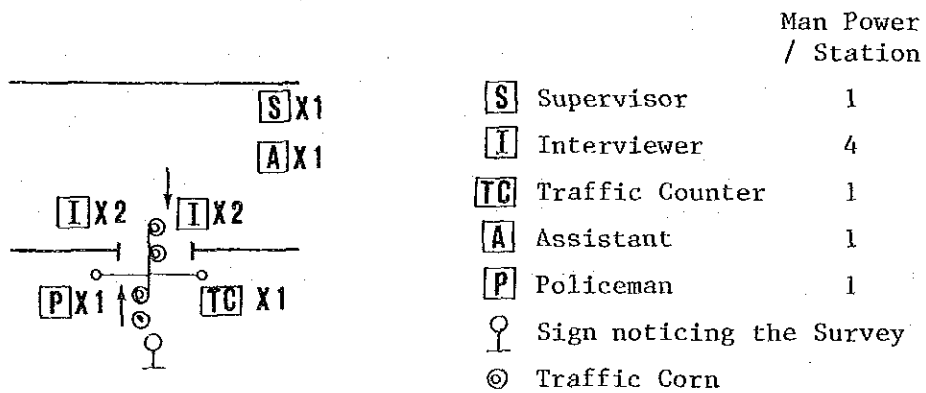
2) Location

5 ports : Surat Thani, Phangnga, Phuket, Krabi, Kantang.

3) Interviewing/Counting Period

12 hours from 7:00 to 19:00 on one day during a week excluding Saturday and Sunday.

4) Arrangement of Surveyors in a Survey Station



5) Necessities

- (1) Interview Sheet FORM-6
- (2) Truck Count Sheet FORM-7
- (3) Traffic Counting Device
- (4) Writing Board
- (5) Pencil/Eraser
- (6) Sign Noticing the Survey
- (7) Traffic Corn
- (8) Rain Coat

- (9) Drinking Water/Food
- (10) Vehicle

1.1.8 Home Interview Survey

1) Method

One thousand (1,000) households are sampled from the households in in Municipalities of Surat Thani, Phangnga, Phuket and Krabi. Family members of the sampled households are requested to write in the questionnaires on the Interview Sheet FORM-8. Interviewers visit each household two times; the first time to deliver Interview Sheet and the second time to collect them.

2) Location

	Samples	Location
Surat Thani	300	6
Phangnga	100	6
Phuket	300	6
Krabi	300	6

* Unit : 50 households

In each Muang Municipality, plural locations, for instance, in urban, suburban and rural areas, are to be chosen so as to enable undistorted sample collection.

3) Interviewing Period

Interviewers are requested to visit sampled households twice.

- (1) To distribute and explain the interview sheet FORM-8 to each sampled household on any day from 8:30 to 16:30, and get the answer to "A Household Information".
- (2) To collect the interview sheet from each sampled household on the day, 4 days after the first visit from 8:30 to 16:30.

4) Allocation of Surveyors in a Location/Unit-day

[S]	Supervisor	1
[I]	Interviewer	3

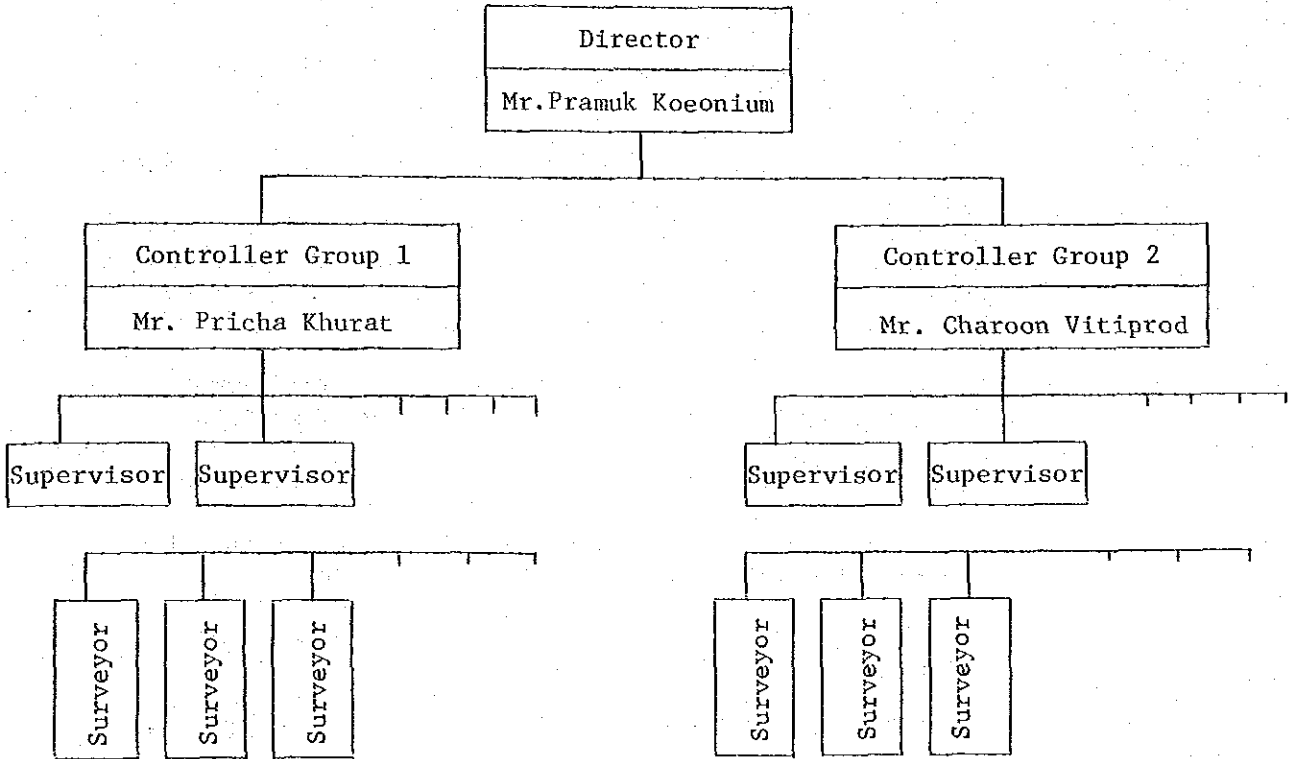
5) Necessities

- (1) Interview Sheet FORM-8
- (2) Writing Board
- (3) Pencil/Eraser
- (4) Vehicle

1.2 IMPLEMENTATION OF SURVEY

1.2.1 Organization for Survey

The survey was carried out with the cooperation of The Thailand Institute of Scientific and Technological Research.



1.2.2 Duties and Responsibilities

1) Director

Director has the over-all responsibility to carry out the Field Survey successfully through organizing the best suited survey team.

2) Controller

Controller has the supreme responsibility at surveying site, and fulfill the following items :

- Prepare schedule of individual supervisors and surveyors and let them know their schedule exactly.
- Prepare such necessities as survey sheet, interview sheet, traffic counter, pencils/erasers, etc. to each survey station and deliver them to the relevant supervisor.
- Arrange the cars for transporting supervisors/surveyors and necessary equipment to and from surveying sites.
- Arrange food and water for surveying sites, if necessary.
- Check and confirm that supervisors/surveyors and all the necessities are sent to each surveying site.
- Try his best to make inspection tours to each surveying site during survey hours.
- Receive every outcome of the survey and equipment from the supervisors.
- Put every outcome of the survey in order and keep them during the survey tour.
- Keep close connection with the director in BKK and let him know the exact situation of the survey.

3) Supervisor

Supervisor has the responsibility to carry out his assigned survey successfully as well as to cooperate with the controller :

- Fully understand the contents of his assigned survey.
- Receive the namelist of surveyors and the list of necessities for his assigned survey from controller.
- Check and confirm the surveyors and necessities before leaving for his assigned survey station.

- Deliver the surveying necessities to each surveyor and arrange surveyors to the suitable positions.
- Check surveyors if they are duly performing their job.
- Control the rest period of each surveyor by providing the assistant prepared.
- Collect every outcome of the survey and surveying equipment from surveyors at the end of the survey. Put them in good order.
- Return every outcome of the survey and surveying equipment to the controller.
- Get immediate contact with the controller, if any problem should happen.

4) Surveyor

Surveyor is requested to perform his job just in accordance with the supervisor's instruction :

- Fully recognize his work schedule and remember the name of his supervisor.
- Arrive at the scheduled place by the fixed time, and inform his attendance to his supervisor.
- Act just in accordance with his supervisor's instruction.
- Continue his assigned job irrespective of weather conditions unless the supervisor instruct otherwise.
- Return every outcome of the survey and surveying equipment to the supervisor at the end of survey.
- Get immediate contact with the supervisor, if any problem should happen.

1.3

SURVEY SHEET

- FORM - 1 Roadside Interview Survey Sheet
- FORM - 2 Traffic Count Survey Sheet
- FORM - 3 Terminal Interview Sheet
- FORM - 4 Terminal Survey Sheet
- FORM - 5 Bus Grade 4 Interview Survey Sheet
- FORM - 6 Truck Interview Survey Sheet
- FORM - 7 Truck Count Survey Sheet
- FORM - 8 Home Interview Survey Sheet

THE SUB-REGIONAL DEVELOPMENT STUDY ON
THE UPPER-SOUTHERN PART OF THAILAND

TRAFFIC COUNT SURVEY SHEET

FORM-2

Date : _____ - _____ - 1983

(1) Station No. : _____ Name : _____

(2) Direction : From _____ To _____

(3) Name of Supervisor _____

Name of Surveor _____

	Bicycle Tricycle	Motor Cycle	Passenger Car	Light Bus	Heavy Bus	Light Truck	Medium(6) Truck	Heavy(10) Truck
7 - 8								
8 - 9								
9 - 10								
10 - 11								
11 - 12								
12 - 13								
13 - 14								
14 - 15								
15 - 16								
16 - 17								
17 - 18								
18 - 19								

THE SUB-REGIONAL DEVELOPMENT STUDY ON
THE UPPER-SOUTHERN PART OF THAILAND

TERMINAL INTERVIEW SHEET

FORM-3

(1) Station No. : _____ Name _____
 (2) Survey Date : _____ - _____ - 1983 (3) Interviewer : _____

(4) Hour :

7	8	9	10	11	12	13	14	15	16	17	18

(5) Origin of this Trip Tambon/Hotel _____ Amphoe/Road _____ Changwat _____	(6) Purpose of this Trip <input type="checkbox"/> 1 Business <input type="checkbox"/> 2 To Attend Meeting <input type="checkbox"/> 3 Private Affairs <input type="checkbox"/> 4 Sightseeing Tour by Group <input type="checkbox"/> 5 Sightseeing Tour by Private <input type="checkbox"/> 6 Others (_____)
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(7) This trip is 1 On the way to 2 On the way from Destination

(8) This trip will take _____ days

(9) Destination of this trip <input type="checkbox"/> 1st Tambon/Hotel _____ Amphoe/Road _____ Changwat _____	(10) Transportation Means <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> 1. On foot 2. Bicycle 3. Motorcycle 4. Passenger Car 5. Taxi 6. Light Bus 7. Heavy Bus 8. Truck 9. Railway 10. Others </div>
<input type="checkbox"/> 2nd Tambon/Hotel _____ Amphoe/Road _____ Changwat _____	<input type="checkbox"/>
<input type="checkbox"/> 3rd Tambon/Hotel _____ Amphoe/Road _____ Changwat _____	<input type="checkbox"/>
<input type="checkbox"/> 4th Tambon/Hotel _____ Amphoe/Road _____ Changwat _____	<input type="checkbox"/>
<input type="checkbox"/> 5th Tambon/Hotel _____ Amphoe/Road _____ Changwat _____	<input type="checkbox"/>

THE SUB-REGIONAL DEVELOPMENT STUDY ON
THE UPPER-SOUTHERN PART OF THAILAND

TERMINAL SURVEY SHEET

FORM-4

- (1) Station No. : _____ Name _____
- (2) Survey Date : _____ - _____ - 1983
- (3) Surveyor : _____

This Survey Sheet is used for four kind of survey.
Please clarify the kind of survey you are going to perform.

Hour Band	<input type="checkbox"/> Bus Grade 2 & 3 <input type="checkbox"/> Railway <input type="checkbox"/> Airline				<input type="checkbox"/> Bus Grade 4			
	Number of Passengers		Number of Bus		Number of Passengers		Number of Bus	
	Getting On	Getting Off	Inward	Outward	Getting On	Getting Off	Inward	Outward
7 - 8								
8 - 9								
9 - 10								
10 - 11								
11 - 12								
12 - 13								
13 - 14								
14 - 15								
15 - 16								
16 - 17								
17 - 18								
18 - 19								

THE SUB-REGIONAL DEVELOPMENT STUDY ON
THE UPPER-SOUTHERN PART OF THAILAND
BUS GRADE 4 INTERVIEW SURVEY SHEET

FORM-5

- (1) Station No. : _____ Name _____
 (2) Survey Date : _____ - _____ - 1983
 (3) Interviewer : _____

Hour Band		Address of Origin/ Destination	Transportation Means to/from Terminal	Trip Purpose
<input type="checkbox"/> 7 <input type="checkbox"/> 13	On	Village _____	<input type="checkbox"/> 1 On foot	<input type="checkbox"/> 1 Home to Work
<input type="checkbox"/> 8 <input type="checkbox"/> 14		Tambon _____	<input type="checkbox"/> 2 Tricycle	<input type="checkbox"/> 2 Home to School
<input type="checkbox"/> 9 <input type="checkbox"/> 15		<input type="checkbox"/> 1 Amphoe _____	<input type="checkbox"/> 3 Motorcycle	<input type="checkbox"/> 3 As a part of Work
<input type="checkbox"/> 10 <input type="checkbox"/> 16		Address of Destination/ Origin	<input type="checkbox"/> 4 Passenger Car	<input type="checkbox"/> 4 Shopping/Private
<input type="checkbox"/> 11 <input type="checkbox"/> 17		<input type="checkbox"/> 2 Village _____	<input type="checkbox"/> 5 Taxi	<input type="checkbox"/> 5 Social Activities
<input type="checkbox"/> 12 <input type="checkbox"/> 18		Off	Tambon _____	<input type="checkbox"/> 6 Light Bus
		Amphoe _____	<input type="checkbox"/> 7 Heavy Bus	<input type="checkbox"/> 7 Travelling
			<input type="checkbox"/> 8 Truck	<input type="checkbox"/> 8 Others
			<input type="checkbox"/> 9 Railway	
			<input type="checkbox"/> 10 Others	
<input type="checkbox"/> 7 <input type="checkbox"/> 13	On	Village _____	<input type="checkbox"/> 1 On foot	<input type="checkbox"/> 1 Home to Work
<input type="checkbox"/> 8 <input type="checkbox"/> 14		Tambon _____	<input type="checkbox"/> 2 Tricycle	<input type="checkbox"/> 2 Home to School
<input type="checkbox"/> 9 <input type="checkbox"/> 15		<input type="checkbox"/> 1 Amphoe _____	<input type="checkbox"/> 3 Motorcycle	<input type="checkbox"/> 3 As a part of Work
<input type="checkbox"/> 10 <input type="checkbox"/> 16		Address of Destination/ Origin	<input type="checkbox"/> 4 Passenger Car	<input type="checkbox"/> 4 Shopping/Private
<input type="checkbox"/> 11 <input type="checkbox"/> 17		<input type="checkbox"/> 2 Village _____	<input type="checkbox"/> 5 Taxi	<input type="checkbox"/> 5 Social Activites
<input type="checkbox"/> 12 <input type="checkbox"/> 18		Off	Tambon _____	<input type="checkbox"/> 6 Light Bus
		Amphoe _____	<input type="checkbox"/> 7 Heavy Bus	<input type="checkbox"/> 7 Travelling
			<input type="checkbox"/> 8 Truck	<input type="checkbox"/> 8 Others
			<input type="checkbox"/> 9 Railway	
			<input type="checkbox"/> 10 Others	
<input type="checkbox"/> 7 <input type="checkbox"/> 13	On	Village _____	<input type="checkbox"/> 1 On foot	<input type="checkbox"/> 1 Home to Work
<input type="checkbox"/> 8 <input type="checkbox"/> 14		Tambon _____	<input type="checkbox"/> 2 Tricycle	<input type="checkbox"/> 2 Home to School
<input type="checkbox"/> 9 <input type="checkbox"/> 15		<input type="checkbox"/> 1 Amphoe _____	<input type="checkbox"/> 3 Motorcycle	<input type="checkbox"/> 3 As a part of Work
<input type="checkbox"/> 10 <input type="checkbox"/> 16		Address of Destination/ Origin	<input type="checkbox"/> 4 Passenger Car	<input type="checkbox"/> 4 Shopping/Private
<input type="checkbox"/> 11 <input type="checkbox"/> 17		<input type="checkbox"/> 2 Village _____	<input type="checkbox"/> 5 Taxi	<input type="checkbox"/> 5 Social Activites
<input type="checkbox"/> 12 <input type="checkbox"/> 18		Off	Tambon _____	<input type="checkbox"/> 6 Light Bus
		Amphoe _____	<input type="checkbox"/> 7 Heavy Bus	<input type="checkbox"/> 7 Travelling
			<input type="checkbox"/> 8 Truck	<input type="checkbox"/> 8 Others
			<input type="checkbox"/> 9 Railway	
			<input type="checkbox"/> 10 Others	

THE SUB-REGIONAL DEVELOPMENT STUDY ON
THE UPPER-SOUTHERN PART OF THAILAND

TRUCK INTERVIEW SURVEY SHEET FORM-6

- (1) Station No. : _____ Name _____
- (2) Direction : 1 to Port 2 from Port
- (3) Date : _____ - 1983 (4) Interviewer : _____
- (5) Hour :

7	8	9	10	11	12	13	14	15	16	17	18
- (6) Vehicle Type : (7) Licence Plate : Color _____ No. _____
- 1 Pick up Truck 2 Truck 2 axes 3 Truck 3 axes
- 4 Trailer 5 Oil Truck 6 Refrigerator Truck
- 7 Other (_____)

(8) Origin of this Trip	(9) Destination of this Trip
Tambon _____	Tambon _____
Amphoe _____	Amphoe _____
Changwat _____	Changwat _____

- (10) This trip takes 1 One day 2 Two days and over
- (11) This trip is 1 To bring cargo to port 2 To pick up cargo from port

(12) Kind of Cargo	
<input type="checkbox"/> 1 Empty	<input type="checkbox"/> 12 Construction Material
<input type="checkbox"/> 2 Mixed Cargoes	<input type="checkbox"/> 13 Construction Residue
<input type="checkbox"/> 3 Rice	<input type="checkbox"/> 14 Liquid Fuel
<input type="checkbox"/> 4 Other Crops	<input type="checkbox"/> 15 Chemical Products
<input type="checkbox"/> 5 Livestock	<input type="checkbox"/> 16 Ceramic Products
<input type="checkbox"/> 6 Rubber	<input type="checkbox"/> 17 Paper/Pulp
<input type="checkbox"/> 7 Coconut	<input type="checkbox"/> 18 Textile Products
<input type="checkbox"/> 8 Other Forestry Products	<input type="checkbox"/> 19 Other Manufacturing Products
<input type="checkbox"/> 9 Tin	<input type="checkbox"/> 20 Waste Matters
<input type="checkbox"/> 10 Other Mining Products	<input type="checkbox"/> 21 Others (_____)
<input type="checkbox"/> 11 Quarrying Products	

(15) Destinated Port
(16) Originated Port

⇒ (17) Only for truck from port

Waiting Hour _____ :

Loading/Unloading Hour _____ :

- (13) Number of Persons : _____ persons
- (14) Tonnage of Cargo : _____ ton

THE SUB-REGIONAL DEVELOPMENT STUDY ON
THE UPPER-SOUTHERN PART OF THAILAND

TRUCK COUNT SURVEY SHEET

FORM-7

- (1) Station No. : _____ Name _____
- (2) Direction : 1 to Port 2 from Port
- (3) Date : _____ - _____ - 1983
- (4) Name of Supervisor _____
- Name of Surveyor _____

Hour Band	Pick up Truck	Truck 2 axes	Truck 3 axes	Trailer	Oil Truck	Refrigerator Truck	Motorcycle	Passenger Car
7 - 8								
8 - 9								
9 - 10								
10 - 11								
11 - 12								
12 - 13								
13 - 14								
15 - 16								
16 - 17								
17 - 18								
18 - 19								

THE SUB-REGIONAL DEVELOPMENT STUDY ON
THE UPPER-SOUTHERN PART OF THAILAND

HOME INTERVIEW SURVEY SHEET

FORM-8

No. _____

This Home Interview Survey is intended for obtaining the basic data concerning the trip characteristics of the people in Upper Southern Part of Thailand. The result of this survey is to be utilized for studying future improvement/development plan of the transportation network in the region. There are three categories of questionnaire, they are

- 1) Household Information,
- 2) Individual Information and
- 3) Trip Information.

The householder is requested to fill in all the categories of questionnaire and each family member is requested to fill in only 2) Individual Information and 3) Trip Information.

The contents of your answer is strictly confined to the statistical use only. To make this Study successful, your kind cooperation to this a survey will be highly appreciated.

Survey Date : _____ - _____ - 1983

Next Visit : _____ - _____ - 1983

at _____ : _____ NESDB

(1) Name of Household : _____ No. _____

(2) Address of Household : _____

(3) First Visit : _____ - _____ - 1983 at _____ : _____
o'clock min.

(4) Questionnaire 1) Household Information sheet
2) Individual/Trip Information sheets

(5) Survey Date : _____ - _____ - 1983

(6) Second Visit : _____ - _____ - 1983 at _____ : _____

A. HOUSEHOLD INFORMATION - only for householder

(1) Address	
Road _____	
Tambon _____	
Amphoe _____	
Municipality _____	

(2) Family Members (Persons)	
Husband	<input type="text"/>
Wife	<input type="text"/>
Children (Older than 6) ..	<input type="text"/>
Grandparents	<input type="text"/>
Relative/Friends	<input type="text"/>
Maid/Guardman/Driver	<input type="text"/>
Total	<input type="text"/>

(3) Vehicles you have (Numbers)	
Bicycle	<input type="text"/>
Motorcycle	<input type="text"/>
Passenger Car	<input type="text"/>
Bus	<input type="text"/>
Truck	<input type="text"/>
Others ()	<input type="text"/>

(4) Electric Appliances you have (Numbers)	
Light	<input type="text"/>
Rice Cooker	<input type="text"/>
Iron	<input type="text"/>
Fan	<input type="text"/>
Stove	<input type="text"/>
Refrigilator	<input type="text"/>
Air Conditioner	<input type="text"/>
Others ()	

(5) Fuel Consumption/Month		
<u>Vehicle Type</u>	<u>Diesel</u>	<u>Gasoline</u>
	฿	฿
Motorcycle		
Passenger Car		
Bus		
Truck		
Tracter		
Phoughing Machine		
Boat		
Others		

(6) Diesel Cost : _____ ฿/Liter

(7) Gasoline Cost : _____ ฿/Liter

(8) Energy Consumption excluding for Transportation						
Energy Type	Unit	Unit Cost ₪	Average	Volume/Month		
				Hot Season	Wet Season	Cold Season
Firewood	Kg					
Charcoal	Kg					
Coal/Lignite	Kg					
Kerosene	liter					
Diesel	liter					
Electricity	liter					
Others	()					

(9) What kind of energy did you mainly use in 10 years ago?

<input type="checkbox"/> 1	Firewood	<input type="checkbox"/> 2	Charcoal
<input type="checkbox"/> 3	Coal/Lignite	<input type="checkbox"/> 4	Kerosene
<input type="checkbox"/> 5	Diesel	<input type="checkbox"/> 6	Electricity
<input type="checkbox"/> 7	Others ()		

B. INDIVIDUAL INFORMATION

No. _____

- Questionnaires Band C. are prepared for every member of your family who is more than 6 years old and stays in your dwelling for more than 2 months.
- Please choose the answer considered to be most suitable for your or write down your answer in the blank.

(1) Address
Road _____
Tambon _____
Amphoe _____
Municipality _____

(4) Age
<input type="checkbox"/> 1 6-10 <input type="checkbox"/> 5 26-30
<input type="checkbox"/> 2 11-15 <input type="checkbox"/> 6 31-40
<input type="checkbox"/> 3 16-20 <input type="checkbox"/> 7 41-50
<input type="checkbox"/> 4 21-25 <input type="checkbox"/> 8 51-60
<input type="checkbox"/> 9 61-

(6) Address of Work Place/School
Road _____
Tambon _____
Amphoe _____
Municipality _____

(2) Status in Family	(3) Sex
<input type="checkbox"/> 1 Husband	<input type="checkbox"/> 1 Male
<input type="checkbox"/> 2 Wife	<input type="checkbox"/> 2 Female
<input type="checkbox"/> 3 Children	
<input type="checkbox"/> 4 Grand Parents	
<input type="checkbox"/> 5 Relatives/Friends	
<input type="checkbox"/> 6 Servants	
<input type="checkbox"/> 7 Guardman	
<input type="checkbox"/> 8 Driver	

(5) Main Occupation
<input type="checkbox"/> 1 Agriculture
<input type="checkbox"/> 2 Forestry
<input type="checkbox"/> 3 Fishery
<input type="checkbox"/> 4 Mining
<input type="checkbox"/> 5 Quarry
<input type="checkbox"/> 6 Construction
<input type="checkbox"/> 7 Manufacturing/Processing
<input type="checkbox"/> 8 Wholesale/Commerce
<input type="checkbox"/> 9 Retail
<input type="checkbox"/> 10 Service
<input type="checkbox"/> 11 Banking/Insurance
<input type="checkbox"/> 12 Transport
<input type="checkbox"/> 13 Government
<input type="checkbox"/> 14 Student
<input type="checkbox"/> 15 House Keeping
<input type="checkbox"/> 16 Unemployed
<input type="checkbox"/> 17 Others ()

C. TRIP INFORMATION

- Please let us have all the information on your journey and trip which you made from morning till night on July , 1983
- Journey is defined as a movement from one place to another with a particular purpose. One journey may consist of several trips with different transportation means. The concept of journey and trip is as explained in the following figure. Please refer to the figure about how to fill in the questionnaire, too.
- Please disregard the "On Foot" trip made for transit from a transportation means to another.

(9) Purpose of Journey

1. Home to Office
2. Home to Factory
3. Home to Field
4. Home to Forest
5. Home to Fishery
6. Home to School
7. Collecting/Delivering Goods
8. As a Part of Work
9. Shopping/Private Affairs
10. Meeting Friends/Recreation
11. Return to Home
12. Others

(11) Transport Means

1. On Foot
2. Bicycle
3. Motorcycle
4. Tricycle
5. Passenger Car
6. Taxi
7. Light Bus
8. Heavy Bus
9. Truck
10. Railway
11. Airline
12. Ship
13. Others

1st Journey
2nd Journey
3rd Journey
4th Journey

(7) Origin/Destination Your Residence	(8) Time Leaving for Destination	(9) Purpose of Journey	(10) Trip Time	(11) Transportation Means	(10) Trip Time	(11) Transportation Means
1st Destination Road _____ Tambon _____ Amphoe _____ Municipality _____	O'clock Min. <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	(1st Trip) min. <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> (3rd Trip) min. <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		(2nd Trip) <input type="text"/> <input type="text"/> (4th Trip) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
2nd Destination Road _____ Tambon _____ Amphoe _____ Municipality _____	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	(1st Trip) min. <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> (3rd Trip) min. <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		(2nd Trip) <input type="text"/> <input type="text"/> (4th Trip) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
3rd Destination Road _____ Tambon _____ Amphoe _____ Municipality _____	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	(1st Trip) min. <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> (3rd Trip) min. <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		(2nd Trip) <input type="text"/> <input type="text"/> (4th Trip) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
4th Destination Road _____ Tambon _____ Amphoe _____ Municipality _____	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>	(1st Trip) min. <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> (3rd Trip) min. <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>		(2nd Trip) <input type="text"/> <input type="text"/> (4th Trip) <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>

1.5 RESULTS OF SURVEY

1.5.1 Traffic Count Survey for Roadside OD

Roadside OD Survey

STATION NO.=101 Tha Chana (Route No.41)
Direction from Chumphon to Surat Thani

HOUR BAND	(1) BI. TRI CYCLE	(2) MOTOR CYCLE	(3) SEDAN	(4) LIGHT BUS	(5) HEAVY BUS	(6) LIGHT TRUCK	(7) MEDIUM TRUCK	(8) HEAVY TRUCK	T O T A L	
									BUS (4+5)	TRUCK (6+7+8)
7 - 8	10	13	3	1	0	12	5	5	1	22
8 - 9	7	8	3	4	1	26	7	9	5	42
9 - 10	4	8	7	2	2	8	6	9	4	23
10 - 11	4	5	4	2	3	15	6	4	5	25
11 - 12	1	8	0	4	1	8	2	5	5	15
12 - 13	2	4	2	5	2	7	7	2	7	16
13 - 14	1	11	3	4	1	3	14	9	5	26
14 - 15	2	3	6	7	2	3	2	3	9	8
15 - 16	3	14	3	0	1	9	7	2	1	18
16 - 17	3	10	2	0	4	14	4	8	4	26
17 - 18	2	5	2	3	1	11	6	4	4	21
18 - 19	4	10	9	0	0	11	9	6	0	26
7 - 19	43	99	44	32	18	127	75	66	50	268
7 - 9	17	21	6	5	1	38	12	14	6	64

Roadside OD Survey

STATION NO.=101 Tha Chana (Route No.41)
Direction from Surat Thani to Chumphon

HOUR BAND	(1) BI. TRI CYCLE	(2) MOTOR CYCLE	(3) SEDAN	(4) LIGHT BUS	(5) HEAVY BUS	(6) LIGHT TRUCK	(7) MEDIUM TRUCK	(8) HEAVY TRUCK	T O T A L	
									BUS (4+5)	TRUCK (6+7+8)
7 - 8	1	14	7	4	0	7	5	3	4	15
8 - 9	0	10	4	0	3	14	3	1	3	18
9 - 10	0	9	10	0	2	11	11	8	2	30
10 - 11	11	8	2	2	2	7	4	5	4	16
11 - 12	1	7	4	7	2	6	2	4	9	12
12 - 13	3	14	4	3	1	11	10	9	4	30
13 - 14	2	8	4	5	2	5	14	16	7	35
14 - 15	2	11	7	4	2	5	6	20	6	31
15 - 16	5	14	10	0	1	11	5	12	1	28
16 - 17	11	24	9	3	3	12	15	33	6	60
17 - 18	7	12	9	2	0	14	11	27	2	52
18 - 19	2	13	3	1	3	14	9	30	4	53
7 - 19	45	144	73	31	21	117	95	168	52	380
7 - 9	1	24	11	4	3	21	8	4	7	33

Roadside OD Survey

STATION NO.=101 Tha Chana (Route No.41)
Direction from Both to Both

HOUR BAND	(1) BI. TRI CYCLE	(2) MOTOR CYCLE	(3) SEDAN	(4) LIGHT BUS	(5) HEAVY BUS	(6) LIGHT TRUCK	(7) MEDIUM TRUCK	(8) HEAVY TRUCK	T O T A L	
									BUS (4+5)	TRUCK (6+7+8)
7 - 8	11	27	10	5	0	19	10	8	5	37
8 - 9	7	18	7	4	4	40	10	10	8	60
9 - 10	4	17	17	2	4	19	17	17	6	53
10 - 11	15	13	6	4	5	22	10	9	9	41
11 - 12	2	15	4	11	3	14	4	9	14	27
12 - 13	5	18	6	8	3	18	17	11	11	46
13 - 14	3	19	7	9	3	8	28	25	12	61
14 - 15	4	14	13	11	4	8	8	23	15	39
15 - 16	8	28	13	0	2	20	12	14	2	46
16 - 17	14	34	11	3	7	26	19	41	10	86
17 - 18	9	17	11	5	1	25	17	31	6	73
18 - 19	6	23	12	1	3	25	18	36	4	79
7 - 19	88	243	117	63	39	244	170	234	102	648
7 - 9	18	45	17	9	4	59	20	18	13	97

Roadside OD Survey

STATION NO.=102 Surat Thani (Route No.401)
Direction from Phunphin to Ban Don

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	75	253	64	73	21	95	14	11	94	120
8 - 9	68	207	52	73	13	84	17	8	86	109
9 - 10	16	158	48	48	22	139	41	8	70	188
10 - 11	17	144	46	58	20	114	22	14	78	150
11 - 12	17	140	28	58	14	117	30	7	72	154
12 - 13	18	158	39	33	12	63	16	6	45	85
13 - 14	15	118	35	32	18	106	10	2	50	118
14 - 15	10	133	38	42	19	110	23	6	61	139
15 - 16	20	157	40	71	12	65	15	10	83	90
16 - 17	25	233	37	66	15	86	32	4	83	122
17 - 18	37	127	25	31	15	50	8	8	46	66
18 - 19	26	162	42	30	14	74	12	6	44	92
7 - 19	344	1990	496	617	195	1103	240	90	812	1433
7 - 9	143	460	118	146	34	179	31	19	180	229

Roadside OD Survey

STATION NO.=102 Surat Thani (Route No.401)
Direction from Ban Don to Phunphin

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	37	230	24	72	21	56	24	9	93	89
8 - 9	11	229	45	97	26	57	28	10	123	95
9 - 10	17	137	38	54	15	100	44	20	69	164
10 - 11	16	165	44	48	14	114	45	11	62	170
11 - 12	18	171	40	53	16	120	23	12	69	155
12 - 13	22	129	26	36	13	81	15	6	49	102
13 - 14	5	162	25	40	16	100	16	5	56	121
14 - 15	12	134	44	51	17	116	41	11	68	168
15 - 16	17	165	50	49	15	112	25	13	64	150
16 - 17	37	263	48	91	20	80	34	18	111	132
17 - 18	39	219	33	46	11	99	31	11	57	131
18 - 19	58	211	20	34	17	73	13	7	51	93
7 - 19	289	2215	437	671	201	1098	339	133	872	1570
7 - 9	48	459	69	169	47	113	52	19	216	184

Roadside OD Survey

STATION NO.=102 Surat Thani (Route No.401)
Direction from Both to Both

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	112	483	90	145	42	151	38	20	187	209
8 - 9	79	436	97	170	39	141	45	18	209	204
9 - 10	33	295	86	102	37	239	85	28	139	352
10 - 11	33	309	90	106	34	228	67	25	140	320
11 - 12	35	311	68	111	30	237	53	19	141	309
12 - 13	40	287	65	69	25	144	31	12	94	187
13 - 14	20	280	50	72	34	206	26	7	106	239
14 - 15	22	267	82	93	36	226	64	17	129	307
15 - 16	37	322	90	120	27	177	40	23	147	240
16 - 17	62	496	85	159	35	166	66	22	194	254
17 - 18	76	346	58	77	26	139	39	19	103	197
18 - 19	84	373	62	64	31	147	25	13	95	185
7 - 19	633	4205	933	1288	396	2201	579	223	1684	3003
7 - 9	191	919	187	315	81	292	83	38	396	413

Roadside OD Survey

STATION NO.=103 Kanchana Dit (Route No. 401)
 Direction from Nakhon Si Thammarat to Surat Thani

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	5	40	8	15	8	20	12	10	23	42
8 - 9	3	33	4	8	3	15	8	5	11	29
9 - 10	1	14	10	6	2	20	8	10	8	38
10 - 11	3	6	7	2	3	14	10	8	5	32
11 - 12	1	15	8	4	3	20	6	11	7	37
12 - 13	0	12	6	0	4	15	7	19	4	41
13 - 14	1	5	8	2	2	18	6	7	4	31
14 - 15	2	3	5	2	2	16	8	10	4	34
15 - 16	4	6	7	2	2	17	8	15	4	40
16 - 17	0	5	7	0	2	15	9	10	2	34
17 - 18	5	17	7	1	8	18	10	15	9	43
18 - 19	2	11	4	2	4	14	6	24	6	44
7 - 19	27	167	81	44	43	202	98	144	87	444
7 - 9	8	73	12	23	11	35	20	15	34	70

Roadside OD Survey

STATION NO.=103 Kanchana Dit (Route No.401)
 Direction from Surat Thani to Nakhon Si Thammarat

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	8	65	10	22	8	15	10	20	30	45
8 - 9	3	60	7	19	3	11	5	14	22	30
9 - 10	1	26	8	3	2	33	3	9	5	45
10 - 11	1	9	5	24	2	31	5	17	26	53
11 - 12	0	6	7	3	4	15	5	15	7	35
12 - 13	0	6	12	3	2	29	9	4	5	42
13 - 14	0	5	7	3	4	15	3	6	7	24
14 - 15	0	5	6	0	2	7	4	9	2	20
15 - 16	3	8	9	1	2	11	12	12	3	35
16 - 17	2	7	6	3	1	15	7	7	4	29
17 - 18	1	13	6	7	4	4	4	9	11	17
18 - 19	0	6	3	2	1	12	2	1	3	15
7 - 19	19	216	86	90	35	198	69	123	125	390
7 - 9	11	125	17	41	11	26	15	34	52	75

Roadside OD Survey

STATION NO.=103 Kanchana Dit (Route No.401)
 Direction from Both to Both

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	13	105	18	37	16	35	22	30	53	87
8 - 9	6	93	11	27	6	26	13	19	33	58
9 - 10	2	40	18	9	4	53	11	19	13	83
10 - 11	4	15	12	26	5	45	15	25	31	85
11 - 12	1	21	15	7	7	35	11	26	14	72
12 - 13	0	18	18	3	6	44	16	23	9	83
13 - 14	1	10	15	5	6	33	9	13	11	55
14 - 15	2	8	11	2	4	23	12	19	6	54
15 - 16	7	14	16	3	4	28	20	27	7	75
16 - 17	2	12	13	3	3	30	16	17	6	63
17 - 18	6	30	13	8	12	22	14	24	20	60
18 - 19	2	17	7	4	5	26	8	25	9	59
7 - 19	46	383	167	134	78	400	167	267	212	834
7 - 9	19	198	29	64	22	61	35	49	86	145

Roadside OD Survey

STATION NO.=104 Wiang Sa (Route No.4104)
Direction from Nakhon Si Thammarat to Ban Na San

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	4	35	3	3	1	10	2	5	4	17
8 - 9	6	71	7	7	2	16	3	3	9	22
9 - 10	4	51	4	7	3	16	0	7	10	23
10 - 11	2	52	4	6	2	12	3	6	8	21
11 - 12	4	32	6	8	3	12	0	0	11	12
12 - 13	6	45	5	2	1	13	4	2	3	19
13 - 14	2	35	3	4	0	22	4	0	4	26
14 - 15	1	26	4	2	1	10	6	3	3	19
15 - 16	3	40	4	0	0	9	2	3	0	14
16 - 17	16	24	2	5	4	15	2	3	9	20
17 - 18	4	34	5	1	1	17	2	3	2	22
18 - 19	10	33	0	1	4	6	3	4	5	13
7 - 19	62	478	47	46	22	158	31	39	68	228
7 - 9	10	106	10	10	3	26	5	8	13	39

Roadside OD Survey

STATION NO.=104 Wiang Sa (Route No.4104)
Direction from Ban Na San to Nakhon Si Thammarat

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	23	47	1	6	1	4	3	2	7	9
8 - 9	4	53	7	2	2	11	4	4	4	19
9 - 10	3	40	2	5	1	11	3	4	6	19
10 - 11	2	35	2	5	1	10	3	4	6	17
11 - 12	13	37	6	4	1	11	3	5	5	19
12 - 13	3	41	4	5	1	15	3	5	6	23
13 - 14	3	40	4	4	2	16	8	2	6	26
14 - 15	2	31	3	6	1	12	3	5	7	20
15 - 16	3	40	4	4	1	20	3	6	5	29
16 - 17	12	76	9	3	1	19	2	5	4	26
17 - 18	7	30	7	2	1	7	2	1	3	10
18 - 19	10	46	2	1	0	17	1	2	1	20
7 - 19	85	516	51	47	13	153	38	45	60	236
7 - 9	27	100	8	8	3	15	7	6	11	28

Roadside OD Survey

STATION NO.=104 Wiang Sa (Route No.4104)
Direction from Both to Both

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	27	82	4	9	2	14	5	7	11	26
8 - 9	10	124	14	9	4	27	7	7	13	41
9 - 10	7	91	6	12	4	27	3	11	16	41
10 - 11	4	87	6	11	3	22	6	10	14	38
11 - 12	17	69	12	12	4	23	3	5	16	31
12 - 13	9	86	9	7	2	28	7	7	9	42
13 - 14	5	75	7	8	2	38	12	2	10	52
14 - 15	3	57	7	8	2	22	9	8	10	39
15 - 16	6	80	8	4	1	29	5	9	5	43
16 - 17	28	100	11	8	5	34	4	8	13	46
17 - 18	11	64	12	3	2	24	4	4	5	32
18 - 19	20	79	2	2	4	23	4	6	6	33
7 - 19	147	994	98	93	35	311	69	94	128	464
7 - 9	37	206	18	18	6	41	12	14	24	67

Roadside OD Survey

STATION NO.=105 Wiang Sa (Route No.41)
Direction from Thung Song to Surat Thani

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	74	82	5	18	1	6	1	3	19	10
8 - 9	7	84	5	16	1	13	3	3	17	19
9 - 10	1	7	1	5	1	3	3	1	6	7
10 - 11	0	40	6	2	1	10	3	11	3	24
11 - 12	1	63	4	7	2	6	1	3	9	10
12 - 13	0	55	5	3	0	8	3	15	3	26
13 - 14	4	50	3	4	0	1	3	12	4	16
14 - 15	1	43	6	1	0	7	8	23	1	38
15 - 16	4	43	3	3	1	6	4	19	4	29
16 - 17	1	96	2	1	0	2	3	17	1	22
17 - 18	8	73	0	2	0	5	4	21	2	30
18 - 19	8	26	1	1	0	3	0	6	1	9
7 - 19	109	662	41	63	7	70	36	134	70	240
7 - 9	81	166	10	34	2	19	4	6	36	29

Roadside OD Survey

STATION NO.=105 Wiang Sa (Route No.41)
Direction from Surat Thani to Thung Song

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	4	43	2	1	1	3	1	4	2	8
8 - 9	2	55	1	4	3	0	0	1	7	1
9 - 10	1	12	1	2	1	0	0	1	3	1
10 - 11	4	52	2	2	0	5	4	4	2	13
11 - 12	2	35	1	0	0	2	2	3	0	7
12 - 13	4	59	3	3	0	3	4	2	3	9
13 - 14	3	91	1	4	1	8	3	3	5	14
14 - 15	4	60	1	1	0	7	0	2	1	9
15 - 16	1	46	0	0	2	8	3	3	2	14
16 - 17	66	81	3	8	0	9	9	3	8	21
17 - 18	8	40	2	0	0	5	3	2	0	10
18 - 19	8	38	0	2	1	5	3	5	3	13
7 - 19	107	612	17	27	9	55	32	33	36	120
7 - 9	6	98	3	5	4	3	1	5	9	9

Roadside OD Survey

STATION NO.=105 Wiang Sa (Route No.41)
Direction from Both to Both

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	78	125	7	19	2	9	2	7	21	18
8 - 9	9	139	6	20	4	13	3	4	24	20
9 - 10	2	19	2	7	2	3	3	2	9	8
10 - 11	4	92	8	4	1	15	7	15	5	37
11 - 12	3	98	5	7	2	8	3	6	9	17
12 - 13	4	114	8	6	0	11	7	17	6	35
13 - 14	7	141	4	8	1	9	6	15	9	30
14 - 15	5	103	7	2	0	14	8	25	2	47
15 - 16	5	89	3	3	3	14	7	22	6	43
16 - 17	67	177	5	9	0	11	12	20	9	43
17 - 18	16	113	2	2	0	10	7	23	2	40
18 - 19	16	64	1	3	1	8	3	11	4	22
7 - 19	216	1274	58	90	16	125	68	167	106	360
7 - 9	87	264	13	39	6	22	5	11	45	38

Roadside OD Survey

STATION NO.=201 Khuraburi (Route No.4)
Direction from Ranong to Takua Pa

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	18	47	0	3	2	7	1	6	5	14
8 - 9	18	51	1	3	4	9	3	4	7	16
9 - 10	16	71	5	3	2	12	2	3	5	17
10 - 11	6	26	1	3	3	11	2	7	6	20
11 - 12	4	21	4	3	1	16	3	7	4	26
12 - 13	6	24	0	3	2	14	2	4	5	20
13 - 14	4	40	1	0	1	5	6	6	1	17
14 - 15	5	21	2	0	3	8	2	4	3	14
15 - 16	3	31	2	1	4	8	1	8	5	17
16 - 17	12	34	2	4	1	13	1	4	5	18
17 - 18	19	64	1	0	0	20	1	4	0	25
18 - 19	21	50	1	2	2	15	4	4	4	23
7 - 19	132	480	20	25	25	138	38	61	50	227
7 - 9	36	98	1	6	6	16	4	10	12	30

Roadside OD Survey

STATION NO.=201 Khuraburi (Route No.4)
Direction from Takua Pa to Ranong

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	11	53	1	0	0	11	4	10	0	25
8 - 9	19	33	2	5	0	13	4	0	5	17
9 - 10	15	54	1	6	2	9	2	1	8	12
10 - 11	12	38	0	1	3	10	1	4	4	15
11 - 12	9	36	1	2	4	15	2	3	6	20
12 - 13	5	32	4	0	1	5	2	2	1	9
13 - 14	6	31	2	0	3	11	4	15	3	30
14 - 15	8	31	2	2	2	10	2	4	4	16
15 - 16	9	38	2	2	1	9	2	5	3	16
16 - 17	18	55	3	3	2	9	2	6	5	17
17 - 18	23	49	0	3	1	14	0	3	4	17
18 - 19	4	29	0	1	8	12	2	2	9	16
7 - 19	139	479	18	25	27	128	27	55	52	210
7 - 9	30	86	3	5	0	24	8	10	5	42

Roadside OD Survey

STATION NO.=201 Khuraburi (Route No.4)
Direction from Both to Both

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	29	100	1	3	2	18	5	16	5	39
8 - 9	37	84	3	8	4	22	7	4	12	33
9 - 10	31	125	6	9	4	21	4	4	13	29
10 - 11	18	64	1	4	4	21	3	11	10	35
11 - 12	13	57	5	5	5	31	5	10	10	46
12 - 13	11	56	4	3	3	19	4	6	6	29
13 - 14	10	71	3	0	4	16	10	21	4	47
14 - 15	13	52	4	2	5	18	4	8	7	30
15 - 16	12	69	4	3	5	17	3	13	8	33
16 - 17	30	89	5	7	3	22	3	10	10	35
17 - 18	42	113	1	3	1	34	1	7	4	42
18 - 19	25	79	1	3	10	27	6	6	13	39
7 - 19	271	959	38	50	52	266	55	116	102	437
7 - 9	66	184	4	11	6	40	12	20	17	72

Roadside OD Survey

STATION NO.=202 Takua Pa (Route No.401)
 Direction from Surat Thani to Takua Pa

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	TOTAL	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	0	6	0	3	0	1	1	0	3	2
8 - 9	2	8	0	1	1	8	1	1	2	10
9 - 10	0	7	0	0	0	8	0	1	0	9
10 - 11	0	9	0	0	1	1	2	1	1	4
11 - 12	0	8	4	0	0	6	3	0	0	9
12 - 13	0	4	1	0	0	5	2	0	0	7
13 - 14	0	5	0	2	0	5	2	0	2	7
14 - 15	1	11	1	0	1	6	3	9	1	18
15 - 16	0	3	1	1	0	6	2	1	1	9
16 - 17	0	11	0	1	1	4	2	2	2	8
17 - 18	0	6	0	2	0	7	1	3	2	11
18 - 19	1	5	0	0	2	3	1	0	2	4
7 - 19	4	83	7	10	6	60	20	18	16	98
7 - 9	2	14	0	4	1	9	2	1	5	12

Roadside OD Survey

STATION NO.=202 Takua Pa (Route No.401)
 Direction from Takua Pa to Surat Thani

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	TOTAL	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	0	3	0	0	0	1	0	1	0	2
8 - 9	1	14	1	2	1	7	1	3	3	11
9 - 10	0	6	2	1	1	9	1	0	2	10
10 - 11	0	9	1	1	0	3	3	0	1	6
11 - 12	0	10	2	5	1	4	1	0	6	5
12 - 13	0	4	1	1	2	8	0	0	3	8
13 - 14	1	9	2	0	0	6	3	0	0	9
14 - 15	0	7	0	0	1	11	0	2	1	13
15 - 16	0	4	2	0	1	6	0	1	1	7
16 - 17	0	9	2	2	1	10	1	0	3	11
17 - 18	0	14	1	4	1	6	0	0	5	6
18 - 19	0	3	0	0	0	0	1	2	0	3
7 - 19	2	92	14	16	9	71	11	9	25	91
7 - 9	1	17	1	2	1	8	1	4	3	13

Roadside OD Survey

STATION NO.=202 Takua Pa (Route No.401)
 Direction from Both to Both

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	TOTAL	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	0	9	0	3	0	2	1	1	3	4
8 - 9	3	22	1	3	2	15	2	4	5	21
9 - 10	0	13	2	1	1	17	1	1	2	19
10 - 11	0	18	1	1	1	4	5	1	2	10
11 - 12	0	18	6	5	1	10	4	0	6	14
12 - 13	0	8	2	1	2	13	2	0	3	15
13 - 14	1	14	2	2	0	11	5	0	2	16
14 - 15	1	18	1	0	2	17	3	11	2	31
15 - 16	0	7	3	1	1	12	2	2	2	16
16 - 17	0	20	2	3	2	14	3	2	5	19
17 - 18	0	20	1	6	1	13	1	3	7	17
18 - 19	1	8	0	0	2	3	2	2	2	7
7 - 19	6	175	21	26	15	131	31	27	41	189
7 - 9	3	31	1	6	2	17	3	5	8	25

Roadside OD Survey

STATION NO.=203 Thap Put (Route No.4)
Direction from Ao Luk to Phangnga

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L		
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)	
7 - 8		2	26	1	4	0	6	7	5	4	18
8 - 9		1	28	1	3	1	8	4	1	4	13
9 - 10		0	21	2	1	4	2	4	1	5	7
10 - 11		4	15	5	3	1	11	3	6	4	20
11 - 12		1	9	2	7	2	4	9	3	9	16
12 - 13		1	19	5	4	5	5	15	7	9	27
13 - 14		5	20	7	4	1	12	3	3	5	18
14 - 15		3	19	2	2	4	12	3	10	6	25
15 - 16		0	22	2	6	2	2	5	12	8	19
16 - 17		11	25	1	2	1	12	8	2	3	22
17 - 18		5	16	2	2	0	9	7	3	2	19
18 - 19		1	6	0	2	0	4	5	1	2	10
7 - 19		34	226	30	40	21	87	73	54	61	214
7 - 9		3	54	2	7	1	14	11	6	8	31

Roadside OD Survey

STATION NO.=203 Thap Put (Route No.4)
Direction from Phangnga to Ao Luk

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L		
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)	
7 - 8		8	23	0	8	2	3	1	2	10	6
8 - 9		4	38	3	7	2	10	3	0	9	13
9 - 10		0	11	3	4	4	8	5	1	8	14
10 - 11		4	18	4	4	4	7	4	1	8	12
11 - 12		5	10	3	3	4	5	17	1	7	23
12 - 13		1	12	1	0	3	2	8	4	3	14
13 - 14		1	13	2	1	2	8	2	5	3	15
14 - 15		4	20	1	1	2	10	9	3	3	22
15 - 16		2	22	3	2	1	7	1	4	3	12
16 - 17		3	29	2	2	2	8	11	3	4	22
17 - 18		6	20	3	7	1	8	11	2	8	21
18 - 19		0	5	2	3	0	3	6	0	3	9
7 - 19		38	221	27	42	27	79	78	26	69	183
7 - 9		12	61	3	15	4	13	4	2	19	19

Roadside OD Survey

STATION NO.=203 Thap Put (Route No.4)
Direction from Both to Both

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L		
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)	
7 - 8		10	49	1	12	2	9	8	7	14	24
8 - 9		5	66	4	10	3	18	7	1	13	26
9 - 10		0	32	5	5	8	10	9	2	13	21
10 - 11		8	33	9	7	5	18	7	7	12	32
11 - 12		6	19	5	10	6	9	26	4	16	39
12 - 13		2	31	6	4	8	7	23	11	12	41
13 - 14		6	33	9	3	3	20	5	8	8	33
14 - 15		7	39	3	3	6	22	12	13	9	47
15 - 16		2	44	5	8	3	9	6	16	11	31
16 - 17		14	54	3	4	3	20	19	5	7	44
17 - 18		11	36	5	9	1	17	18	5	10	40
18 - 19		1	11	2	5	0	7	11	1	5	19
7 - 19		72	447	57	82	48	166	151	80	130	397
7 - 9		15	115	5	22	5	27	15	8	27	50

Roadside OD Survey

STATION NO.=301 Sarasin Bridge (Route No.402)
Direction from Phangnga to Phuket

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	5	26	1	14	0	35	8	9	14	52
8 - 9	2	18	5	11	9	42	14	7	20	63
9 - 10	1	18	5	8	5	50	8	6	13	64
10 - 11	1	14	7	13	5	46	3	3	18	52
11 - 12	0	14	5	15	7	43	11	6	23	60
12 - 13	1	21	6	6	4	34	6	7	10	47
13 - 14	1	15	12	10	3	34	20	5	13	59
14 - 15	2	14	9	5	2	30	21	5	7	56
15 - 16	1	10	15	13	6	36	26	16	19	78
16 - 17	1	17	6	4	3	37	14	10	7	61
17 - 18	3	13	12	3	3	42	16	8	6	66
18 - 19	2	11	8	2	3	29	10	4	5	43
7 - 19	20	191	91	105	50	458	157	86	155	701
7 - 9	7	44	6	25	9	77	22	16	34	115

Roadside OD Survey

STATION NO.=301 Sarasin Bridge (Route No.402)
Direction from Phuket to Phangnga

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	3	7	5	13	5	15	9	3	18	27
8 - 9	0	16	9	6	5	39	10	2	11	51
9 - 10	1	14	10	8	8	64	15	8	16	87
10 - 11	0	12	14	8	6	45	20	11	14	76
11 - 12	0	19	11	11	2	40	13	17	13	70
12 - 13	1	7	4	9	2	30	3	6	11	39
13 - 14	1	15	7	13	4	28	7	8	17	43
14 - 15	1	13	6	10	1	26	9	11	11	46
15 - 16	1	7	7	7	8	36	9	7	15	52
16 - 17	2	18	13	4	7	27	15	7	11	49
17 - 18	1	18	3	3	6	36	10	8	9	54
18 - 19	5	23	8	3	1	46	5	2	4	53
7 - 19	16	169	97	95	55	432	125	90	150	647
7 - 9	3	23	14	19	10	54	19	5	29	78

Roadside OD Survey

STATION NO.=301 Sarasin Bridge (Route No.402)
Direction from Both to Both

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	8	33	6	27	5	50	17	12	32	79
8 - 9	2	34	14	17	14	81	24	9	31	114
9 - 10	2	32	15	16	13	114	23	14	29	151
10 - 11	1	26	21	21	11	91	23	14	32	128
11 - 12	0	33	16	27	9	83	24	23	36	130
12 - 13	2	28	10	15	6	64	9	13	21	86
13 - 14	2	30	19	23	7	62	27	13	30	102
14 - 15	3	27	15	15	3	56	30	16	18	102
15 - 16	2	17	22	20	14	72	35	23	34	130
16 - 17	3	35	19	8	10	64	29	17	18	110
17 - 18	4	31	15	6	9	78	26	16	15	120
18 - 19	7	34	16	5	4	75	15	6	9	96
7 - 19	36	360	188	200	105	890	282	176	305	1348
7 - 9	10	67	20	44	19	131	41	21	63	193

Roadside OD Survey

STATION NO.=401 Plaiphaya (Route No.4035)
Direction from Wiang Sa to Ao Luk

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	TOTAL	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	1	8	0	1	1	2	3	5	2	10
8 - 9	1	13	2	3	1	6	5	0	4	11
9 - 10	1	9	1	2	1	1	9	2	3	12
10 - 11	1	8	2	2	2	5	7	2	4	14
11 - 12	1	8	3	2	1	3	1	2	3	6
12 - 13	1	6	2	1	1	10	4	4	2	18
13 - 14	0	7	1	3	0	5	0	3	3	8
14 - 15	4	6	2	2	1	5	2	5	3	12
15 - 16	1	1	3	1	0	7	4	3	1	14
16 - 17	3	13	2	0	1	6	6	5	1	17
17 - 18	1	7	0	2	2	1	5	2	4	8
18 - 19	0	18	1	1	2	6	4	2	3	12
7 - 19	15	104	19	20	13	57	50	35	33	142
7 - 9	2	21	2	4	2	8	8	5	6	21

Roadside OD Survey

STATION NO.=401 Phaiphaya (Route No.4035)
Direction from Ao Luk to Wiang Sa

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	TOTAL	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	1	6	0	3	0	3	1	1	3	5
8 - 9	1	11	0	2	3	8	3	2	5	13
9 - 10	1	8	0	2	1	1	3	3	3	7
10 - 11	0	5	1	2	2	1	8	1	4	10
11 - 12	3	4	0	5	1	6	3	1	6	12
12 - 13	1	7	0	0	1	6	3	1	1	10
13 - 14	0	12	3	3	0	3	6	2	3	11
14 - 15	0	13	0	3	2	8	7	2	5	17
15 - 16	3	11	1	2	1	7	6	4	3	17
16 - 17	4	11	0	0	1	5	5	4	1	14
17 - 18	3	9	2	3	2	5	2	3	5	10
18 - 19	1	11	0	0	0	2	6	1	0	9
7 - 19	18	108	7	25	14	57	53	25	39	135
7 - 9	2	17	0	5	3	11	4	3	8	18

Roadside OD Survey

STATION NO.=401 Plaiphaya (Route No.4035)
Direction from Both to Both

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	TOTAL	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	2	14	0	4	1	5	4	6	5	15
8 - 9	2	24	2	5	4	14	8	2	9	24
9 - 10	2	17	1	4	2	2	12	5	6	19
10 - 11	1	13	3	4	4	6	15	3	8	24
11 - 12	4	12	3	7	2	11	4	3	9	18
12 - 13	2	13	2	1	2	16	7	5	3	28
13 - 14	0	19	4	6	0	8	6	5	6	19
14 - 15	4	19	2	5	3	13	9	7	8	29
15 - 16	4	12	4	3	1	14	10	7	4	31
16 - 17	7	24	2	0	2	11	11	9	2	31
17 - 18	4	16	2	5	4	6	7	5	9	18
18 - 19	1	29	1	1	2	8	10	3	3	21
7 - 19	33	212	26	45	27	114	103	60	72	277
7 - 9	4	38	2	9	5	19	12	8	14	39

Roadside OD Survey

STATION NO.=402 Khlong Thom (Route No.4)
Direction from Huai Yot to Krabi

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	13	50	2	2	1	4	1	0	3	5
8 - 9	16	92	3	4	3	12	10	2	7	24
9 - 10	5	34	7	2	2	14	7	4	4	25
10 - 11	6	24	4	2	5	17	7	1	7	25
11 - 12	5	31	2	1	3	14	5	3	4	22
12 - 13	6	24	4	2	2	14	8	7	4	29
13 - 14	3	27	3	2	3	13	5	4	5	22
14 - 15	3	25	9	2	2	16	5	1	4	22
15 - 16	2	30	3	2	2	18	2	6	4	26
16 - 17	8	55	5	2	2	10	10	3	4	23
17 - 18	11	44	1	0	1	10	7	2	1	19
18 - 19	15	42	2	1	1	10	5	1	2	16
7 - 19	93	478	45	22	27	152	72	34	49	258
7 - 9	29	142	5	6	4	16	11	2	10	29

Roadside OD Survey

STATION NO.=402 Khlong Thom (Route No.4)
Direction from Krabi to Huai Yot

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	3	36	2	2	3	1	7	2	5	10
8 - 9	1	47	9	14	3	1	10	6	17	17
9 - 10	4	18	4	6	3	5	1	2	9	8
10 - 11	6	15	5	3	1	10	4	1	4	15
11 - 12	6	24	1	5	2	8	6	3	7	17
12 - 13	4	26	4	1	2	10	2	7	3	19
13 - 14	2	16	1	5	3	8	4	1	8	13
14 - 15	2	12	8	1	3	7	5	2	4	14
15 - 16	1	11	7	1	3	11	8	2	4	21
16 - 17	36	66	9	7	2	6	7	3	9	16
17 - 18	13	49	7	2	3	12	5	2	5	19
18 - 19	18	36	0	0	0	11	7	5	0	23
7 - 19	96	356	57	47	28	90	66	36	75	192
7 - 9	4	83	11	16	6	2	17	8	22	27

Roadside OD Survey

STATION NO.=402 Khlong Thom (Route No.4)
Direction from Both to Both

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	16	86	4	4	4	5	8	2	8	15
8 - 9	17	139	12	18	6	13	20	8	24	41
9 - 10	9	52	11	8	5	19	8	6	13	33
10 - 11	12	39	9	5	6	27	11	2	11	40
11 - 12	11	55	3	6	5	22	11	6	11	39
12 - 13	10	50	8	3	4	24	10	14	7	48
13 - 14	5	43	4	7	6	21	9	5	13	35
14 - 15	5	37	17	3	5	23	10	3	8	36
15 - 16	3	41	10	3	5	29	10	8	8	47
16 - 17	44	121	14	9	4	16	17	6	13	39
17 - 18	24	93	8	2	4	22	12	4	6	38
18 - 19	33	78	2	1	1	21	12	6	2	39
7 - 19	189	834	102	69	55	242	138	70	124	450
7 - 9	33	225	16	22	10	18	28	10	32	56

1.5.2 Traffic Count Survey on the Boundary of Urban Area

Traffic Count Survey

STATION NO.=111 Surat Thani (Route No.401)
Direction from Kanchana Dit to Ban Don

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	123	412	20	175	11	76	25	2	186	103
8 - 9	35	274	33	130	4	86	22	8	134	116
9 - 10	36	213	24	72	7	84	36	17	79	137
10 - 11	40	200	25	75	5	97	28	19	80	144
11 - 12	36	277	33	58	5	103	28	20	63	151
12 - 13	26	212	34	61	4	66	18	32	65	116
13 - 14	36	172	25	40	5	66	37	20	45	123
14 - 15	39	193	24	48	3	77	28	28	51	133
15 - 16	45	232	35	52	2	81	31	15	54	127
16 - 17	131	392	67	75	4	83	32	18	79	133
17 - 18	86	313	33	42	7	73	23	13	49	109
18 - 19	56	295	32	22	9	68	14	13	31	95
7 - 19	689	3185	385	850	66	960	322	205	916	1487
7 - 9	158	686	53	305	15	162	47	10	320	219

Traffic Count Survey

STATION NO.=111 Surat Thani (Route No.401)
Direction from Ban Don to Kanchana Dit

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	110	336	35	124	22	14	20	32	146	66
8 - 9	46	305	42	77	5	97	20	21	82	138
9 - 10	40	175	34	74	4	85	24	24	78	135
10 - 11	41	200	38	75	7	56	21	27	82	104
11 - 12	47	260	37	78	2	84	27	21	80	132
12 - 13	25	260	32	74	2	75	33	14	76	122
13 - 14	20	165	33	63	7	71	36	14	70	121
14 - 15	35	204	29	59	6	85	28	13	65	126
15 - 16	57	275	37	74	3	89	30	10	77	129
16 - 17	90	363	31	119	4	78	26	14	123	118
17 - 18	77	325	34	57	8	75	16	9	65	100
18 - 19	67	295	18	37	2	51	11	4	39	66
7 - 19	655	3163	400	911	72	860	294	203	983	1357
7 - 9	156	641	77	201	27	111	40	53	228	204

Traffic Count Survey

STATION NO.=111 Surat Thani (Route No.401)
Direction from Both to Both

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	233	748	55	299	33	90	45	34	332	169
8 - 9	81	579	75	207	9	183	42	29	216	254
9 - 10	76	388	58	146	11	169	62	41	157	272
10 - 11	81	400	63	150	12	153	49	46	162	248
11 - 12	83	537	70	136	7	187	55	41	143	283
12 - 13	51	472	66	135	6	141	51	46	141	238
13 - 14	56	337	58	103	12	137	73	34	115	244
14 - 15	74	397	53	107	9	162	56	41	116	259
15 - 16	102	507	72	126	5	170	61	25	131	256
16 - 17	221	755	98	194	8	161	58	32	202	251
17 - 18	163	638	67	99	15	148	39	22	114	209
18 - 19	123	590	50	59	11	119	25	17	70	161
7 - 19	1344	6348	785	1761	138	1820	616	408	1899	2844
7 - 9	314	1327	130	506	42	273	87	63	548	423

Traffic Count Survey

STATION NO.=112 Surat Thani (Route No.4009)
Direction from Ban Na San to Ban Don

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	168	368	28	134	13	65	8	3	147	76
8 - 9	43	246	32	51	3	58	9	8	54	75
9 - 10	17	113	14	42	4	44	6	7	46	59
10 - 11	12	112	17	35	4	47	15	1	39	63
11 - 12	15	126	16	42	6	68	13	6	48	87
12 - 13	28	154	9	35	5	43	8	2	40	53
13 - 14	11	113	9	38	4	42	14	7	42	63
14 - 15	23	117	8	35	3	39	5	5	38	49
15 - 16	58	219	27	64	5	58	20	0	69	78
16 - 17	75	287	26	85	13	51	18	5	98	74
17 - 18	48	108	19	32	2	46	10	4	34	60
18 - 19	77	171	14	28	4	50	8	2	32	60
7 - 19	575	2134	219	621	66	611	136	50	687	797
7 - 9	211	614	60	185	16	123	17	11	201	151

Traffic Count Survey

STATION NO.=112 Surat Thani (Route No. 4009)
Direction from Ban Don to Ban Na San

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	111	331	32	92	16	70	11	2	108	83
8 - 9	37	230	22	56	8	67	8	7	64	82
9 - 10	19	108	13	41	3	46	3	1	44	55
10 - 11	16	80	14	39	4	21	12	7	43	40
11 - 12	27	135	31	44	6	34	6	5	50	45
12 - 13	22	123	13	34	3	42	15	3	37	60
13 - 14	16	103	9	25	4	38	12	1	29	51
14 - 15	23	89	9	36	4	22	8	3	40	33
15 - 16	76	238	22	60	5	56	11	3	65	70
16 - 17	61	227	24	87	17	45	8	3	104	56
17 - 18	41	130	19	23	1	12	5	0	24	17
18 - 19	42	113	10	12	0	24	3	1	12	28
7 - 19	491	1907	218	549	71	477	107	36	620	620
7 - 9	148	561	54	148	24	137	19	9	172	165

Traffic Count Survey

STATION NO.=112 Surat Thani (Route No.4009)
Direction from Both to Both

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	279	699	60	226	29	135	19	5	255	159
8 - 9	80	476	54	107	11	125	17	15	118	157
9 - 10	36	221	27	83	7	90	16	8	90	114
10 - 11	28	192	31	74	8	68	27	8	82	103
11 - 12	42	261	47	86	12	102	19	11	98	132
12 - 13	50	277	22	69	8	85	23	5	77	113
13 - 14	27	216	18	63	8	80	26	8	71	114
14 - 15	46	206	17	71	7	61	13	8	78	82
15 - 16	134	457	49	124	10	114	31	3	134	148
16 - 17	136	514	50	172	30	96	26	8	202	130
17 - 18	89	238	38	55	3	58	15	4	58	77
18 - 19	119	284	24	40	4	74	11	3	44	88
7 - 19	1066	4041	437	1170	137	1088	243	86	1307	1417
7 - 9	359	1175	114	333	40	260	36	20	373	316

Traffic Count Survey

STATION NO.=211 Phangnga (Route No.4)
Direction from Takua Thung to Phangnga

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	37	196	4	54	3	17	10	3	57	30
8 - 9	12	134	9	33	2	42	11	2	35	55
9 - 10	32	96	13	18	5	25	20	2	23	47
10 - 11	5	70	7	23	5	30	6	4	28	40
11 - 12	8	62	6	17	4	31	7	2	21	40
12 - 13	8	95	9	17	6	27	11	4	23	42
13 - 14	12	84	8	13	4	24	5	3	17	32
14 - 15	14	81	6	15	6	28	11	4	21	43
15 - 16	2	34	1	18	5	26	8	5	23	39
16 - 17	14	115	10	17	6	12	8	6	23	26
17 - 18	15	149	9	17	3	16	6	4	20	26
18 - 19	31	118	14	5	3	20	5	2	8	27
7 - 19	190	1234	96	247	52	298	108	41	299	447
7 - 9	49	330	13	87	5	59	21	5	92	85

Traffic Count Survey

STATION NO.=211 Phangnga (Route No.4)
Direction from Phangnga to Takua Thung

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	11	114	1	13	9	11	11	5	22	27
8 - 9	10	138	17	23	8	43	8	2	31	53
9 - 10	11	106	15	38	5	37	9	2	43	48
10 - 11	5	82	10	31	5	40	14	3	36	57
11 - 12	9	70	9	17	3	30	6	7	20	43
12 - 13	7	83	12	20	4	26	6	5	24	37
13 - 14	6	73	8	11	2	23	8	4	13	35
14 - 15	6	93	3	17	4	26	12	10	21	48
15 - 16	11	68	4	15	7	31	15	4	22	50
16 - 17	26	156	7	33	5	29	16	3	38	48
17 - 18	37	143	6	23	4	27	3	10	27	40
18 - 19	26	122	11	13	2	18	1	8	15	27
7 - 19	165	1248	103	254	58	341	109	63	312	513
7 - 9	21	252	18	36	17	54	19	7	53	80

Traffic Count Survey

STATION NO.=211 Phangnga (Route No.4)
Direction from Both to Both

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	48	310	5	67	12	28	21	8	79	57
8 - 9	22	272	26	36	10	85	19	4	66	108
9 - 10	43	202	28	56	10	62	29	4	66	95
10 - 11	10	152	17	54	10	70	20	7	64	97
11 - 12	17	132	15	34	7	61	13	9	41	83
12 - 13	15	178	21	37	10	53	17	9	47	79
13 - 14	18	157	16	24	6	47	13	7	30	67
14 - 15	20	174	9	32	10	54	23	14	42	91
15 - 16	13	102	5	33	12	57	23	9	45	89
16 - 17	40	271	17	50	11	41	24	9	61	74
17 - 18	52	292	15	40	7	43	9	14	47	66
18 - 19	37	240	25	18	5	38	6	10	23	54
7 - 19	355	2482	199	501	110	639	217	104	611	960
7 - 9	70	582	31	123	22	113	40	12	145	165

Traffic Count Survey

STATION NO.=212 Phangnga (Route No.4)
Direction from Thap Put to Phangnga

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	7	101	7	21	4	9	7	7	25	23
8 - 9	3	96	23	15	5	31	10	0	20	41
9 - 10	2	65	9	10	2	34	7	5	12	46
10 - 11	5	41	8	11	6	30	9	4	17	43
11 - 12	1	36	17	7	2	17	5	5	9	27
12 - 13	2	60	9	16	4	25	4	9	20	38
13 - 14	1	58	8	8	1	17	7	3	9	27
14 - 15	4	42	6	15	4	37	12	12	19	61
15 - 16	3	42	15	14	2	29	13	3	16	45
16 - 17	10	47	6	13	4	24	11	3	17	38
17 - 18	8	80	10	12	2	20	5	2	14	27
18 - 19	4	17	12	8	3	19	6	7	11	32
7 - 19	50	685	130	150	39	292	96	60	189	448
7 - 9	10	197	30	36	9	40	17	7	45	64

Traffic Count Survey

STATION NO.=212 Phangnga (Route No.4)
Direction from Phangnga to Thap Put

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	5	57	14	9	4	8	7	4	13	19
8 - 9	2	86	12	13	3	25	9	3	16	37
9 - 10	4	65	6	9	3	23	9	4	12	36
10 - 11	5	64	10	18	4	27	8	4	22	39
11 - 12	0	45	12	14	5	23	7	1	19	31
12 - 13	3	29	12	10	6	19	4	5	16	28
13 - 14	3	38	11	12	5	21	6	4	17	31
14 - 15	0	25	11	9	5	24	8	3	14	35
15 - 16	0	30	6	12	5	26	7	5	17	38
16 - 17	4	58	6	30	5	32	4	7	35	43
17 - 18	8	70	7	17	3	22	4	4	20	30
18 - 19	7	54	8	5	0	13	4	1	5	18
7 - 19	41	621	115	158	48	263	77	45	206	385
7 - 9	7	143	26	22	7	33	16	7	29	56

Traffic Count Survey

STATION NO.=212 Phangnga (Route No.4)
Direction from Both to Both

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	12	158	21	30	8	17	14	11	38	42
8 - 9	5	182	35	28	8	56	19	3	36	78
9 - 10	6	130	15	19	5	57	16	9	24	82
10 - 11	10	105	18	29	10	57	17	8	39	82
11 - 12	1	81	29	21	7	40	12	6	28	58
12 - 13	5	89	21	26	10	44	8	14	36	66
13 - 14	4	96	19	20	6	38	13	7	26	58
14 - 15	4	67	17	24	9	61	20	15	33	96
15 - 16	3	72	21	26	7	55	20	8	33	83
16 - 17	14	105	12	43	9	56	15	10	52	81
17 - 18	16	150	17	29	5	42	9	6	34	57
18 - 19	11	71	20	13	3	32	10	8	16	50
7 - 19	91	1306	245	308	87	555	173	105	395	833
7 - 9	17	340	56	58	16	73	33	14	74	120

Traffic Count Survey

STATION NO.=311 Phuket (Teachers College)
Direction from Thalang to Phuket

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	38	632	33	83	0	74	28	12	83	114
8 - 9	0	467	44	57	1	63	31	10	58	104
9 - 10	1	209	38	37	10	63	22	9	47	94
10 - 11	0	157	23	30	5	68	24	4	35	96
11 - 12	1	232	49	30	6	81	33	9	36	123
12 - 13	6	285	29	44	6	53	10	4	50	69
13 - 14	1	248	32	26	5	84	24	8	31	116
14 - 15	6	256	42	38	3	87	24	12	41	123
15 - 16	0	215	40	27	3	70	24	6	30	100
16 - 17	6	290	60	47	9	60	25	10	56	95
17 - 18	11	353	36	39	5	73	24	7	44	104
18 - 19	4	321	86	26	4	89	16	8	30	113
7 - 19	74	3666	512	484	57	867	285	99	541	1251
7 - 9	38	1099	77	140	1	137	59	22	141	218

Traffic Count Survey

STATION NO.=311 Phuket (Teachers College)
Direction from Phuket to Thalang

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	8	294	24	27	5	42	17	5	32	64
8 - 9	1	239	47	22	7	62	19	6	29	87
9 - 10	3	171	51	30	8	83	35	17	38	135
10 - 11	0	159	45	32	3	89	23	18	35	130
11 - 12	2	193	23	36	5	60	27	9	39	96
12 - 13	1	203	21	21	4	67	16	5	25	88
13 - 14	3	167	34	30	2	73	14	5	32	92
14 - 15	11	186	54	34	6	94	27	18	40	139
15 - 16	2	230	40	32	11	72	24	7	43	103
16 - 17	30	411	60	54	3	93	21	8	57	122
17 - 18	20	521	60	50	1	106	25	8	51	139
18 - 19	17	485	30	40	3	63	9	5	43	77
7 - 19	98	3259	489	408	56	904	257	111	464	1272
7 - 9	9	533	71	49	12	104	36	11	61	151

Traffic Count Survey

STATION NO.=311 Phuket (Teachers College)
Direction from Both to Both

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	46	926	57	110	5	116	45	17	115	178
8 - 9	1	706	91	79	8	125	50	16	87	191
9 - 10	4	380	89	67	18	146	57	26	85	229
10 - 11	0	316	68	62	8	157	47	22	70	226
11 - 12	3	425	72	66	9	141	60	18	73	219
12 - 13	7	489	50	63	10	122	26	9	75	157
13 - 14	4	415	66	56	7	157	38	13	63	208
14 - 15	17	442	96	72	9	181	51	30	81	262
15 - 16	2	445	80	59	14	142	48	13	73	203
16 - 17	36	701	120	101	12	153	46	18	113	217
17 - 18	31	874	96	89	6	179	49	15	95	243
18 - 19	21	806	116	66	7	152	25	13	73	190
7 - 19	172	6925	1001	892	113	1771	542	210	1005	2523
7 - 9	47	1632	148	189	13	241	95	33	202	369

Traffic Count Survey

STATION NO.=312 Phuket (Main Stadium)
Direction from Kra Thu to Phuket

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	76	844	36	84	0	67	20	0	84	87
8 - 9	10	417	55	40	0	74	15	4	40	93
9 - 10	6	152	18	28	0	31	12	0	28	43
10 - 11	13	174	10	22	2	44	9	5	24	58
11 - 12	9	231	14	26	0	43	9	2	26	54
12 - 13	8	253	17	20	0	24	7	10	20	41
13 - 14	17	236	19	30	0	43	14	0	30	57
14 - 15	5	180	29	25	0	37	13	4	25	54
15 - 16	44	253	13	26	1	47	26	0	27	73
16 - 17	12	477	45	49	1	57	28	1	50	86
17 - 18	15	410	32	30	0	42	20	1	30	63
18 - 19	21	311	15	22	0	28	4	2	22	34
7 - 19	237	3938	303	402	4	537	177	29	406	743
7 - 9	86	1261	91	124	0	141	35	4	124	180

Traffic Count Survey

STATION NO.=312 Phuket (Main Stadium)
Direction from Phuket to Kra Thu

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	13	431	32	43	0	67	8	4	43	79
8 - 9	9	373	34	32	0	78	14	2	32	94
9 - 10	5	211	13	26	1	34	27	2	27	63
10 - 11	10	205	10	30	0	39	14	2	30	55
11 - 12	6	260	24	39	0	46	14	1	39	61
12 - 13	8	268	20	29	1	19	4	2	30	25
13 - 14	44	192	16	29	1	28	25	0	30	53
14 - 15	4	179	12	21	0	43	17	4	21	64
15 - 16	2	267	23	26	2	53	15	3	28	71
16 - 17	27	502	39	54	0	55	20	6	54	81
17 - 18	66	635	71	62	1	85	11	0	63	96
18 - 19	20	452	21	23	0	35	6	2	23	43
7 - 19	214	3975	315	414	6	582	175	28	420	785
7 - 9	22	804	66	75	0	145	22	6	75	173

Traffic Count Survey

STATION NO.=312 Phuket (Main Stadium)
Direction from Both to Both

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	89	1275	68	127	0	134	28	4	127	166
8 - 9	19	790	69	72	0	152	29	6	72	187
9 - 10	11	363	31	54	1	65	39	2	55	106
10 - 11	23	379	20	52	2	83	23	7	54	113
11 - 12	15	491	38	65	0	89	23	3	65	115
12 - 13	16	521	37	49	1	43	11	12	50	66
13 - 14	61	428	35	59	1	71	39	0	60	110
14 - 15	9	359	41	46	0	80	30	8	46	118
15 - 16	46	520	36	52	3	100	41	3	55	144
16 - 17	39	979	84	103	1	112	48	7	104	167
17 - 18	82	1045	103	92	1	127	31	1	93	159
18 - 19	41	763	36	45	0	63	10	4	45	77
7 - 19	451	7913	618	816	10	1119	352	57	826	1528
7 - 9	108	2065	157	199	0	286	57	10	199	353

Traffic Count Survey

STATION NO.=313 Phuket (National Resource Center)
 Direction from Hayaek Chalong to Phuket

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	293	1326	70	99	19	115	17	4	118	136
8 - 9	41	734	58	66	14	57	23	6	80	86
9 - 10	23	433	55	57	6	70	28	17	63	115
10 - 11	23	325	22	43	7	64	19	11	50	94
11 - 12	31	399	35	50	7	50	16	7	57	73
12 - 13	38	533	30	55	6	65	13	6	61	84
13 - 14	8	423	47	42	1	75	12	6	43	93
14 - 15	15	354	37	37	3	68	28	11	40	107
15 - 16	34	482	33	55	3	69	24	8	58	101
16 - 17	28	729	34	58	8	76	25	7	66	108
17 - 18	20	658	39	47	3	87	21	5	50	113
18 - 19	29	630	33	44	0	62	4	1	44	67
7 - 19	583	7026	493	653	77	858	230	89	730	1177
7 - 9	334	2060	128	165	33	172	40	10	198	222

Traffic Count Survey

STATION NO.=313 Phuket (Natural Resource Center)
 Direction from Phuket to Hayaek Chalong

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	52	693	30	70	11	65	29	4	81	98
8 - 9	29	547	37	62	11	88	26	10	73	124
9 - 10	39	376	33	68	3	70	25	14	71	109
10 - 11	32	387	20	48	7	65	17	9	55	91
11 - 12	27	440	29	57	7	71	15	9	64	95
12 - 13	36	437	38	46	3	66	10	8	49	84
13 - 14	5	416	37	31	4	83	31	6	35	120
14 - 15	14	392	32	36	2	60	21	10	38	91
15 - 16	18	434	43	44	3	66	16	9	47	91
16 - 17	119	765	54	72	5	87	14	4	77	105
17 - 18	117	1004	84	80	6	98	14	0	86	112
18 - 19	70	891	60	48	2	72	10	2	50	84
7 - 19	558	6782	497	662	64	891	228	85	726	1204
7 - 9	81	1240	67	132	22	153	55	14	154	222

Traffic Count Survey

STATION NO.=313 Phuket (Natural Resource Center)
 Direction from Both to Both

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	345	2019	100	169	30	180	46	8	199	254
8 - 9	70	1281	95	128	25	145	49	16	153	210
9 - 10	62	809	88	125	9	140	53	31	134	224
10 - 11	55	712	42	91	14	129	36	20	105	185
11 - 12	58	839	64	107	14	121	31	16	121	168
12 - 13	74	970	68	101	9	131	23	14	110	168
13 - 14	13	839	84	73	5	158	43	12	78	213
14 - 15	29	746	69	73	5	128	49	21	78	198
15 - 16	52	916	75	99	6	135	40	17	105	192
16 - 17	147	1494	88	130	13	163	39	11	143	213
17 - 18	137	1662	123	127	9	185	35	5	136	225
18 - 19	99	1521	93	92	2	134	14	3	94	151
7 - 19	1141	13808	990	1315	141	1749	458	174	1456	2381
7 - 9	415	3300	195	297	55	325	95	24	352	444

Traffic Count Survey

STATION NO.=411 Krabi (Route No.4411)
 Direction from Junction with Route No.4 to Krabi

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	14	174	16	48	11	40	6	6	59	52
8 - 9	4	266	29	42	3	54	9	6	45	69
9 - 10	2	179	35	49	9	77	14	3	58	94
10 - 11	3	142	16	41	1	48	9	6	42	63
11 - 12	2	161	15	35	1	63	9	10	36	82
12 - 13	0	132	21	40	1	39	7	4	41	50
13 - 14	0	144	25	38	2	47	5	9	40	62
14 - 15	3	135	15	34	4	80	14	6	38	100
15 - 16	2	96	16	35	2	27	8	1	37	36
16 - 17	5	149	17	30	5	35	16	9	35	60
17 - 18	11	159	14	30	7	55	14	16	37	85
18 - 19	7	149	20	28	3	49	14	3	31	66
7 - 19	53	1886	239	450	49	614	126	79	499	819
7 - 9	18	440	45	90	14	94	15	12	104	121

Traffic Count Survey

STATION NO.=411 Krabi (Route No.4411)
 Direction from Krabi to Junction with Route No.4)

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	7	129	10	38	6	37	9	12	44	58
8 - 9	5	203	25	49	5	82	22	19	54	123
9 - 10	3	154	26	53	2	76	18	3	55	97
10 - 11	7	121	11	50	1	60	19	6	51	85
11 - 12	0	157	21	42	2	59	11	8	44	78
12 - 13	4	165	19	35	5	58	11	3	40	72
13 - 14	1	110	23	36	1	58	13	8	37	79
14 - 15	1	128	18	41	3	61	14	8	44	83
15 - 16	1	107	24	24	2	65	11	10	26	86
16 - 17	5	220	31	49	12	74	13	10	61	97
17 - 18	12	183	28	28	6	48	10	8	34	66
18 - 19	8	136	11	30	2	33	12	3	32	48
7 - 19	54	1813	247	475	47	711	163	98	522	972
7 - 9	12	332	35	87	11	119	31	31	98	181

Traffic Count Survey

STATION NO.=411 Krabi (Route No.4411)
 Direction from Both to Both

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	21	303	26	86	17	77	15	18	103	110
8 - 9	9	469	54	91	8	136	31	25	99	192
9 - 10	5	333	61	102	11	153	32	6	113	191
10 - 11	10	263	27	91	2	108	28	12	93	148
11 - 12	2	318	36	77	3	122	20	18	80	160
12 - 13	4	297	40	75	6	97	18	7	81	122
13 - 14	1	254	48	74	3	105	19	17	77	141
14 - 15	4	263	33	75	7	141	28	14	82	183
15 - 16	3	203	40	59	4	92	19	11	63	122
16 - 17	10	369	48	79	17	109	29	19	96	157
17 - 18	23	342	42	58	13	103	24	24	71	151
18 - 19	15	285	31	58	5	82	26	6	63	114
7 - 19	107	3699	486	925	96	1325	289	177	1021	1791
7 - 9	30	772	80	177	25	213	46	43	202	302

Traffic Count Survey

STATION NO.=412 Krabi (Route No.4034)
 Direction from Junction with Route No.4 to Krabi

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	0	29	0	2	1	2	1	3	3	6
8 - 9	0	21	0	3	1	9	7	2	4	18
9 - 10	1	17	1	2	1	3	5	2	3	10
10 - 11	0	19	1	1	1	16	8	0	2	24
11 - 12	0	12	1	0	0	8	7	0	0	15
12 - 13	0	16	3	0	0	4	0	0	0	4
13 - 14	0	8	4	0	0	8	4	0	0	12
14 - 15	0	5	2	4	0	10	3	5	4	18
15 - 16	1	2	0	1	0	3	2	1	1	6
16 - 17	0	14	4	4	0	10	1	2	4	13
17 - 18	0	13	4	2	0	5	3	0	2	8
18 - 19	0	11	1	0	0	3	1	1	0	5
7 - 19	2	167	21	19	4	81	42	16	23	139
7 - 9	0	50	0	5	2	11	8	5	7	24

Traffic Count Survey

STATION NO.=412 Krabi (Route No.4034)
 Direction from Krabi to Junction with Route No.4

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	0	14	1	1	0	6	3	0	1	9
8 - 9	0	35	1	0	0	7	4	0	0	11
9 - 10	1	14	2	0	0	9	1	0	0	10
10 - 11	0	12	1	0	0	3	2	0	0	5
11 - 12	0	15	1	0	0	7	5	1	0	13
12 - 13	0	9	1	2	0	5	1	2	2	8
13 - 14	0	2	0	0	1	8	1	2	1	11
14 - 15	0	9	0	0	0	5	7	1	0	13
15 - 16	1	24	0	0	0	8	0	3	0	11
16 - 17	0	19	2	1	0	8	5	2	1	15
17 - 18	0	16	1	0	0	2	12	0	0	14
18 - 19	0	17	0	0	0	3	3	1	0	7
7 - 19	2	186	10	4	1	71	44	12	5	127
7 - 9	0	49	2	1	0	13	7	0	1	20

Traffic Count Survey

STATION NO.=412 Krabi (Route No.4034)
 Direction from Both to Both

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	0	43	1	3	1	8	4	3	4	15
8 - 9	0	56	1	3	1	16	11	2	4	29
9 - 10	2	31	3	2	1	12	6	2	3	20
10 - 11	0	31	2	1	1	19	10	0	2	29
11 - 12	0	27	2	0	0	15	12	1	0	28
12 - 13	0	25	4	2	0	9	1	2	2	12
13 - 14	0	10	4	0	1	16	5	2	1	23
14 - 15	0	14	2	4	0	15	10	6	4	31
15 - 16	2	26	0	1	0	11	2	4	1	17
16 - 17	0	33	6	5	0	18	6	4	5	28
17 - 18	0	29	5	2	0	7	15	0	2	22
18 - 19	0	28	1	0	0	6	4	2	0	12
7 - 19	4	353	31	23	5	152	86	28	28	266
7 - 9	0	99	2	6	2	24	15	5	8	44

Traffic Count Survey

STATION NO.=511 Kantang (Route No.403)
Direction from Trang to Kantang

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	57	148	14	29	2	18	11	4	31	33
8 - 9	17	114	15	8	3	20	13	7	11	40
9 - 10	12	78	13	11	3	21	14	3	14	38
10 - 11	9	116	12	24	4	21	9	4	28	34
11 - 12	7	57	16	15	3	13	14	4	18	31
12 - 13	14	77	15	16	3	20	10	7	19	37
13 - 14	12	84	16	13	3	29	9	3	16	41
14 - 15	24	153	13	14	3	21	7	4	17	32
15 - 16	27	168	21	20	2	24	10	3	22	37
16 - 17	43	171	15	19	5	23	7	0	24	30
17 - 18	56	165	21	17	3	21	4	3	20	28
18 - 19	34	141	15	14	5	21	6	0	19	27
7 - 19	312	1472	186	200	39	252	114	42	239	408
7 - 9	74	262	29	37	5	38	24	11	42	73

Traffic Count Survey

STATION NO.=511 Kantang (Route No.403)
Direction from Kantang to Trang

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	14	63	20	19	3	26	4	1	22	31
8 - 9	21	87	15	15	3	13	15	2	18	30
9 - 10	17	91	17	20	3	17	8	10	23	35
10 - 11	25	136	18	16	4	25	16	5	20	46
11 - 12	15	45	15	17	2	21	14	5	19	40
12 - 13	22	100	15	15	2	19	19	8	17	46
13 - 14	14	95	11	16	3	21	13	8	19	42
14 - 15	23	157	18	16	2	27	9	4	18	40
15 - 16	59	208	14	24	3	25	10	3	27	38
16 - 17	45	200	13	17	4	32	8	4	21	44
17 - 18	90	224	18	23	3	21	5	4	26	30
18 - 19	45	157	17	8	2	19	6	0	10	25
7 - 19	390	1563	191	206	34	266	127	54	240	447
7 - 9	35	150	35	34	6	39	19	3	40	61

Traffic Count Survey

STATION NO.=511 Kantang (Route No.403)
Direction from Both to Both

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	BI. TRI CYCLE	MOTOR CYCLE	SEDAN	LIGHT BUS	HEAVY BUS	LIGHT TRUCK	MEDIUM TRUCK	HEAVY TRUCK	BUS (4+5)	TRUCK (6+7+8)
7 - 8	71	211	34	48	5	44	15	5	53	64
8 - 9	38	201	30	23	6	33	28	9	29	70
9 - 10	29	169	30	31	6	38	22	13	37	73
10 - 11	34	252	30	40	8	46	25	9	48	80
11 - 12	32	102	31	32	5	34	28	9	37	71
12 - 13	36	177	30	31	5	39	29	15	36	83
13 - 14	26	179	27	29	6	50	22	11	35	83
14 - 15	47	310	31	30	5	48	16	8	35	72
15 - 16	86	376	35	44	5	49	20	6	49	75
16 - 17	88	371	28	36	9	55	15	4	45	74
17 - 18	146	389	39	40	6	42	9	7	46	58
18 - 19	79	298	32	22	7	40	12	0	29	52
7 - 19	702	3035	377	406	73	518	241	96	479	855
7 - 9	109	412	64	71	11	77	43	14	82	134

1.5.3

Counting Survey for Bus (Grade 2 & 3)

Bus (Grade 2 & 3) Terminal Survey

STATION NO. 10 Surat Thani

	PASSENGER			BUS		
	ON	OFF	TOTAL	IN	OUT	TOTAL
7 - 8	35	101	136	2	4	6
8 - 9	32	111	143	2	4	6
9 - 10	65	179	244	4	10	14
10 - 11	127	43	170	4	6	10
11 - 12	92	154	246	3	7	10
12 - 13	116	131	247	6	4	10
13 - 14	112	137	249	7	6	13
14 - 15	99	65	164	4	4	8
15 - 16	99	104	203	4	5	9
16 - 17	44	139	183	4	4	8
17 - 18	75	12	87	8	3	11
18 - 19	40	4	44	6	2	8
7 - 19	935	1180	2116	54	59	113
7 - 9	67	212	279	4	8	12

Bus (Grade 2 & 3) Terminal Survey

STATION NO. 30 Phuket

	PASSENGER			BUS		
	ON	OFF	TOTAL	IN	OUT	TOTAL
7 - 8	0	44	44	0	4	4
8 - 9	0	108	108	0	5	5
9 - 10	16	39	55	4	6	10
10 - 11	36	12	48	5	3	8
11 - 12	52	47	99	6	2	8
12 - 13	86	41	127	5	5	10
13 - 14	40	7	47	2	2	4
14 - 15	18	46	64	3	2	5
15 - 16	13	67	80	1	3	4
16 - 17	14	46	60	2	2	4
17 - 18	44	25	69	5	1	6
18 - 19	33	29	62	2	1	3
7 - 19	352	511	863	35	36	71
7 - 9	0	152	152	0	9	9

Bus (Grade 2 & 3) Terminal Survey

STATION NO. 20 Phangnga

	PASSENGER			BUS		
	ON	OFF	TOTAL	IN	OUT	TOTAL
7 - 8	0	35	35	5	4	9
8 - 9	5	20	25	4	3	7
9 - 10	0	34	34	3	6	9
10 - 11	0	0	0	5	3	8
11 - 12	0	0	0	2	2	4
12 - 13	7	24	31	4	4	8
13 - 14	1	0	1	3	1	4
14 - 15	5	13	18	5	1	6
15 - 16	4	12	16	3	2	5
16 - 17	4	1	5	3	0	3
17 - 18	0	17	17	1	1	2
18 - 19	3	0	3	1	0	1
7 - 19	29	155	185	39	24	63
7 - 9	5	55	60	9	7	16

Bus (Grade 2 & 3) Terminal Survey

STATION NO. 40 Krabi

	PASSENGER			BUS		
	ON	OFF	TOTAL	IN	OUT	TOTAL
7 - 8	19	0	19	2	0	2
8 - 9	21	0	21	1	0	1
9 - 10	0	0	0	0	0	0
10 - 11	0	0	0	0	0	0
11 - 12	0	0	0	0	0	0
12 - 13	0	0	0	0	0	0
13 - 14	9	11	20	1	1	2
14 - 15	27	6	33	2	1	3
15 - 16	0	0	0	0	0	0
16 - 17	18	38	56	1	4	5
17 - 18	20	66	86	1	4	5
18 - 19	72	0	72	4	0	4
7 - 19	186	121	307	12	10	22
7 - 9	40	0	40	3	0	3

1.5.4 Counting Survey for Bus (Grade 4)

Bus (Grade 4) Terminal Survey

STATION NO. 10 Surat Thani

	PASSENGER			BUS	
	ON	OFF	TOTAL	IN	OUT
7 - 8	73	207	280	20	22
8 - 9	102	132	234	20	12
9 - 10	590	538	1128	78	83
10 - 11	383	481	864	74	76
11 - 12	479	521	1000	74	67
12 - 13	336	537	873	47	68
13 - 14	328	446	774	53	61
14 - 15	299	449	748	44	45
15 - 16	288	913	1101	52	63
16 - 17	501	1040	1541	62	72
17 - 18	201	359	560	26	28
18 - 19	75	115	191	11	18
7 - 19	3656	5638	9294	561	615
7 - 9	175	339	514	40	34

Bus (Grade 4) Terminal Survey

STATION NO. 30 Phuket

	PASSENGER			BUS	
	ON	OFF	TOTAL	IN	OUT
7 - 8	794	58	852	100	8
8 - 9	381	195	576	134	23
9 - 10	294	224	518	122	29
10 - 11	366	298	664	94	33
11 - 12	172	274	446	40	23
12 - 13	178	185	363	58	21
13 - 14	152	177	329	59	18
14 - 15	116	199	315	43	19
15 - 16	85	356	441	36	24
16 - 17	43	598	641	28	60
17 - 18	14	333	347	10	20
18 - 19	0	136	136	0	12
7 - 19	2595	3033	5628	724	269
7 - 9	1175	253	1428	234	31

Bus (Grade 4) Terminal Survey

STATION NO. 20 Phangnga

	PASSENGER			BUS	
	ON	OFF	TOTAL	IN	OUT
7 - 8	835	58	893	37	9
8 - 9	249	273	522	29	15
9 - 10	99	268	367	15	23
10 - 11	24	413	437	17	28
11 - 12	34	135	169	12	20
12 - 13	57	109	166	10	15
13 - 14	75	96	171	11	8
14 - 15	33	92	125	13	15
15 - 16	22	450	472	11	21
16 - 17	63	922	985	10	29
17 - 18	7	166	173	11	20
18 - 19	13	53	66	8	10
7 - 19	1511	3035	4546	184	202
7 - 9	1084	331	1415	66	24

Bus (Grade 4) Terminal Survey

STATION NO. 40 Krabi

	PASSENGER			BUS	
	ON	OFF	TOTAL	IN	OUT
7 - 8	42	4	46	8	5
8 - 9	29	9	38	18	12
9 - 10	28	3	31	17	15
10 - 11	7	25	32	15	10
11 - 12	5	25	30	14	12
12 - 13	34	20	54	20	13
13 - 14	9	68	77	16	13
14 - 15	11	116	127	15	14
15 - 16	13	32	45	16	13
16 - 17	4	6	10	8	7
17 - 18	0	0	0	0	0
18 - 19	0	0	0	0	0
7 - 19	182	308	490	147	114
7 - 9	71	13	84	26	17

1.5.5 Counting Survey for Railway

Railway Station Survey

POS NO.=11 Phun Phin

	PASSENGER		
	ON	OFF	TOTAL
7 - 8	149	69	218
8 - 9	285	85	370
9 - 10	0	0	0
10 - 11	143	112	255
11 - 12	182	0	182
12 - 13	0	39	39
13 - 14	63	92	155
14 - 15	0	0	0
15 - 16	0	0	0
16 - 17	57	385	442
17 - 18	112	142	254
18 - 19	4	58	62
7 - 19	995	982	1977
7 - 9	434	154	588

1.5.6 Counting Survey for Airport

Airport Survey

POS NO.=10 Surat Thani

	PASSENGER		
	ON	OFF	TOTAL
7 - 8	0	0	0
8 - 9	0	0	0
9 - 10	8	62	70
10 - 11	0	0	0
11 - 12	46	3	49
12 - 13	0	0	0
13 - 14	0	0	0
14 - 15	0	0	0
15 - 16	0	0	0
16 - 17	0	0	0
17 - 18	0	0	0
18 - 19	0	0	0
7 - 19	54	65	119
7 - 9	0	0	0

Railway Station Survey

POS NO.=12 Chaiya

	PASSENGER		
	ON	OFF	TOTAL
7 - 8	14	11	25
8 - 9	31	21	52
9 - 10	53	18	71
10 - 11	0	0	0
11 - 12	0	0	0
12 - 13	0	0	0
13 - 14	0	0	0
14 - 15	38	22	60
15 - 16	9	19	28
16 - 17	22	5	27
17 - 18	26	4	30
18 - 19	0	0	0
7 - 19	193	100	293
7 - 9	45	32	77

Airport Survey

POS NO.=30 Phuket

	PASSENGER		
	ON	OFF	TOTAL
7 - 8	0	0	0
8 - 9	0	0	0
9 - 10	10	20	30
10 - 11	79	62	141
11 - 12	0	0	0
12 - 13	0	0	0
13 - 14	0	0	0
14 - 15	0	0	0
15 - 16	42	87	129
16 - 17	0	0	0
17 - 18	119	103	222
18 - 19	0	0	0
7 - 19	250	272	522
7 - 9	0	0	0

Railway Station Survey

POS NO.=13 Ban Na San

	PASSENGER		
	ON	OFF	TOTAL
7 - 8	43	131	174
8 - 9	13	3	16
9 - 10	58	74	132
10 - 11	10	46	56
11 - 12	46	63	109
12 - 13	89	59	148
13 - 14	14	3	17
14 - 15	0	0	0
15 - 16	95	1	96
16 - 17	106	65	171
17 - 18	0	0	0
18 - 19	0	0	0
7 - 19	474	445	919
7 - 9	56	134	190

1.5.7 Counting Survey for Seaport

Seaport Survey

STATION NO. 10 Surat Thani (Route No. 4079)

Direction from Outside to Port

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	PICKUP TRUCK	TRUCK 6 WHL 10	TRUCK 10 WHL	TRAI LER	OIL TRUCK	REFRIG TRUCK	MOTOR CYCLE	PASSEN CAR	TRUCK (1+6)	OTHERS (7+8)
7 - 8	6	6	0	0	5	0	46	0	17	46
8 - 9	2	2	0	0	4	0	16	1	8	17
9 - 10	7	6	1	0	5	0	22	1	19	23
10 - 11	9	10	0	0	4	0	11	2	23	13
11 - 12	11	5	0	0	0	0	11	5	16	16
12 - 13	7	11	2	0	2	0	22	7	22	29
13 - 14	10	6	1	0	4	0	19	6	21	25
14 - 15	5	5	0	0	2	0	18	1	10	19
15 - 16	7	9	0	0	2	0	26	1	18	27
16 - 17	18	7	2	0	1	0	57	2	28	59
17 - 18	17	2	3	0	0	1	47	5	23	52
18 - 19	7	1	0	0	0	0	22	11	8	33
7 - 19	104	70	9	0	29	1	317	42	213	359
7 - 9	8	8	0	0	9	0	62	1	25	63

Seaport Survey

STATION NO. 10 Surat Thani (Route No. 4079)

Direction from Port to Outside

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	PICKUP TRUCK	TRUCK 6 WHL 10	TRUCK 10 WHL	TRAI LER	OIL TRUCK	REFRIG TRUCK	MOTOR CYCLE	PASSEN CAR	TRUCK (1+6)	OTHERS (7+8)
7 - 8	8	6	0	0	0	0	30	1	14	31
8 - 9	0	5	0	0	2	0	13	1	7	14
9 - 10	5	2	0	0	7	0	16	1	14	17
10 - 11	8	5	0	0	4	0	21	2	17	23
11 - 12	10	7	0	0	6	0	19	0	23	19
12 - 13	7	8	0	0	1	0	21	4	16	25
13 - 14	8	8	3	0	4	0	19	4	23	23
14 - 15	5	7	1	0	2	0	15	4	15	19
15 - 16	10	8	1	0	2	0	25	4	21	29
16 - 17	7	2	1	0	0	0	57	1	10	58
17 - 18	17	5	1	0	0	0	50	4	23	54
18 - 19	11	1	0	0	0	0	25	2	12	27
7 - 19	96	64	7	0	28	0	311	28	195	339
7 - 9	8	11	0	0	2	0	43	2	21	45

Seaport Survey

STATION NO. 10 Surat Thani (Route No. 4079)

Direction from Both to Both

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	PICKUP TRUCK	TRUCK 6 WHL 10	TRUCK 10 WHL	TRAI LER	OIL TRUCK	REFRIG TRUCK	MOTOR CYCLE	PASSEN CAR	TRUCK (1+6)	OTHERS (7+8)
7 - 8	14	12	0	0	5	0	76	1	31	77
8 - 9	2	7	0	0	6	0	29	2	15	31
9 - 10	12	8	1	0	12	0	38	2	33	40
10 - 11	17	15	0	0	8	0	32	4	40	36
11 - 12	21	12	0	0	6	0	30	5	39	35
12 - 13	14	19	2	0	3	0	43	11	38	54
13 - 14	18	14	4	0	8	0	38	10	44	48
14 - 15	8	12	1	0	4	0	33	5	25	38
15 - 16	17	17	1	0	4	0	51	5	39	56
16 - 17	25	9	3	0	1	0	114	3	38	117
17 - 18	34	7	4	0	0	1	97	9	46	106
18 - 19	18	2	0	0	0	0	47	13	20	60
7 - 19	200	134	16	0	57	1	628	70	408	698
7 - 9	16	19	0	0	11	0	105	3	46	108

Seaport Survey

STATION NO. 20 Phangnga (Khuraburi)

Direction from Outside to Port

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	PICKUP	TRUCK	TRUCK	TRAI	OIL	REFRIG	MOTOR	PASSEN	TRUCK	OTHERS
	6 WHL	10 WHL	10 WHL	LER	TRUCK	TRUCK	CYCLE	CAR	(1+6)	(7+8)
7 - 8	6	4	1	0	0	0	6	0	11	6
8 - 9	5	3	0	0	0	0	6	0	8	6
9 - 10	5	1	0	0	0	0	11	0	6	11
10 - 11	0	0	0	0	0	0	14	0	0	14
11 - 12	0	0	1	0	0	0	5	0	1	5
12 - 13	0	1	0	0	0	0	7	0	1	7
13 - 14	4	0	1	0	0	0	1	1	5	2
14 - 15	4	1	0	0	0	0	7	0	5	7
15 - 16	2	1	0	0	0	0	8	0	3	8
16 - 17	3	0	1	0	0	0	6	0	4	6
17 - 18	3	0	0	0	0	0	10	0	3	10
18 - 19	2	1	2	0	0	1	5	0	6	5
7 - 19	34	12	6	0	0	1	86	1	53	87
7 - 9	11	7	1	0	0	0	12	0	19	12

Seaport Survey

STATION NO. 20 Phangnga (Khuraburi)

Direction from Port to Outside

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	PICKUP	TRUCK	TRUCK	TRAI	OIL	REFRIG	MOTOR	PASSEN	TRUCK	OTHERS
	6 WHL	10 WHL	10 WHL	LER	TRUCK	TRUCK	CYCLE	CAR	(1+6)	(7+8)
7 - 8	0	2	1	0	0	0	2	0	3	2
8 - 9	6	1	0	0	0	0	2	0	7	2
9 - 10	3	1	0	0	0	0	8	0	4	8
10 - 11	9	1	2	0	0	0	17	0	12	17
11 - 12	3	4	3	0	0	0	11	0	10	11
12 - 13	2	2	0	0	0	0	5	0	4	5
13 - 14	0	1	0	0	0	0	6	0	1	6
14 - 15	3	0	1	0	0	0	6	0	4	6
15 - 16	4	0	2	0	0	0	13	1	6	14
16 - 17	2	0	0	0	0	0	8	0	2	8
17 - 18	1	0	0	0	0	0	12	0	1	12
18 - 19	7	3	4	0	0	0	11	0	14	11
7 - 19	40	15	13	0	0	0	101	1	68	102
7 - 9	6	3	1	0	0	0	4	0	10	4

Seaport Survey

STATION NO. 20 Phangnga (Khuraburi)

Direction from Both to Both

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	PICKUP	TRUCK	TRUCK	TRAI	OIL	REFRIG	MOTOR	PASSEN	TRUCK	OTHERS
	6 WHL	10 WHL	10 WHL	LER	TRUCK	TRUCK	CYCLE	CAR	(1+6)	(7+8)
7 - 8	6	6	2	0	0	0	8	0	14	8
8 - 9	11	4	0	0	0	0	8	0	15	8
9 - 10	8	2	0	0	0	0	19	0	10	19
10 - 11	9	1	2	0	0	0	31	0	12	31
11 - 12	3	4	4	0	0	0	16	0	11	16
12 - 13	2	3	0	0	0	0	12	0	5	12
13 - 14	4	1	1	0	0	0	7	1	6	8
14 - 15	7	1	1	0	0	0	13	0	9	13
15 - 16	6	1	2	0	0	0	21	1	9	22
16 - 17	5	0	1	0	0	0	14	0	6	14
17 - 18	4	0	0	0	0	0	22	0	4	22
18 - 19	9	4	6	0	0	1	16	0	20	16
7 - 19	74	27	19	0	0	1	187	2	121	189
7 - 9	17	10	2	0	0	0	16	0	29	16

Seaport Survey

STATION NO. 30 Phuket

Direction from Outside to Port

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	PICKUP TRUCK	TRUCK 6 WHL 10	TRUCK 10 WHL	TRAI LER	OIL TRUCK	REFRIG TRUCK	MOTOR CYCLE	PASSEN CAR	TRUCK (1+6)	OTHERS (7+8)
7 - 8	17	3	3	0	1	0	374	3	24	377
8 - 9	40	6	4	1	4	1	191	5	56	196
9 - 10	71	10	7	0	1	0	226	10	89	236
10 - 11	34	6	6	1	1	1	164	1	49	165
11 - 12	36	5	8	0	0	0	192	5	49	197
12 - 13	28	2	2	0	0	0	165	3	32	168
13 - 14	35	7	3	0	0	0	148	1	45	149
14 - 15	29	11	8	0	0	0	128	5	48	133
15 - 16	32	8	3	0	0	0	72	6	43	78
16 - 17	27	4	2	0	1	0	120	3	34	123
17 - 18	45	6	5	0	0	1	225	6	57	231
18 - 19	17	1	5	0	0	0	162	3	23	165
7 - 19	411	69	56	2	8	3	2167	51	549	2218
7 - 9	57	9	7	1	5	1	565	8	80	573

Seaport Survey

STATION NO. 30 Phuket

Direction from Port to Outside

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	PICKUP TRUCK	TRUCK 6 WHL 10	TRUCK 10 WHL	TRAI LER	OIL TRUCK	REFRIG TRUCK	MOTOR CYCLE	PASSEN CAR	TRUCK (1+6)	OTHERS (7+8)
7 - 8	16	3	1	0	2	0	252	6	22	258
8 - 9	32	4	3	0	1	0	153	4	40	167
9 - 10	45	10	5	0	5	1	212	5	66	217
10 - 11	18	3	3	0	1	0	131	1	25	132
11 - 12	40	6	8	0	0	1	206	1	55	207
12 - 13	28	4	5	0	0	0	180	0	37	180
13 - 14	48	2	6	0	0	0	123	2	56	125
14 - 15	29	4	3	0	0	0	105	3	36	108
15 - 16	22	4	5	0	0	0	69	6	31	75
16 - 17	31	7	4	0	0	0	117	1	42	118
17 - 18	37	6	2	0	0	2	296	6	47	302
18 - 19	27	6	1	0	0	0	239	9	34	248
7 - 19	373	59	46	0	9	4	2093	44	491	2137
7 - 9	48	7	4	0	3	0	415	10	62	425

Seaport Survey

STATION NO. 30 Phuket

Direction from Both to Both

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	PICKUP TRUCK	TRUCK 6 WHL 10	TRUCK 10 WHL	TRAI LER	OIL TRUCK	REFRIG TRUCK	MOTOR CYCLE	PASSEN CAR	TRUCK (1+6)	OTHERS (7+8)
7 - 8	33	6	4	0	3	0	626	9	46	635
8 - 9	72	10	7	1	5	1	354	9	96	363
9 - 10	116	20	12	0	6	1	438	15	155	453
10 - 11	52	9	9	1	2	1	295	2	74	297
11 - 12	76	11	16	0	0	1	398	6	104	404
12 - 13	56	6	7	0	0	0	345	3	69	348
13 - 14	83	9	9	0	0	0	271	3	101	274
14 - 15	58	15	11	0	0	0	233	8	84	241
15 - 16	54	12	8	0	0	0	141	12	74	153
16 - 17	58	11	6	0	1	0	237	4	76	241
17 - 18	82	12	7	0	0	3	521	12	104	533
18 - 19	44	7	6	0	0	0	401	12	57	413
7 - 19	784	128	102	2	17	7	4260	95	1040	4355
7 - 9	105	16	11	1	8	1	980	18	142	998

Seaport Survey

STATION NO. 40 Krabi

Direction from Outside to Port

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	PICKUP TRUCK	TRUCK 6 WHL 10	TRUCK 10 WHL	TRAI LER	OIL TRUCK	REFRIG TRUCK	MOTOR CYCLE	PASSEN CAR	TRUCK (1'6)	OTHERS (7+8)
7 - 8	3	0	1	0	0	0	0	0	4	0
8 - 9	3	2	0	0	0	1	32	0	6	32
9 - 10	3	2	1	0	0	0	41	1	6	42
10 - 11	1	2	2	0	0	0	20	0	5	20
11 - 12	3	2	1	0	0	0	20	2	6	22
12 - 13	0	0	0	0	0	0	16	0	0	16
13 - 14	0	1	0	0	0	0	14	0	1	14
14 - 15	2	2	0	0	0	1	27	0	5	27
15 - 16	1	1	0	0	0	0	21	0	2	21
16 - 17	1	1	0	0	0	0	22	0	2	22
17 - 18	1	0	0	0	0	0	15	0	1	15
18 - 19	2	0	0	0	0	0	9	0	2	9
7 - 19	20	13	5	0	0	2	237	3	40	240
7 - 9	6	2	1	0	0	1	32	0	10	32

Seaport Survey

STATION NO. 40 Krabi

Direction from Port to Outside

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	PICKUP TRUCK	TRUCK 6 WHL 10	TRUCK 10 WHL	TRAI LER	OIL TRUCK	REFRIG TRUCK	MOTOR CYCLE	PASSEN CAR	TRUCK (1'6)	OTHERS (7+8)
7 - 8	3	0	1	0	0	0	0	0	4	0
8 - 9	3	2	0	0	0	0	26	0	5	26
9 - 10	3	2	1	0	0	1	47	1	7	48
10 - 11	1	2	0	0	0	0	20	0	3	20
11 - 12	3	2	3	0	0	0	20	2	8	22
12 - 13	0	0	0	0	0	0	16	0	0	16
13 - 14	0	1	0	0	0	0	14	0	1	14
14 - 15	2	2	0	0	0	0	24	0	4	24
15 - 16	1	1	0	0	0	1	24	0	3	24
16 - 17	1	1	0	0	0	0	19	0	2	19
17 - 18	1	0	0	0	0	0	18	0	1	18
18 - 19	2	0	0	0	0	0	9	0	2	9
7 - 19	20	13	5	0	0	2	237	3	40	240
7 - 9	6	2	1	0	0	0	26	0	9	26

Seaport Survey

STATION NO. 40 Krabi

Direction from Both to Both

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	PICKUP TRUCK	TRUCK 6 WHL 10	TRUCK 10 WHL	TRAI LER	OIL TRUCK	REFRIG TRUCK	MOTOR CYCLE	PASSEN CAR	TRUCK (1'6)	OTHERS (7+8)
7 - 8	6	0	2	0	0	0	0	0	8	0
8 - 9	6	4	0	0	0	1	58	0	11	58
9 - 10	6	4	2	0	0	1	88	2	13	90
10 - 11	2	4	2	0	0	0	40	0	8	40
11 - 12	6	4	4	0	0	0	40	4	14	44
12 - 13	0	0	0	0	0	0	32	0	0	32
13 - 14	0	2	0	0	0	0	28	0	2	28
14 - 15	4	4	0	0	0	1	51	0	9	51
15 - 16	2	2	0	0	0	1	45	0	5	45
16 - 17	2	2	0	0	0	0	41	0	4	41
17 - 18	2	0	0	0	0	0	33	0	2	33
18 - 19	4	0	0	0	0	0	18	0	4	18
7 - 19	40	26	10	0	0	4	474	6	80	480
7 - 9	12	4	2	0	0	1	58	0	19	58

Seaport Survey

STATION NO. 50 Kantang

Direction from Outside to Port

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	PICKUP TRUCK	TRUCK 6 WHL 10	TRUCK 10 WHL	TRAI LER	OIL TRUCK	REFRIG TRUCK	MOTOR CYCLE	PASSEN CAR	TRUCK (1+6)	OTHERS (7+8)
7 - 8	1	1	0	0	0	0	8	0	2	8
8 - 9	2	1	0	0	0	0	18	0	3	18
9 - 10	1	2	0	0	0	0	23	0	3	23
10 - 11	0	0	0	0	0	0	35	2	0	37
11 - 12	0	0	0	0	0	0	7	1	0	8
12 - 13	1	2	0	0	0	0	3	1	3	4
13 - 14	2	0	0	0	1	1	20	0	4	20
14 - 15	2	1	0	0	0	0	54	0	3	54
15 - 16	5	0	0	0	0	0	24	1	5	25
16 - 17	5	1	0	0	0	0	39	1	6	40
17 - 18	1	0	0	0	0	0	65	0	1	65
18 - 19	0	0	0	0	0	0	109	2	0	111
7 - 19	20	8	0	0	1	1	405	8	30	413
7 - 9	3	2	0	0	0	0	26	0	5	26

Seaport Survey

STATION NO. 50 Kantang

Direction from Port to Outside

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	PICKUP TRUCK	TRUCK 6 WHL 10	TRUCK 10 WHL	TRAI LER	OIL TRUCK	REFRIG TRUCK	MOTOR CYCLE	PASSEN CAR	TRUCK (1+6)	OTHERS (7+8)
7 - 8	0	0	0	0	0	0	8	0	0	8
8 - 9	2	2	0	0	0	0	18	0	4	18
9 - 10	1	1	0	0	0	0	19	0	2	19
10 - 11	1	1	0	0	0	0	39	2	2	41
11 - 12	0	0	0	0	0	0	7	1	0	8
12 - 13	1	2	0	0	0	0	3	1	3	4
13 - 14	1	0	0	0	0	0	16	0	1	16
14 - 15	3	1	0	0	1	1	52	0	6	52
15 - 16	5	0	0	0	0	0	25	1	5	26
16 - 17	5	1	0	0	0	0	39	1	6	40
17 - 18	1	0	0	0	0	0	61	0	1	61
18 - 19	0	0	0	0	0	0	109	2	0	111
7 - 19	20	8	0	0	1	1	396	8	30	404
7 - 9	2	2	0	0	0	0	26	0	4	26

Seaport Survey

STATION NO. 50 Kantang

Direction from Both to Both

HOUR BAND	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	T O T A L	
	PICKUP TRUCK	TRUCK 6 WHL 10	TRUCK 10 WHL	TRAI LER	OIL TRUCK	REFRIG TRUCK	MOTOR CYCLE	PASSEN CAR	TRUCK (1+6)	OTHERS (7+8)
7 - 8	1	1	0	0	0	0	16	0	2	16
8 - 9	4	3	0	0	0	0	36	0	7	36
9 - 10	2	3	0	0	0	0	42	0	5	42
10 - 11	1	1	0	0	0	0	74	4	2	78
11 - 12	0	0	0	0	0	0	14	2	0	16
12 - 13	2	4	0	0	0	0	6	2	6	8
13 - 14	3	0	0	0	1	1	36	0	5	36
14 - 15	5	2	0	0	1	1	106	0	9	106
15 - 16	10	0	0	0	0	0	49	2	10	51
16 - 17	10	2	0	0	0	0	78	2	12	80
17 - 18	2	0	0	0	0	0	126	0	2	126
18 - 19	0	0	0	0	0	0	218	4	0	222
7 - 19	40	16	0	0	2	2	801	16	60	817
7 - 9	5	4	0	0	0	0	52	0	9	52

2. CARGO TRANSPORTATION DEMAND

2.1 PRESENT CARGO TRANSPORTATION

The existing situations of cargo transportation related to the Upper South was estimated by two different methods. The first estimation was based on such existing transportation data as the result of Roadside Interview Survey which was carried out and the data obtained from the State Railway of Thailand and the Harbour Department. The other estimation was based on production/consumption analysis of major products of the Upper South.

2.1.1 Estimation by Existing Transportation Data

1) Roadside Interview Survey

Roadside Interview Survey together with traffic counting was carried out in July - August 1983 for the purpose of supplementing the lack of truck transportation data, especially aiming at obtaining interregional and interprovincial cargo distribution pattern. Figure 2.1 shows the survey locations. The survey was performed for 12 hours from 7:00 to 19:00 one day each for every location with the cooperation of Thailand Institute of Scientific and Technological Research.

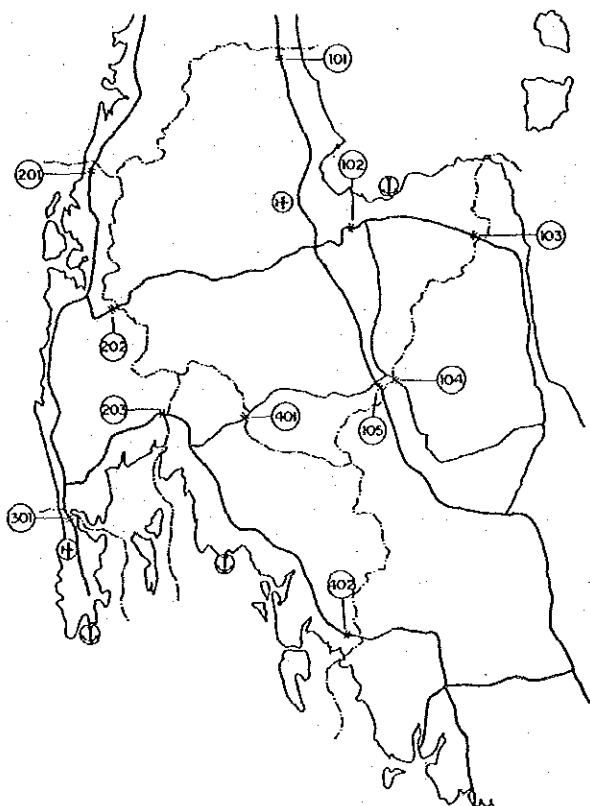


Fig. 2.1 Location of Roadside Interview Survey

2) Estimation of Cargo OD Table

Cargo OD table by truck was established by the sampled interview, which was converted into the average daily volume on the basis of traffic counting survey by Department of Highways in 1982 and then into annual volume. Cargo OD table by all transportation modes was estimated by adding cargo OD tables by railway and ship to the above mentioned OD table by truck. Table 2.1 shows the estimated cargo OD table by all transportation modes in 1982. This OD table shows generating and attracting pattern of cargo of the four provinces in the Upper South excluding their intraprovincial movement. The possibility of seasonal fluctuation is the greatest concern on the accuracy of this estimation. The average truck traffic of July and August was proved to be 3 percent less than that of the annual monthly average. This estimation can be concluded to be slightly less than the actual volume.

Table 2.1 Cargo OD Table in 1982 estimated by Existing Transportation Data

Unit : 1,000 ton/year

	1	2	3	4	5	6	7	8	9	TOTAL
1. SURAT THANI	0.0	45.3	2.6	46.4	154.3	45.0	228.9	0.0	0.0	522.4
2. PHANGNGA	20.1	0.0	253.3	7.3	1.6	3.3	95.7	0.0	7.3	398.6
3. PHUKET	1.1	167.5	0.0	74.1	13.5	2.2	247.9	0.0	52.9	559.2
4. KRABI	27.7	20.8	43.1	0.0	68.8	39.1	126.0	0.0	8.3	333.8
5. OTHER SOUTH	336.1	37.3	126.6	232.9	0.0	0.0	0.0	0.0	0.0	732.9
6. CHUM/RANONG	41.4	55.6	22.6	0.1	0.0	0.0	0.0	0.0	0.0	119.7
7. OTHERS	260.0	221.2	172.3	82.2	0.0	0.0	0.0	0.0	0.0	735.7
8. EAST COUNTRIES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9. WEST COUNTRIES	0.0	0.3	125.4	0.0	0.0	0.0	0.0	0.0	0.0	125.7
TOTAL	686.4	548.0	745.9	443.0	238.2	89.6	698.4	0.0	68.5	3518.0

- Note : 1) Export and import volume of west countries should be interpreted as east and west countries.
 2) Intra zonal cargo transportation is not included.

Source : The Team

2.1.2 Estimation by Production/Consumption Analysis

The following ten major commodities were selected among a variety of commodities produced or consumed in the Upper South by taking account of their present and future importance to the area from economic and transportation aspects: 1. Rice, 2. Rubber, 3. Palm oil, 4. Coconut, 5. Fish, 6. Forestry Products, 7. Tin, 8. Petroleum Products, 9. Cement and 10. Manufactured Products. The analysis of this section is based on economic indicators of 1980. The annual growth rate of GPP for the period 1980 - 1982 was minus 0.3 percent for the Upper South. It can be considered that there was no significant change of cargo transportation in the area as well.

1) Rice

Production and consumption status of rice in the Upper South can be summarized as shown in Table 2.2.

Table 2.2 Rice Production and Consumption in 1980

	Population (1000)	Consumption ^{1/} (1000 ton)	Production ^{2/} (1000 ton)	Balance (1000 ton)
Upper South	1105.8	243.2	104.1	△139.1
Surat Thani	588.4	129.4	72.8	△ 56.6
Phangnga	170.3	37.5	8.5	△ 29.0
Phuket	131.0	28.8	2.0	△ 26.8
Krabi	216.1	47.5	20.8	△ 26.7

Note: 1/ Per capita consumption is assumed at 220kg/person-year.

2/ White rice is assumed to be equivalent to 65% of paddy.

Source: The Team

The Upper South is characterized as a rice deficit area. Nakhon Si Thammarat and Phatthalung are major rice supplying provinces to the area and high quality rice is supplied from the Central Region via railway. Rice transportation of the Upper South was estimated as shown in Figure 2.2 based on the following assumptions:

- Rice produced in a changwat would be consumed there first of all. This constitutes intra provincial movement of rice.
- Though high quality rice of 7,000 tons imported from the Central could be distributed throughout the area, it was supposedly supplied only to Surat Thani.
- Rice deficiency of each province was assumed to be supplied from Nakhon Si Thammarat and Phatthalung in proportion to the produced quantity of both provinces.

2) Rubber

Production status of rubber in the Upper South can be summarized as shown in Table 2.3.

Table 2.3 Rubber production in 1980

	Unit: 1,000 ton/year	
	Production	Smoked Sheet ^{1/}
Upper South	98	77.7
Surat Thani	39	30.9
Phangnga	22	17.4
Phuket	7	5.6
Krabi	30	23.8

Note: ^{1/}Smoked rubber sheet is assumed to be equivalent to about 80% of plain rubber sheet

Source: The Team

According to the statistics of Harbour Department, export volume of rubber at Phuket and Kantang amounted to 24.2 and 33.1 thousand tons, respectively. Due to the lack of international port at Surat Thani, rubber produced there was transported by land to Bangkok or Songkhla. According to the statistics of State Railway of Thailand, the volume transported by railway amounted to 10.8 thousand tons for Bangkok and 9.6 thousand tons for Hat Yai. Rubber transportation of the Study Area was estimated as shown in Figure 2.3 based on the following assumptions :

- Rubber produced in Phangnga was transported to Phuket for smoking.
- Smoked rubber sheet produced in Phuket was exported through Phuket Port.
- Smoked rubber sheet produced in Krabi was exported through Kantang Port.
- Smoked rubber sheet produced in Surat Thani was assumed to be transported to Bangkok and Hat Yai just in accordance with the statistics. The remaining 10.5 thousand tons was allocated to Phuket and Kantang to correspond with the rubber handling volume of both ports.

3) Palm Oil

Production status of palm oil in the Upper South can be summarized as shown in Table 2.4. Though oil palm production is still limited, it is anticipated that the production will

sharply be increased in the Upper South because of the bright prospect of market and land suitability of the area for oil palm production.

Table 2.4 Palm Oil Production in 1980

	Unit: 1,000 ton/year	
	Palm Oil	FFB
Upper South	77	308
Surat Thani	13	52
Phangnga	-	-
Phuket	-	-
Krabi	64	256

Source : The Team

Oil palm harvested needs to be brought into extraction plant in 24 hours for preventing quality deterioration. The distribution of the extracted palm oil is controlled by the plant holding company. Most of palm oil is transported to Bangkok by tank rolly for further processing. Palm oil transportation is schematically shown in Figure 2.4.

4) Coconut

Coconut production shows a decreasing trend mainly due to lack of replanting management which was caused by unattractive market price. Thailand is now importing coconut from abroad but the production should be promoted at least for sustaining self-sufficiency level. Production and consumption status of coconut can be summarized as shown in Table 2.5.

Table 2.5 Coconut Production and Consumption in 1980

Study Area	Production	Unit: 1,000 ton/year		
		Local ^{1/} Consumption	Balance	for ^{2/} Copra
Study Area	75	44.1	30.9	6.7
Surat Thani	58	23.5	34.5	5.8
Phangnga	9	6.8	2.2	0.9
Phuket	5	5.2	Δ 0.2	-
Krabi	3	8.6	Δ 5.6	-

Note: ^{1/} Per capita consumption of coconut is assumed at 32 nuts/year (1.25 kg/nut).

^{2/} Copra production is assumed at 10 percent of coconut production in province with surplus. 8.5 nuts of coconut can produce 1 kg of copra.

Source: The Team

Though the Upper South is in surplus of coconut, most of the surplus is dispatched to Bangkok instead of being supplied to copra production in the area. Coconut transportation was estimated as shown in Figure 2.5 based on the following assumptions :

- Surplus of Phangnga (2.2 - 0.9) would be supplied to Phuket.
- Phuket and Krabi would be supplied by Surat Thani to cover the deficit.
- The remaining surplus of Surat Thani would be sent to Bangkok.

5) Fish

Fish landed and consumption status in the Upper South can be summarized as shown in Table 2.6.

Table 2.6 Fish Landed and Consumption in 1980

Unit: 1,000 ton/year

	Landed	Trash ^{1/}	Valuable	to Bangkok	Balance	Consumption ^{2/}
Upper South	162	76.6	85.4	20.4	65.0	38.8
Surat Thani	83	53.1	29.9	8.0	21.9	20.6
Phangnga	15	4.5	10.5	0.0	10.5	6.0
Phuket	52	15.4	36.6	10.8	25.8	4.6
Krabi	12	3.6	8.4	1.6	6.8	7.6

Note: ^{1/} Trash fish ratios of Phangnga and Krabi are assumed to be equal to that of Phuket.

^{2/} Per capita fish consumption is assumed at 30 - 40 kg/year.

Source: The Team

Based on this status, fish transportation of the Upper South was estimated as shown in Figure 2.6 with the following assumptions :

- Whole volume of trash fish landed is supposedly sent to fishmeal factory. Trash fish landed at Phangnga and Krabi would be transported to Phuket.
- Fishmeal produced is assumed at 70% of trash fish and to be transported to Singapore by ship.
- Total of fish surplus of Phangnga and Phuket is assumed to be processed in several kind of fish processing industries in Phuket. The quantity processed would be reduced by 30% and the products are forwarded to Bangkok.

6) Forestry Products

South Thailand produced wood of 1,286 thousand m³ in 1980 which accounted for 50.6 percent of wood production in the whole country. The Upper South shared 36.5 percent of wood production in the South. This area is one of the most important wood production area in the country. The production and consumption status of wood can be summarized as shown in Table 2.7.

Table 2.7 Wood Production and Consumption in 1980

	Production	to <u>1/</u> Bangkok	Balance	<u>2/</u> Consumption
Upper South	470	246.7	223.3	223.3
Surat Thani	180	94.5	85.5	118.8
Phangnga	290	152.2	137.8	34.4
Phuket	-	-	-	26.5
Krabi	-	-	-	43.6

Note: 1/ The quantity transported to Bangkok was estimated by multiplying the quantity transported northward from the South by the composition ratio of the Upper South in the South.

2/ Wood consumption of each province was estimated by allocating the balance to each in proportion to population of respective provinces.

Source: The Team

Phangnga is a wood supplying province to the others in the Upper South as shown in Figure 2.7.

7) Tin

Production of tin concentrates in the South amounted to 40.3 thousand tons in 1980, which was 87.6 percent of that of the whole country. 90 percent of tin smelting capacity of the country is concentrated in Phuket. It would, therefore, be very plausible to assume that all tin concentrates produced in the South are destined to Phuket for processing. Refined tin metal is exported to overseas market through the pier of Thaisarco. Refined tin metal is equivalent to 75.4 percent of crude tin concentrates. Based on the above considerations, tin transportation in the South was estimated as shown in figure 2.8.

8) Petroleum Products

Oil depots in the South are located at Chumphon, Surat Thani, Pak Phanang, Songkhla, Kantang and Phuket. Those located on the Gulf of Thailand coast are supplied petroleum products mostly from Bangkok and Si Ratcha, and those on the Andaman Sea coast are supplied mostly from Singapore. From these oil depots, petroleum products are distributed to inland gas stations and big oil consumers.

The quantity of petroleum products landed at oil depots was estimated on the basis of "Report for Cargo Ship File" compiled by the Harbour Department. Consumption of petroleum products of each province was estimated based on the relationship between GPP and petroleum consumption of the South. The volume of petroleum products available at each oil depot was firstly allocated to the nearest province, secondly to the next nearest province and so on. The estimated transportation of petroleum products is as shown in Figure 2.9.

9) Cement

Cement factories are located in Bangkok and Thung Song. While factories in Bangkok supply cement to every part of the country except the South, the factory at Thung Song is specialized in supplying cement to the South Region. Customers can get cement through three depots situated at Chumphon, Surat Thani and Hat Yai and the factory at Thung Song. Ready mixed cement centers are located at Surat Thani, Nakhon Si Thammarat, Hat Yai, Pattani and Phuket for providing cement to construction sites. The factory has yearly production capacity of 650 thousand tons by clinker base or about 800 thousand tons of portland and admixed cement. Cement demand in the South is now approaching to the full capacity of production. Consumption of cement in the South was estimated based on population and GPP. The estimated transportation of cement is as shown in figure 2.10.

10) Manufactured Products

The quantity of manufactured products produced in the Upper South was estimated by multiplying the production amount estimated in Industry Sector by volume/amount ratios for the classified kind of industry. These were summarized into four groups of industry, consumer goods by local resource, consumer goods by non local resource, industrial goods by local resource and industrial goods by non local resource.

Market distribution patterns for these four kind of goods were assumed by taking account of the relative comparison of marketing range of these goods. Table 2.8 shows the estimated production and distribution of these goods produced in the Upper South coupled with the assumed distribution pattern. The total quantity generated in the Upper South was estimated at 352.6 thousand tons, consisting of 134.2, 131.5 and 86.9 thousand tons for the distribution to the province itself,

Table 2.8 Production and Distribution of Manufactured Products in 1980

Unit : 1,000 ton/year

		Consumer Goods			Industrial Goods			Total
		Local	Non Local	Total	Local	Non Local	Total	
Upper South	Total	81.6	0.8	82.4	235.8	34.4	270.2	352.6
	Province itself	32.7	0.2	32.9	94.4	6.9	101.3	134.2
	South Thailand	32.7	0.6	33.3	70.7	27.5	98.2	131.5
	Other Domestic	16.2	-	16.2	70.7	-	70.7	86.9
	Overseas	-	-	-	-	-	-	-
Surat Thani	Total	53.9	0.3	54.2	97.4	13.8	111.2	165.4
	Surat Thani	21.6	0.1	21.7	39.0	2.8	41.8	63.5
	South Thailand	21.6	0.2	21.8	29.2	11.0	40.2	62.0
	Other Domestic	10.7	-	10.7	29.2	-	29.2	39.9
	Overseas	-	-	-	-	-	-	-
Phangnga	Total	5.1	0.1	5.2	26.0	3.6	29.6	34.8
	Phangnga	2.0	-	2.0	10.4	0.7	11.1	13.1
	South Thailand	2.0	0.1	2.1	7.8	2.9	10.7	12.8
	Other Domestic	1.1	-	1.1	7.8	-	7.8	8.9
	Overseas	-	-	-	-	-	-	-
Phuket	Total	12.9	0.3	13.2	74.7	15.9	90.6	103.8
	Phuket	5.2	0.1	5.3	29.9	3.2	33.1	38.4
	South Thailand	5.2	0.2	5.4	22.4	12.7	35.1	40.5
	Other Domestic	2.5	-	2.5	22.4	-	22.4	24.9
	Overseas	-	-	-	-	-	-	-
Krabi	Total	9.7	0.1	9.8	37.7	1.1	38.8	48.6
	Krabi	3.9	-	3.9	15.1	0.2	15.3	19.2
	South Thailand	3.9	0.1	4.0	11.3	0.9	12.2	16.2
	Other Domestic	1.9	-	1.9	11.3	-	11.3	13.2
	Overseas	-	-	-	-	-	-	-
Market (%)	Total	100	100	(100)	100	100	(100)	(100)
	Province itself	40	30	(40)	40	20	(38)	(38)
	South Thailand	40	70	(40)	30	80	(36)	(37)
	Other Domestic	20	-	(20)	30	-	(26)	(25)
	Overseas	-	-	(-)	-	-	(-)	(-)

Source : The Team

the South Region and other domestic market, respectively. A gravity type model was applied for the distribution in the South Region, population being a factor for consumer goods and GPP being a factor for industrial goods. Fig. 2.11 shows the estimated distribution pattern of the manufactured products.

2.1.3 Present Cargo OD Table

Based on the production/consumption analysis, the existing OD table for major commodities were established as shown in Table 2.9. It should be noted that this OD table is composed of ten major commodities - rice, rubber, palm oil, coconut, fish, forestry products, tin and manufactured products which are mainly produced in the Upper South and petroleum products and cement which are supplied to the area from outside. There are such other various kind of commodities that are produced in the area as other agricultural products, livestock, other minerals and quarrying products as well as such manufactured products that are supplied to the area as food, beverage, textile, electronics and industrial goods.

Table 2.9 OD Table of Major Commodities in 1980

Unit : 1,000 tons/year

	1	2	3	4	5	6	7	8	9	TOTAL
1. SURAT THANI	299.2	60.4	3.7	23.1	61.3	75.4	191.3	37.2	1.2	752.8
2. PHANGNGA	34.5	68.8	90.2	46.0	3.3	1.0	162.3	0.0	0.0	406.1
3. PHUKET	2.4	112.7	76.5	1.8	6.5	1.9	53.7	15.4	54.5	325.4
4. KRABI	1.0	7.4	4.5	94.2	30.3	0.4	80.4	0.0	0.0	218.2
5. OTHER SOUTH	129.7	91.5	82.9	46.9	0.0	0.0	0.0	0.0	0.0	351.0
6. CHUM/RANONG	0.0	0.0	2.9	0.0	0.0	0.0	0.0	0.0	0.0	2.9
7. OTHERS	252.0	0.0	41.4	0.0	0.0	0.0	0.0	0.0	0.0	293.4
8. EAST COUNTRIES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9. WEST COUNTRIES	0.0	0.0	113.6	0.0	0.0	0.0	0.0	0.0	0.0	113.6
TOTAL	718.8	340.8	415.7	212.0	101.4	78.7	487.7	52.6	55.7	2463.4

Source : The Team

In order to supplement miscellaneous commodities that are produced in the Upper South it was assumed that the surplus of the volume subtracted Table 2.9 from Table 2.1 for each OD pair generated from the four provinces represented the volume of miscellaneous commodities. On the other hand, it was assumed that the surplus of the volume subtracted Table 2.9 from Table 2.1 for each OD pair attracted to the four provinces from outside the Upper South represented the volume of general commodities supplied from outside.

A cargo OD table thus estimated is summarized in Table 2.10.

Table 2.10 Cargo OD Table in 1980 Estimated by Production/Consumption Analysis

Unit: 1,000/year

	1	2	3	4	5	6	7	8	9	TOTAL
1. SURAT THANI	400.5	60.4	3.7	46.4	154.3	75.4	228.8	37.2	1.2	1007.9
2. PHANGGA	34.5	102.4	253.3	46.0	3.3	3.3	162.3	0.0	0.0	605.1
3. PHUKET	2.4	167.5	177.4	74.1	13.5	2.2	247.9	15.4	54.5	754.9
4. KRABI	27.2	20.8	43.1	247.1	68.8	39.1	126.0	0.0	0.0	572.1
5. OTHER SOUTH	336.1	91.5	126.6	232.9	0.0	0.0	0.0	0.0	0.0	787.1
6. CHUM/RANONG	41.4	55.6	22.6	0.1	0.0	0.0	0.0	0.0	0.0	119.7
7. OTHERS	260.0	221.2	172.3	82.2	0.0	0.0	0.0	0.0	0.0	735.7
8. EAST COUNTRIES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9. WEST COUNTRIES	0.0	0.0	113.6	0.0	0.0	0.0	0.0	0.0	0.0	113.6
TOTAL	1102.1	719.4	912.6	728.8	239.9	120.0	765.0	52.6	55.7	4696.1

Source : The Team

2.2 FUTURE CARGO TRANSPORTATION

2.2.1 Estimation by Production/Consumption Analysis

Future transportation demand of the major commodities was estimated as explained in the following.

1) Rice

It is expected that rice production will be increased by both improvement of productivity and areal expansion of double cropping in the Upper South. The target of rice production is summarized in Table 2.11. Population growth, on the other hand, will increase rice consumption in the area. It is estimated that the deficiency of rice will remain at nearly the same level as at present.

Table 2.11 Rice Production and Consumption in 2000

	Population (1000)	Consumption ^{1/} (1000 ton)	Production ^{2/} (1000 ton)	Balance (1000 ton)
Upper South	1,833.1	403.3	257.5	△145.8
Surat Thani	990.3	217.9	219.7	1.8
Phangnga	234.3	51.5	16.3	△ 35.2
Phuket	272.5	60.0	3.9	△ 56.1
Krabi	336.0	73.9	17.6	△ 56.3

Note: ^{1/}Per capita consumption is assumed at 220 kg/person-year

^{2/}White rice is assumed to be equivalent to 65% of paddy

Source: The Team

Surat Thani will be a rice sufficient province though the other three provinces will still remain rice deficient. They will import rice from Surat Thani as well as Nakhon Si Thammarat and Phatthalung. Rice transportation of the Upper South was estimated as shown in Figure 2.12 based on the following assumptions :

- Rice produced in a province would be consumed there first of all.
- Rice imported from Central Region was assumed to increase in proportion to the increase of rice consumption in the Upper South.
- Rice surplus of Surat Thani would be distributed to the other three provinces in proportion to their respective shortage.
- The remaining deficit would be supplied from Nakhon Si Thammarat and Phatthalung proportionate to the present production volume of these provinces.

2) Rubber

Rubber production will be increased not through expansion of rubber plantation area but through improvement of productivity because the existing rubber plantation area exceeds the area suitable for rubber and replanting for higher yields is being actively promoted. Future prospect of world rubber market is bright due to the limited supply of natural rubber and increasing utilization for radial tyre. The target of rubber production is summarized in Table 2.12.

Table 2.12 Rubber Production in 2000

	Unit: 1,000 ton/year	
	Production	Smoked Sheet ^{1/}
Upper South	349	276.7
Surat Thani	138	109.4
Phangnga	85	67.4
Phuket	18	14.3
Krabi	108	85.6

Note: ^{1/}Smoked rubber sheet is assumed to be equivalent to about 80% of plain rubber sheet.

Source: The Team

Rubber transportation of the Upper South was estimated as shown in Figure 2.13 based on the following assumptions:

- The quantity carried by railway from Surat Thani was assumed to increase in proportion to the increase of rubber production in Surat Thani. However, it is possible that this portion would be directly exported to overseas market through Khanom Deep Sea Port proposed.
- International rubber market of Thailand was assumed to be diversified, 67 percent for the eastern countries and 33 percent for the western countries.
- Rubber produced in Phangnga is destined to Phuket for processing.
- Fifty percent of the estimated quantity to be exported to the eastern countries from Phuket and Krabi will be shipped to Singapore for transshipment and the remaining will be sent to Surat Thani for direct shipment.

(3) Palm Oil

Domestic market for palm oil is very bright because vegetable oil consumption is expected to increase owing to the change of people's way of life and palm oil has superior competitiveness against other vegetable oils. International market of palm oil is expected to grow at an annual growth rate of 4.7 percent for the period 1985 - 1990 and 5.4 percent for the period 1990 - 1995 according to IBRD's projection. Production prospect of palm oil in the Upper South is summarized in Table 2.13.

Table 2.13 Palm Oil Production in 2000

Unit: 1,000 ton/year		
	Palm Oil	FFB
Upper South	472	1,888
Surat Thani	238	952
Phangnga	-	-
Phuket	-	-
Krabi	234	936

Source : The Team

Most of the extracted crude palm oil will be sent to Bangkok for refining and down stream processing, some of the palm oil will be exported to international market and only a limited quantity will be processed into down stream products there. Palm oil transportation is estimated as shown in Fig. 2.14 based on the following assumptions:

- Domestic demand for palm oil is assumed to increase at a growth rate of 10 percent up to 1990 and at a growth rate of 5 percent afterwards by 2000.
- The quantity of palm oil processed in Surat Thani is assumed at 10,000 ton.
- The balance between the produced quantity of palm oil and the quantity to be consumed in domestic is assumed to be exported.
- The quantity exported to the western countries is assumed at 80 percent of total export and 20 percent to the eastern countries on the basis of the present import situations.

4) Coconut

Areal expansion of coconut cultivation is promising as unused suitable land for coconut is widely distributed in the Upper South. Though farmers do not have much incentive to increase coconut production due to the unattractive market price, it will be very effective to stimulate production by introducing mixed cropping and making full use of every part of coconut to produce copra, active carbon, textile, furniture and so forth. Production target and consumption status of coconut are shown in Table 2.14.

Table 2.14 Coconut Production and Consumption in 2000

Unit: 1,000 ton/year

	Production	Local 1/ Consumption	2/ Balance	for 3/,4/ Coconut Oil
Upper South	183	36.7	146.3	8.4
Surat Thani	158	19.8	138.2	8.4
Phangnga	11	4.7	6.3	-
Phuket	3	5.5	Δ 2.5	-
Krabi	11	6.7	4.3	-

Note: 1/Per capita consumption of coconut is assumed to be a half of that of 1980.

2/Coconut deficit province, Phuket, is supposedly supplied from Phangnga.

3/The surplus of coconut in Phangnga and Krabi will be sent to Bangkok while the quantity of coconut sent from Surat Thani to Bangkok is assumed to remain at the same level as of 1980, the remaining being processed into coconut oil.

coconut : 1.25 kg/piece
 1 tonnage of copra : 6,773 nuts
 1 tonnage of coconut oil : 62% of copra

4/Coconut oil is assumed to be sent to Bangkok.

Source: The Team

Coconut transportation was estimated as shown in Fig. 2.15.

5) Fish

Coastal and ocean fishing cannot be expected much due to the deterioration of resources and restriction of 200 seamiles. It could be possible to increase fish catch in a long run by introducing appropriate measures to protect fishery resources and promoting inland and seawater fish farming. It would, however, be more plausible to assume at the moment no growth can be expected. Table 2.15. shows the expected fish landed and consumption prospect of the Upper South:

Table 2.15 Fish Landed and Consumption in 2000

Unit: 1,000 ton/year

	Landed	Trash ^{1/}	Valuable	Consumption ^{2/}	Balance	to Bangkok ^{3/}	for Processing ^{4/}
Upper South	162	43.0	119.0	64.2	54.8	28.6	28.5
Surat Thani	83	26.6	56.4	34.7	21.7	10.9	10.8
Phangnga	15	3.1	11.9	8.2	3.7	-	-
Phuket	52	10.8	41.2	9.5	31.7	17.7	17.7
Krabi	12	2.5	9.5	11.8	Δ 2.3	-	-

Note : 1/ Trash fish landed in Surat Thani is presumed to be 50 percent of the present volume and those in provinces on Andaman coast to be 70 percent.

2/ Per capita fish consumption is assumed to remain at the present level, 30 - 40 kg/year.

3/ 50 percent of valuable fish balance of Surat Thani and Phuket is assumed to be forwarded to Bangkok, the remaining being used for processing.

4/ Processed fish and fishmeal will be exported to overseas market.

Source : The Team

Fig. 2.16 illustrates the estimated fish transportation.

6) Forestry Products

Forestry resources have been deteriorated in recent years. However, they should be restored for satisfying everlasting wood demand and conserving natural environment. Forestry products available in the Upper South in 2000 was assumed to maintain the present level of production. On top of this, old rubber trees should be fully utilized as a source of wood supply. Replanting of rubber trees is expected to produce 155 thousand cubic meters every year in the Area. Table 2.16 shows the estimated production and consumption status of wood inclusive of rubber trees cut down.

Table 2.16 Wood Production and Consumption in 2000

	Unit: 1,000 m ³ /year				
	Production	to 1/ Bangkok	Balance	Consumption	(Rubber Trees)
Upper South	654.2	293.8	360.4	360.4	155.2
Surat Thani	447.3	234.8	212.5	194.7	61.5
Phangnga	112.4	59.0	53.4	46.1	37.8
Phuket	7.9	-	7.9	53.6	7.9
Krabi	86.6	-	86.6	66.0	48.0

Note : 1/ The quantity transported to Bangkok was assumed to increase in proportion to the increase of forestry products in Surat Thani and Phangnga.

Source : The Team

The estimated transportation of forestry products is as shown in Fig. 2.17.

7) Tin

By referring to several demand projections of tin, the world demand for tin in 2000 was estimated at 247 thousand tons with an annual growth rate of 0.8 percent from 1980. The quantity of tin export of Thailand was estimated to be 39.0 thousand tons with the assumption that the present Thailand's share in the world market would remain constant at 15.8 percent. Phuket would be the most important port for tin export, handling 35.1 thousand tons of tin metal annually. Production of tin concentrates of provinces in the South was estimated based on their respective production share in 1980. In consequence, tin transportation in the South was estimated as shown in Fig. 2.18.

8) Petroleum Products

Demand for petroleum products in 2000 was estimated to be $3,482 \times 10^6$ l/year and $1,450 \times 10^6$ l/year for the South Region and the Upper South respectively as shown in Energy Sector. Demand of the Upper South was estimated in relation with GPP and that of the other changwats in the South was estimated in relation with the present consumption pattern. It was assumed that six oil depots in the South would receive adequate quantity of petroleum products to supply the demand of their hinterlands. The estimated transportation of petroleum products is as shown in Fig. 2.19.

9) Cement

The present production capacity of Thung Song is to be increased from 650 thousand tons in 1980 to 1,900 thousand tons by clinker base by 1987. This capacity increase can cope with the demand increase of the South by 1995, after which proportionate capacity increase will again be necessary. The production capacity in 2000 was estimated to be 2,719 thousand tons by clinker base or 3,358 thousand tons of portland and admixed cement. Demand share of the Upper South was assumed to increase from 25.7 percent in 1980 to 32 percent in 2000. The estimated cement consumption of the provinces in the Upper South are shown in Fig. 2.20, coupled with expected transportation flow. New establishment of cement depots will be necessary in Phuket, Phangnga and Krabi.

10) Manufactured Products

The quantity of manufactured products which will be produced in the Upper South in 2000 was estimated by multiplying the production target by volume/amount ratios for classified kind of industry. The same procedure as applied to the estimation of present movement was used for the future estimation. Table 2.17 shows the estimated production and distribution of manufactured products produced in the Upper South, coupled with the assumed distribution pattern. The total quantity generated was estimated at 4,029 thousand tons, comprising of 1,215, 1,325, 1,146 and 343 thousand tons for the distribution to province itself, the South Region, other domestic and overseas market, respectively. A gravity type model was applied for the distribution in the South Region. It was assumed that 2/3 of export from Surat Thani would be destined to the eastern countries, the remaining being destined to the western countries while 2/3 of export from provinces on the Andaman Sea Coast would be destined to the western countries, the remaining being destined to the eastern countries. Fig. 2.21 illustrates the estimated distribution pattern of manufactured products.

Based on the production/consumption analysis, the future OD table for major commodities were established as shown in Table 2.18.

Table 2.17 Production and Distribution of Manufactured Products in 2000

Unit : 1,000 ton/year

Study Area		Consumer Goods			Industrial Goods			Total
		Local	Non Local	Total	Local	Non Local	Total	
Study Area	Total	1003.2	31.8	1035.0	2415.0	579.1	2994.1	4029.1
	Province itself	301.0	16.0	317.0	724.5	173.7	898.2	1215.2
	South Thailand	300.9	9.4	310.3	724.5	289.7	1014.2	1324.5
	Other Domestic Overseas	301.0	-	301.0	845.2	-	845.2	1146.2
Surat Thani	Total	589.8	13.1	602.9	1216.0	373.1	1589.1	2192.0
	Surat Thani	176.9	6.6	183.5	364.8	111.9	476.7	660.2
	South Thailand	176.9	3.9	180.8	364.8	186.6	551.4	732.2
	Other Domestic Overseas	176.9	-	176.9	425.6	-	425.6	602.5
Phangnga	Total	106.4	1.8	108.2	248.1	27.7	275.8	384.0
	Phangnga	31.9	0.9	32.8	74.4	8.3	82.7	115.5
	South Thailand	31.9	0.5	32.4	74.4	13.9	88.3	120.7
	Other Domestic Overseas	31.9	-	31.9	86.8	-	86.8	118.7
Phuket	Total	171.9	12.8	184.7	606.9	93.7	700.6	885.3
	Phuket	51.6	6.4	58.0	182.1	28.1	210.2	268.2
	South Thailand	51.6	3.8	55.4	182.1	46.9	229.0	284.4
	Other Domestic Overseas	51.6	-	51.6	212.4	-	212.4	264.0
Krabi	Total	135.1	4.1	139.2	344.0	84.6	428.6	567.8
	Krabi	40.6	2.1	42.7	103.2	25.4	128.6	171.3
	South Thailand	40.5	1.2	41.7	103.2	42.3	145.5	187.2
	Other Domestic Overseas	40.6	-	40.6	120.4	-	120.4	161.0
Market (%)	Total	100	100	(100)	100	100	(100)	(100)
	Province itself	30	50	(31)	30	30	(30)	(30)
	South Thailand	30	30	(30)	30	50	(34)	(33)
	Other Domestic Overseas	30	-	(29)	35	-	(28)	(28)
	Overseas	10	20	(10)	5	20	(8)	(9)

Source : The Team

Table 2.18 OD Table of Major Commodities in 2000

Unit : 1,000 tons/year

	1	2	3	4	5	6	7	8	9	TOTAL
1. SURAT THANI	1137.3	252.7	105.3	162.6	438.5	252.7	1076.9	196.5	133.0	3755.5
2. PHANGNGA	21.0	190.8	185.8	23.6	19.2	4.7	181.5	9.7	19.3	655.6
3. PHUKET	38.3	360.0	338.2	26.7	46.1	11.8	281.7	77.6	131.8	1312.2
4. KRABI	22.2	66.5	49.0	273.4	66.8	5.6	332.3	86.5	114.4	1016.7
5. OTHER SOUTH	463.2	218.3	310.3	312.1	0.0	0.0	0.0	0.0	0.0	1303.9
6. CHUM/RANONG	0.0	0.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0	3.3
7. OTHERS	897.9	0.0	179.9	0.0	0.0	0.0	0.0	0.0	0.0	1077.8
8. EAST COUNTRIES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9. WEST COUNTRIES	0.0	0.0	493.7	0.0	0.0	0.0	0.0	0.0	0.0	493.7
TOTAL	2579.9	1088.3	1665.5	798.4	570.6	274.8	1872.4	370.3	398.5	9618.7

Source : The Team

2.2.2 Other Cargoes excluded from Production/Consumption Analysis

As stated in the preceding section, the cargo OD table of major commodities does not cover every kind of commodity flow. It is necessary to take into account of the commodities that will be supplied from the regions outside the Upper South, named "General Commodity" and that will be supplied from the area to the other regions other than the major commodities, named "Miscellaneous Commodities".

1) General Commodity

The future quantity of general commodity which will be supplied from other regions to the Upper South is considered to be a function of the present volume and the growth rate of per capita GPP of the area. The control total of general commodity was estimated to be 2,572.6 thousand tons. This control total was allocated to origin zones of Other Lower South, Ranong/Chumphon and Others based on the present pattern. The allocation to destination provinces was estimated on the basis of targetted population of each province in 2000. Transportation of general commodity is presented in Table 2.19.

Table 2.19 OD Table of General Commodities in 2000

Unit: 1,000 ton/year

	1	2	3	4	5	6	7	8	9	TOTAL
1. SURAT THANI	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. PHANGNGA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. PHUKET	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. KRABI	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5. OTHER SOUTH	609.0	144.1	167.6	206.6	0.0	0.0	0.0	0.0	0.0	1127.3
6. CHUM/RANONG	163.1	38.6	44.9	55.3	0.0	0.0	0.0	0.0	0.0	301.9
7. OTHERS	617.7	146.1	170.0	209.6	0.0	0.0	0.0	0.0	0.0	1143.4
8. EAST COUNTRIES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9. WEST COUNTRIES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	1389.8	328.8	382.5	471.5	0.0	0.0	0.0	0.0	0.0	2572.6

Source : The Team

2) Miscellaneous Commodities

Miscellaneous commodities other than the major commodities are considered to be composed mostly of agricultural products. The future quantity of miscellaneous commodities was estimated based on the present quantity and the growth rate of GPP in agriculture sector of the Upper South. In the consequence, the total quantity was estimated to be 2,819.7 thousand tons. The quantity was distributed to destination zones by the present

pattern. Then these controls were allocated to each origin provinces in the Upper South in accordance with their respective GPPs of agriculture sector. The estimated transportation of miscellaneous commodities is as shown in Table 2.20. The quantity of intraprovincial movement was estimated by applying the intraprovincial movement ratio derived from the OD table of major commodities.

Table 2.20 OD Table of Miscellaneous Commodities in 2000

Unit: 1,000 ton/year

	1	2	3	4	5	6	7	8	9	TOTAL
1. SURAT THANI	601.3	141.2	339.4	189.2	216.1	64.4	432.8	0.0	0.0	1984.4
2. PHANGNGA	40.4	283.7	177.9	99.1	113.3	33.8	226.8	0.0	0.0	975.0
3. PHUKET	11.9	21.8	60.3	29.3	33.4	10.0	66.9	0.0	0.0	233.6
4. KRABI	34.7	63.6	152.7	210.5	97.3	29.0	194.7	0.0	0.0	782.5
5. OTHER SOUTH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6. CHUM/RANONG	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7. OTHERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8. EAST COUNTRIES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9. WEST COUNTRIES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	688.3	510.3	730.3	528.1	460.1	137.2	921.2	0.0	0.0	3975.5

Source : The Team

2.2.3 Future Cargo OD Table

On the basis of above mentioned analysis, future cargo OD table was estimated as shown in Table 2.21.

Table 2.21 Cargo OD Table in 2000

Unit: 1,000 /year

	1	2	3	4	5	6	7	8	9	TOTAL
1. SURAT THANI	1738.6	393.9	444.7	351.8	654.6	317.1	1509.7	196.5	133.0	5739.9
2. PHANGNGA	61.4	474.5	363.7	122.7	132.5	38.5	408.3	9.7	19.3	1630.6
3. PHUKET	50.2	381.8	398.5	56.0	79.5	21.8	348.6	77.6	131.8	1545.8
4. KRABI	56.9	130.1	201.7	483.9	164.1	34.6	527.0	86.5	114.4	1799.2
5. OTHER SOUTH	1072.2	362.4	477.9	518.7	0.0	0.0	0.0	0.0	0.0	2431.2
6. CHUM/RANONG	163.1	38.6	48.2	55.3	0.0	0.0	0.0	0.0	0.0	305.2
7. OTHERS	1515.6	146.1	349.9	209.6	0.0	0.0	0.0	0.0	0.0	2221.2
8. EAST COUNTRIES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9. WEST COUNTRIES	0.0	0.0	493.7	0.0	0.0	0.0	0.0	0.0	0.0	493.7
TOTAL	4658.0	1927.4	2778.3	1798.0	1030.7	412.0	2793.6	370.3	398.5	16166.8

Source : The Team

Total volume of cargo transportation related to the Upper South in 2000 was estimated to be 16,166.8 thousand tons, at an annual growth rate of 6.4 percent from 1980. The estimated volume of cargo generation and attraction of the four provinces in 2000 is summarized as shown in Table 2.22 together with the volume achieved in 1980:

Table 2.22 Generation and Attraction of Cargo in 2000
Unit:1,000tons/year

	Generation			Attraction		
	1980	2000	2000/1980 % pa	1980	2000	2000/1980 % pa
Surat Thani	1007.9	5739.9	9.1	1102.1	4658.0	7.5
Phangnga	605.1	1630.6	5.1	719.4	1927.4	5.1
Phuket	754.9	1545.8	3.6	912.6	2778.3	5.7
Krabi	572.1	1799.2	5.9	728.8	1798.0	4.6
Total	2940.0	10715.5	6.7	3462.9	11161.7	6.0

Source : The Team

Surat Thani is considered to have the largest quantity of cargo generation and attraction in the Upper South, sharing 54 percent of total generation and 42 percent of total attraction. The annual growth rate is calculated at 9.1 percent for generation and 7.5 percent for attraction. Phuket, which is another growth center in the area, will not have large quantity of cargo generation compared with Surat Thani owing to the fact that the province will not have agricultural products to supply to the other zones and manufactured products in bulk. To the contrary, the quantity of cargo attraction to Phuket is estimated to share 25 percent of total attraction to the area, showing an annual growth rate of 5.7 percent. It should be noted that additional attraction will be invited from the other provinces of the cargoes which are to be exported to foreign countries via Phuket Deep Seaport.

As a consequence that this estimation is based principally on production and consumption analysis of the Upper South, such possible transportation demands as mentioned below are not included in the estimated cargo OD table.

Possible Transportation Demands

- (1) Direct import from foreign countries to Phuket Deep Seaport aiming the market of the South and/or Thailand.
- (2) Export of the cargo produced outside the Upper South through Phuket Deep Seaport.
- (3) Developed transportation demand which might be newly generated by the improvement/development of transportation infrastructure.

- (4) Complicated cargo transportations to and fro caused by business transactions.

2.2.4 Modal Split

Existing data are very limited for estimating modal split curve among road, railway and ship. In general, it is a common tendency that the shorter the travel distance, the higher the share by road, and that the longer the travel distance, the higher the share by ship. The share of railway falls inbetween with an increasing share against distance.

Modal split curve for each kind of commodity was established on the basis of the compiled modal split ratio between the South and Bangkok, interview to the manufacturers and the above mentioned general tendency. They are summarized in Table 2.23. Each cargo OD table by commodity kind was partitioned into OD tables by mode by applying the established modal split curve by commodity kind. They were summed up by mode and the resultant OD tables by mode for all commodities are presented in Table 2.24. Export and import cargoes are not included here though some of them are to be transported from the east to the west coast and vice versa. The modal split for inter zonal transportation was estimated to be 68 percent by road, 21 percent by railway and 11 percent by ship.

Table 2.23 Modal Split Model for Cargo

	South - BKK			less than 300 km			more than 300km
	Road	Rail	Ship	Road	Rail	Ship	
1. Rice	11	89	-	100	-	-	(Road-Rail) $y = - 0.02136x + 106.41$ (ship=0)
2. Rubber	100	-	-	100	-	-	(Road = 100)
3. Palm Oil	90	-	10	100	-	-	(Road-Ship) $y = - 0.01942x + 105.83$ (Rail=0)
4. Coconut	100	-	-	100	-	-	(Road = 100)
5. Fish	100	-	-	100	-	-	(Road = 100)
6. Forestry	65	18	17	100	-	-	(Road-Rail) $y = - 0.06796x + 120.39$ (Ship) $y = - 0.03301x + 109.90$
7. Tin	100	-	-	100	-	-	(Road = 100)
8. Petroleum	4	2	94	-	100	-	Railway preferable between port and inland depot if available
9. Cement	4	95	1	-	100	-	Railway preferable between factory and depot if available
10. Manufactured	51	35	15	100	-	-	(Road-Rail) $y = - 0.09515x + 128.54$
11. General	51	35	15	100	-	-	(Ship) $y = - 0.02913x + 108.74$
12. Miscellaneous	51	35	15	100	-	-	

Source : The Team

Table 2.24 Cargo OD Table in 2000

(1) by Road Unit : 1,000 ton/year

	1	2	3	4	5	6	7	8	9	TOTAL
1. SURAT THANI	1738.6	270.5	444.7	351.8	625.1	317.1	1086.5	0.0	0.0	4834.3
2. PHANGNGA	61.4	474.5	363.7	122.7	124.5	38.0	262.3	0.0	0.0	1447.1
3. PHUKET	50.2	183.5	398.5	56.0	70.0	20.3	196.1	0.0	0.0	974.6
4. KRABI	56.9	130.1	201.7	483.9	164.1	34.6	363.0	0.0	0.0	1434.3
5. OTHER SOUTH	580.0	167.4	204.5	518.7	0.0	0.0	0.0	0.0	0.0	1470.6
6. CHUM/RANONG	163.1	38.1	42.8	55.3	0.0	0.0	0.0	0.0	0.0	299.3
7. OTHERS	407.0	89.7	91.7	126.7	0.0	0.0	0.0	0.0	0.0	715.1
8. EAST COUNTRIES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9. WEST COUNTRIES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	3057.2	1353.8	1747.6	1715.1	983.7	410.0	1907.9	0.0	0.0	11175.3

(2) by Railway

	1	2	3	4	5	6	7	8	9	TOTAL
1. SURAT THANI	0.0	123.4	0.0	0.0	20.5	0.0	275.6	0.0	0.0	419.5
2. PHANGNGA	0.0	0.0	0.0	0.0	8.0	0.5	146.0	0.0	0.0	154.5
3. PHUKET	0.0	198.3	0.0	0.0	9.5	1.5	152.5	0.0	0.0	361.8
4. KRABI	0.0	0.0	0.0	0.0	0.0	0.0	152.3	0.0	0.0	152.3
5. OTHER SOUTH	483.3	195.0	273.4	0.0	0.0	0.0	0.0	0.0	0.0	951.7
6. CHUM/RANONG	0.0	0.5	5.4	0.0	0.0	0.0	0.0	0.0	0.0	5.9
7. OTHERS	157.5	56.4	78.3	82.9	0.0	0.0	0.0	0.0	0.0	375.1
8. EAST COUNTRIES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9. WEST COUNTRIES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	640.8	573.6	357.1	82.9	38.0	2.0	726.4	0.0	0.0	2420.8

(3) by Ship

	1	2	3	4	5	6	7	8	9	TOTAL
1. SURAT THANI	0.0	0.0	0.0	0.0	9.0	0.0	147.6	0.0	0.0	156.6
2. PHANGNGA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. PHUKET	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. KRABI	0.0	0.0	0.0	0.0	0.0	0.0	11.7	0.0	0.0	11.7
5. OTHER SOUTH	8.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.9
6. CHUM/RANONG	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7. OTHERS	951.1	0.0	179.9	0.0	0.0	0.0	0.0	0.0	0.0	1131.0
8. EAST COUNTRIES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9. WEST COUNTRIES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	960.0	0.0	179.9	0.0	9.0	0.0	159.3	0.0	0.0	1308.2

Note : Excluding Foreign Trade of 1262.5 thousand tons

Source : The Team

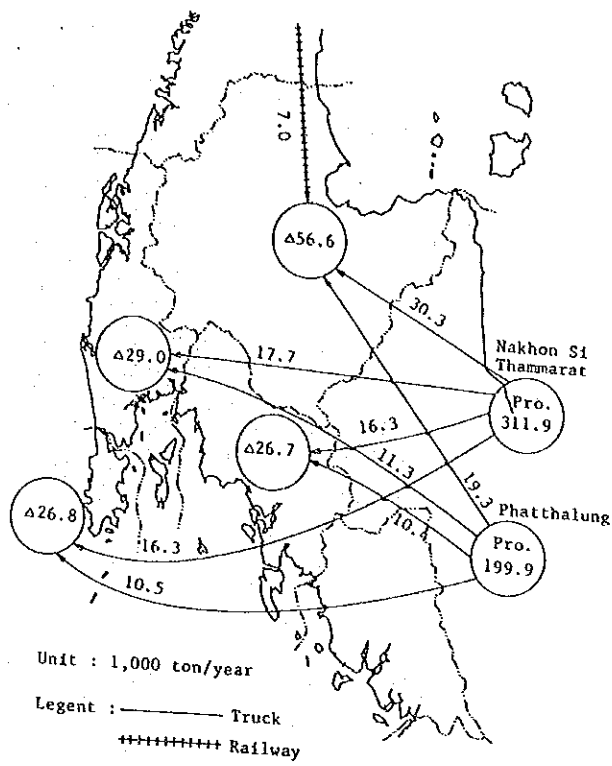


Fig. 2.2 Rice in 1980

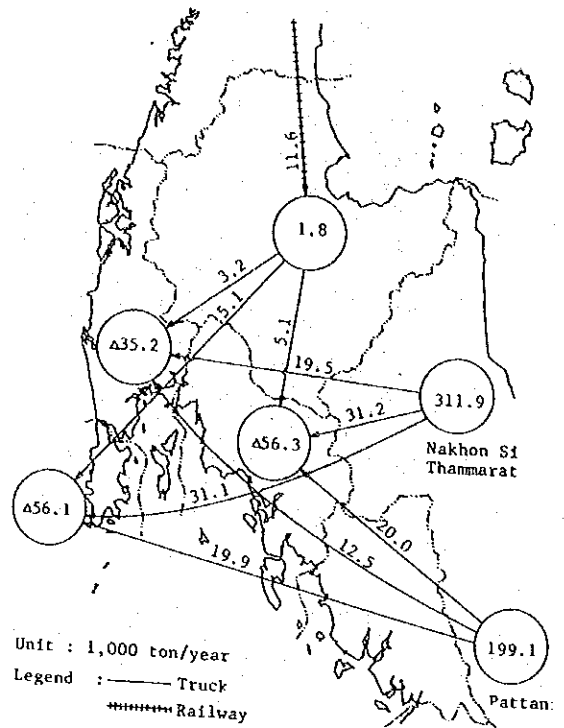


Fig. 2.12 Rice in 2000

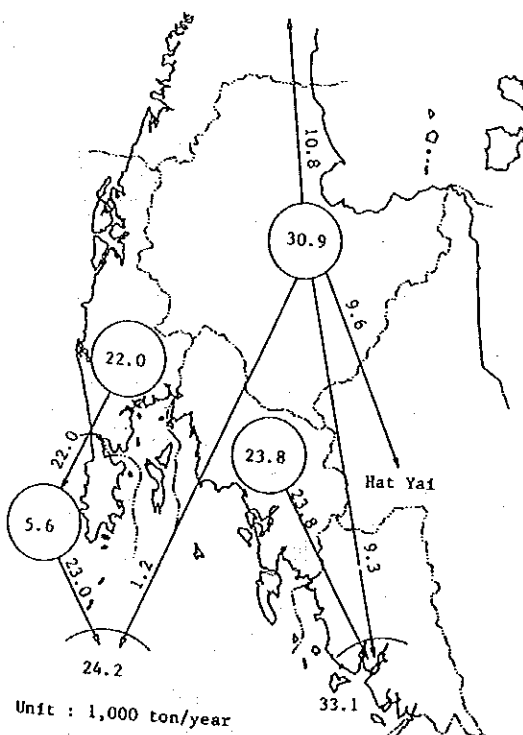


Fig. 2.3 Rubber in 1980

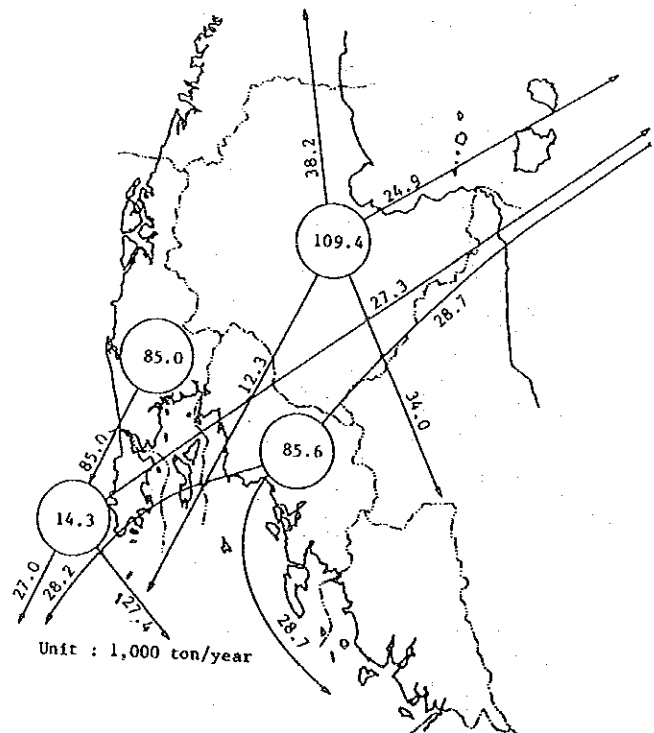


Fig. 2.13 Rubber in 2000

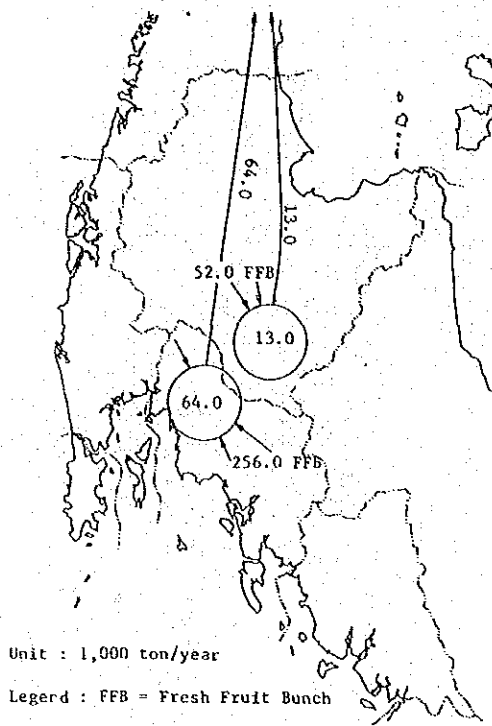


Fig. 2.4 Palm Oil in 1980

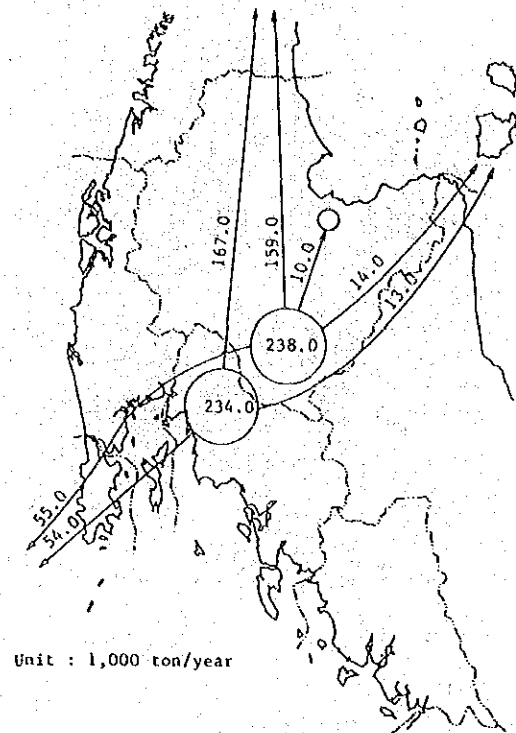


Fig. 2.14 Palm Oil in 2000

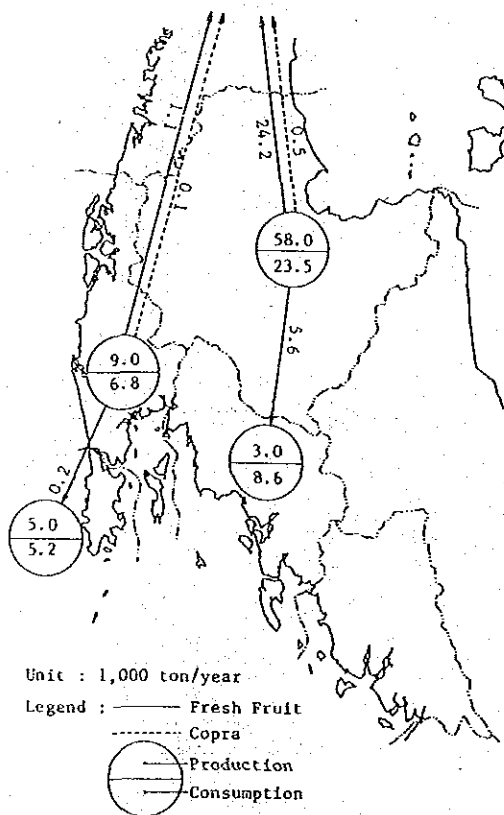


Fig. 2.5 Coconut in 1980

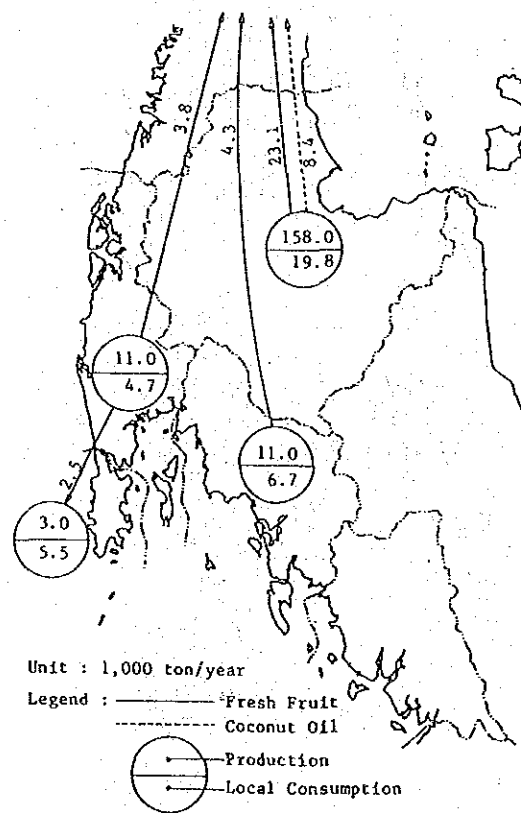


Fig. 2.15 Coconut in 2000

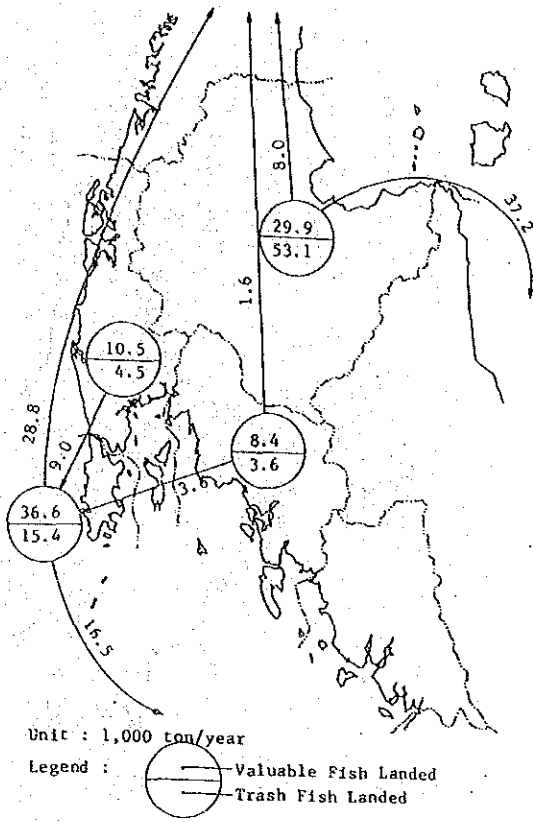


Fig. 2.6 Fish in 1980

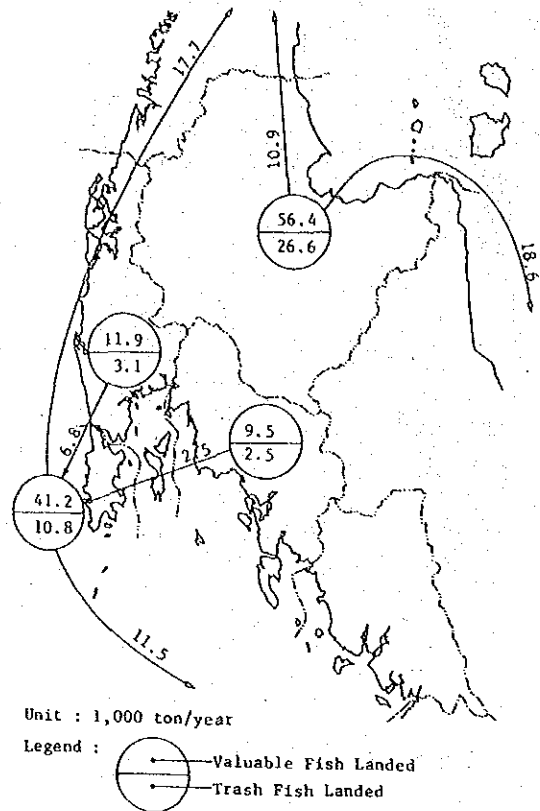


Fig. 2.16 Fish in 2000

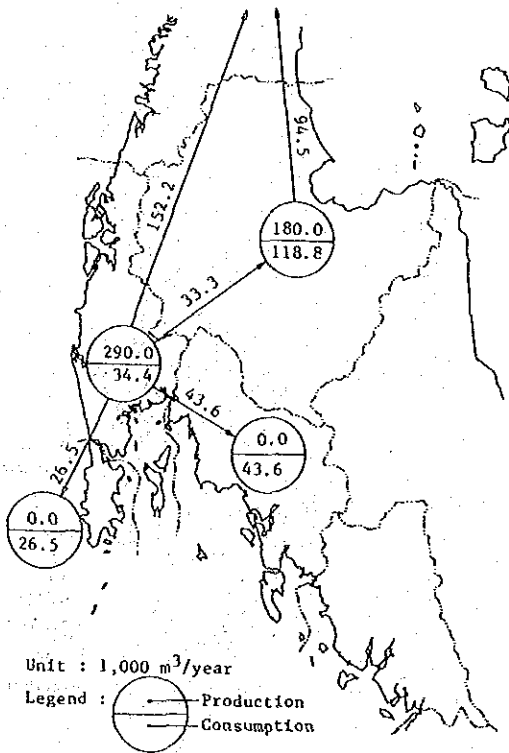


Fig. 2.7 Forestry Products in 1980

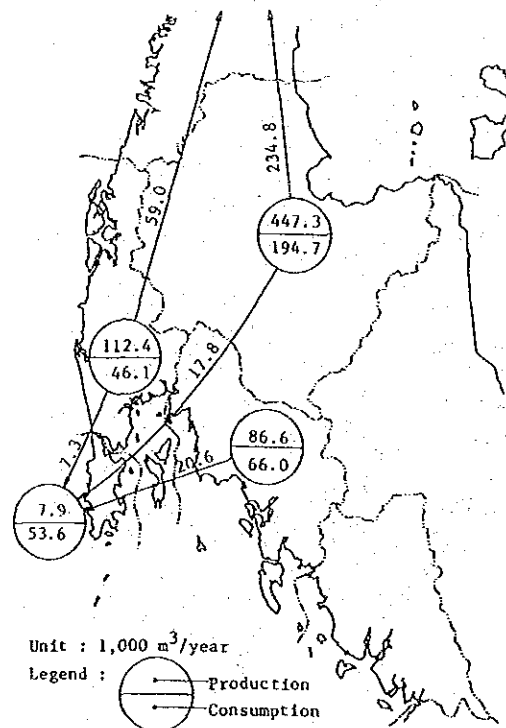


Fig. 2.17 Forestry Products in 2000

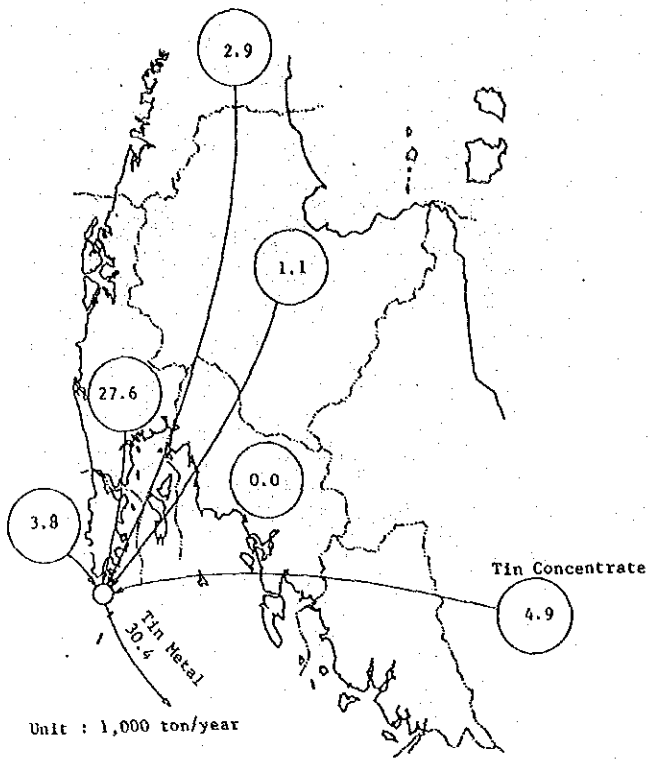


Fig. 2.8 Tin in 1980

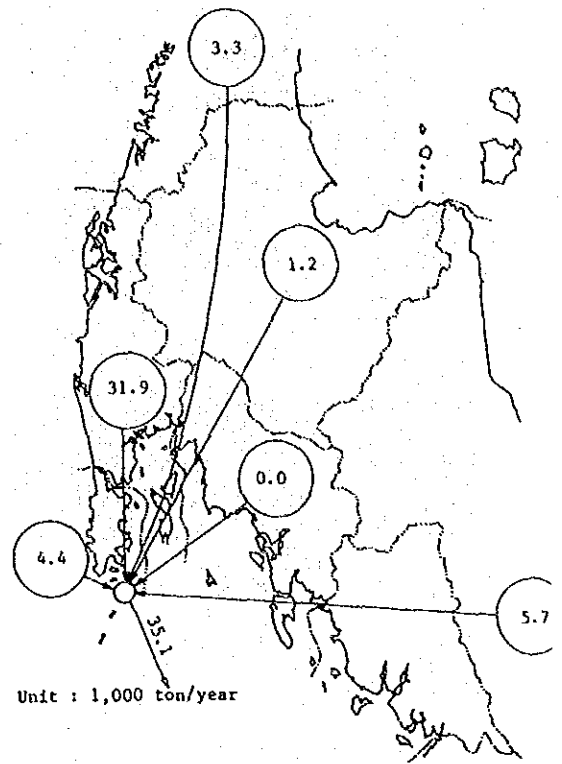


Fig. 2.18 Tin in 2000

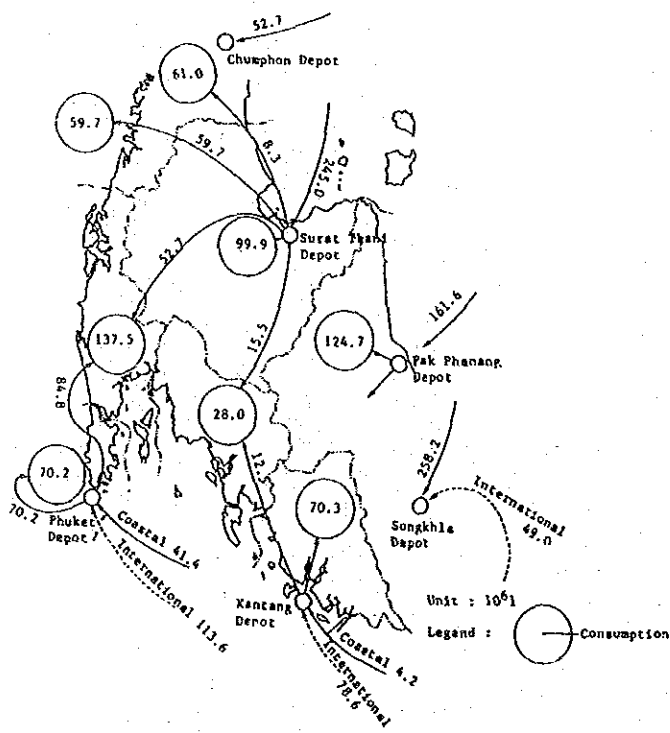


Fig. 2.9 Petroleum Products in 1980

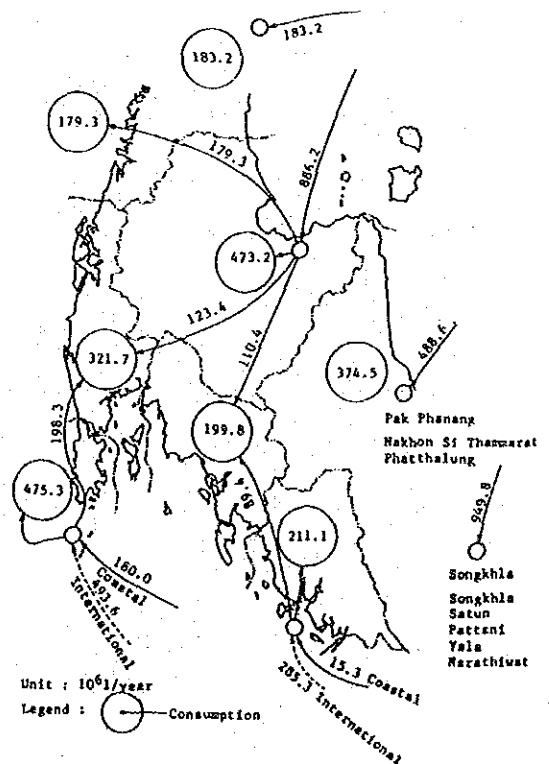


Fig. 2.19 Petroleum Products in 2000

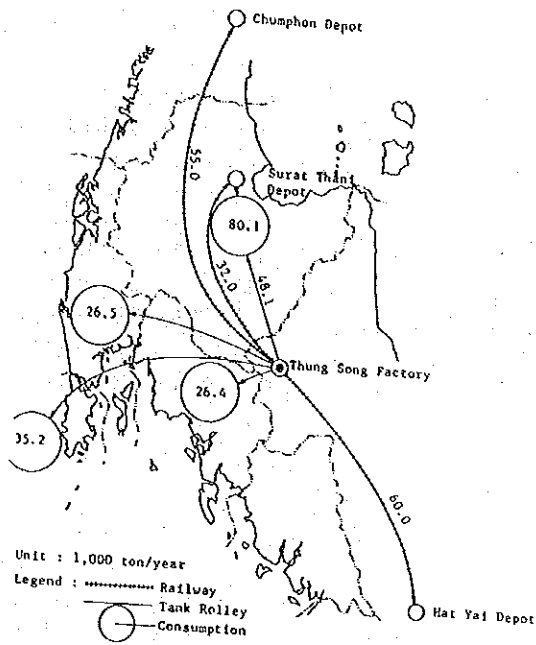


Fig. 2.10 Cement in 1980

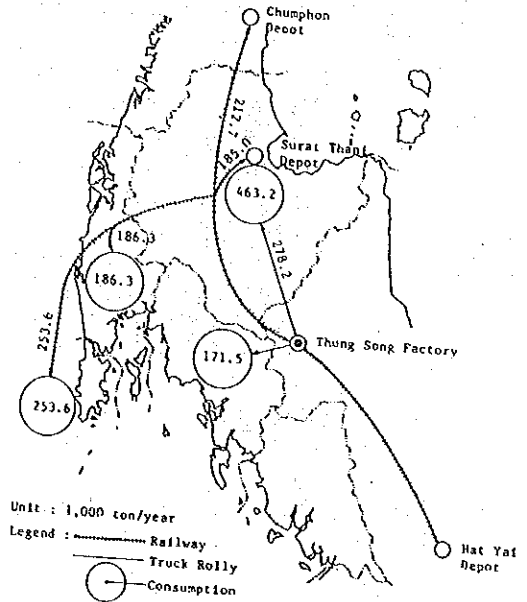


Fig. 2.20 Cement in 2000

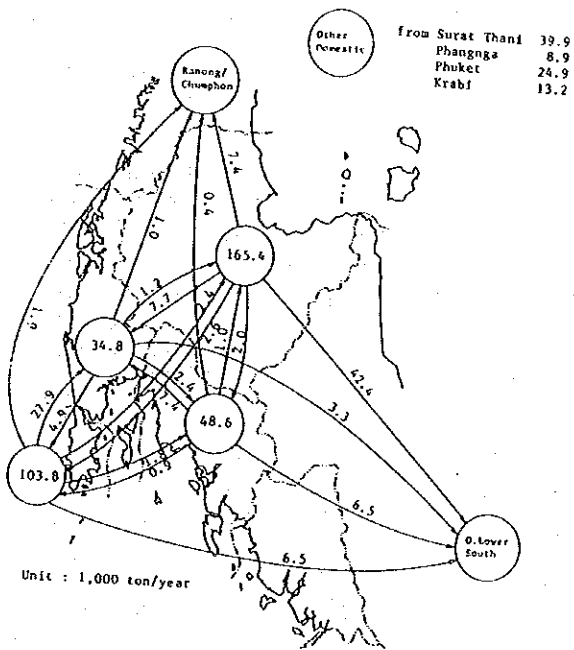


Fig. 2.11 Manufactured Products in 1980

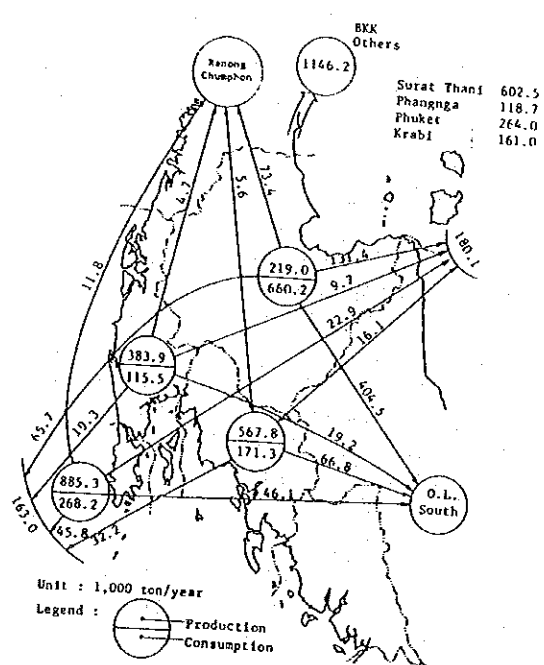


Fig. 2.21 Manufactured Products in 2000

3. PASSENGER TRANSPORTATION

3.1 PRESENT PASSENGER TRANSPORTATION

The existing situations of passenger transportation related to the Upper South was estimated by two different methods.

The first estimation was based on such existing transportation data as the result of Roadside Interview Survey which was carried out simultaneously with interview for trucks and the data obtained from the State Railway of Thailand and Department of Aviation. The other estimation was based on person trip generation of the residents of the Upper South and the data on visitors to the area compiled by Tourism Authority of Thailand.

3.1.1 Estimation by Existing Transportation Data

Roadside Interview Survey for passengers was carried out in July - August 1983 for the purpose of supplementing the lack of passenger movement by land transportation, especially aiming at obtaining inter-regional and interprovincial passenger distribution pattern. The survey location and period are same as per explained in cargo transportation section.

Passenger OD table by road was established by the sampled interview, which was converted into the average daily volume on the basis of traffic counting survey by Department of Highways in 1982. Passenger OD table by all transportation modes was estimated by adding passenger OD tables by railway and air to the above derived OD table by road transportation. Table 3.1 shows the thus estimated passenger OD table by all transportation modes in 1982.

Table 3.1 Passenger OD Table in 1982 Established by Interview Survey

Unit : person trip/day

	1	2	3	4	5	6	7	8	9	TOTAL
1. SURAT THANI	0	361	458	3378	309	4263	1882	710	131	11492
2. PHANGNGA	361	0	4178	148	31	90	568	299	30	5705
3. PHUKET	458	4178	0	473	582	1072	56	1605	197	8621
4. KRABI	3378	148	473	0	118	3270	41	994	11	8433
5. SONGKHLA	309	31	582	118	0	0	0	0	0	1040
6. OTHER L. SOUTH	4263	90	1072	3270	0	0	0	0	0	8695
7. RANON/CHUMPHON	1882	568	56	41	0	0	0	0	0	2547
8. BAKGKOK	710	299	1605	994	0	0	0	0	0	3608
9. OTHERS	131	30	197	11	0	0	0	0	0	369
TOTAL	11492	5705	8621	8433	1040	8695	2547	3608	369	50510

Note : 1) Intra zonal person trip is not included.

Source : The Team

Possible seasonal fluctuation of road transportation was checked by referring to the quarterly traffic count data of bus which is the representative passenger transportation means at present. The average bus traffic of July and August was proved to be 2 percent less than the average of a year.

3.1.2 Estimation by Person Trip Analysis

1) Person Trip of Residents

On top of Roadside Interview Survey, Home Interview Survey was carried out by the Team for the purpose of obtaining the data on the frequency of person trip generation of the residents in the Upper South. Six Survey locations were selected for Surat Thani, Phuket and Krabi districts and two for Phangnga district, each location consisting of 50 households. Interviewers were mostly students of local vocational colleges and they were required to make interview to the households and fill the questionnaires. Family members of 7 years and over were requested to inform every trip they made in a day.

The results are briefly shown in Table 3.2. The number of person trip per day was estimated at 2.01 for the average of the Upper South. The ratio of the trips destined outside the said districts was 3.8 percent of the total trips and that of the trips destined outside the said province was 1.0 percent. These ratios are considered to be extremely low. However, it could be understandable, considering that most of necessary facilities and business establishments are concentrated in municipalities while most of the area outside municipalities are occupied with agricultural land use.

Table 3.2 Result of Home Interview Survey

	Surat Thani	Phangnga	Phuket	Krabi	Total
Trips/person day	2.15	1.79	2.17	1.94	2.01
Ratio of trip outside district (%)	5.2	2.6	2.3	4.3	3.8
Ratio of trip outside province (%)	0.6	1.3	0.7	1.8	1.0

Source : The Team

By referring to this result, person trip generation of the residents in the Upper South was estimated for 1980 as shown in Table 3.3. While total number of person trips were estimated to be 1,798 thousand trips, the number of person trips destined to other districts/provinces was estimated to be only 98.5 thousand trips. Of the 98.5 thousand trips,

Table 3.3 Person Trip by Residents in 1980

	Surat Thani		Phangnga		Phuket		Krabi		Total	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
1) Population (10 ³)	52.8	535.6	15.0	155.3	45.1	85.9	14.6	201.5	127.5	978.3
2) Rate of Population 7 years and over (%)	588.4		170.3		131.0		216.1		1105.8	
3) Active Population : 1) x 2)	81.4		82.1		84.6		78.4		81.3	
4) Trip/Person Day	43.0	436.0	12.3	127.5	38.2	72.7	11.4	158.0	104.9	794.2
5) Person Trips (10 ³) : 3) x 4)	2.0		2.0		2.0		2.0		2.0	
6) Trip Rate destined outside District(%)	86.0	872.0	24.6	255.0	76.4	145.4	22.8	316.0	209.8	1588.4
7) Trips destined outside District: 5) x 6)	958.0		279.6		221.8		338.8		1798.2	
8) Trip Rate destined outside Province (%)	3.8	5.7 <u>1/</u>	3.8	5.7	3.8	5.7	3.8	5.7	3.8	5.7
9) Trips destined outside Province : 5) x 8)	3268	49704	935	14535	2903	8288	866	18012	7972	90539
10) Intra Provincia Trips : 7) - 9)	52972		15470		11191		18878		98511	
	1.0	1.5 <u>2/</u>	1.0	1.5	1.0	1.5	1.0	1.5	1.0	1.5
	860	13080	246	3825	764	2181	228	4740	2098	23826
	13940		4071		2945		4968		25924	
	39032		11399		8246		13910		72587	

Note : 1/ Assumed to be 1.5 times as much as these of urban area because residents in rural area needs access to urban centers to fulfill their daily life.

2/ - ditto -

Source : The Team

72.6 thousand trips (74 percent) were estimated as intra provincial trip and the remaining 25.9 thousand trips (26 percent) were estimated as inter provincial trip.

The number of person trips thus estimated was then distributed to each OD pair based on the present distribution pattern shown in Table 2.1. The estimated person trip OD table in 1980 is as shown in Table 3.4.

Table 3.4 Person Trip OD of Residents in 1980

Unit: person trip/day

	1	2	3	4	5	6	7	8	9	TOTAL
1. SURAT THANI	39032	585	133	1677	279	2699	778	707	102	45992
2. PHANGNGA	585	11399	912	57	21	43	182	220	17	13436
3. PHUKET	133	912	8246	31	70	90	3	213	20	9718
4. KRABI	1677	57	31	13910	24	464	4	228	2	16397
5. SONGKHLA	279	21	70	24	0	0	0	0	0	394
6. OTHER L. SOUTH	2699	43	90	464	0	0	0	0	0	3296
7. RANON/CHUMPHON	778	182	3	4	0	0	0	0	0	967
8. BAKGKOK	707	220	213	228	0	0	0	0	0	1368
9. OTHERS	102	17	20	2	0	0	0	0	0	141
TOTAL	45992	13436	9718	16397	394	3296	967	1368	141	91709

Source : The Team

2) Person Trip of Non Residents

Statistics on number of visitors to the four provinces in the Upper South are compiled by Tourism Authority of Thailand. They can be summarized as shown in Table 3.5.

Table 3.5 Number of Visitors to the Upper South in 1980

Unit: 1,000 persons/year

	Thai	Foreigner	Total
Surat Thani	1,751	27	1,778
Phangnga	176	10	186
Phuket	446	53	499
Krabi	466	7	473
Total	2,836	97	2,936

Source : "Domestic Tourism Statistics for the South" by TAT

The statistics indicates from where the visitors came to each province, too. Based on these information, an OD table of domestic visitors from outside the Upper South was established as shown in Table 3.6, assuming that the visitors would make their return trips directly from their initial destinations. In this OD table, person trips by foreigners and possible excursion trips made in the Upper South by visitors are not included.

Table 3.6 Person Trip OD of Non Residents in 1980

Unit : person trip/day

	1	2	3	4	5	6	7	8	9	TOTAL
1. SURAT THANI	0	0	0	0	216	2046	578	1471	0	4311
2. PHANGNGA	0	0	0	0	61	83	0	95	0	239
3. PHUKET	0	0	0	0	147	231	0	416	0	794
4. KRABI	0	0	0	0	25	392	0	140	0	557
5. SONGKHLA	216	61	147	25	0	0	0	0	0	449
6. OTHER L. SOUTH	2046	83	231	392	0	0	0	0	0	2752
7. RANON/CHUMPHON	578	0	0	0	0	0	0	0	0	578
8. BAKKOK	1471	95	416	140	0	0	0	0	0	2122
9. OTHERS	0	0	0	0	0	0	0	0	0	0
TOTAL	4311	239	794	557	449	2752	578	2122	0	11802

- Note: 1) Visitors from the changwats in the Upper South are excluded as they are considered residents.
 2) Foreign tourists are not included.
 3) Possible excursion trips are not included.

Source: The Team

3) Present Person Trip OD Table

By summing up the two OD tables, a person trip OD table related to the Upper South was obtained as shown in Table 3.7. The total number of interprovincial person trips was estimated to be 30.9 thousand trips. Compared with the person trip OD table derived from the existing transportation data, the total number of person trips was estimated to be 61 percent of the former estimation, or short of 19.6 thousand trips. The major reasons for this shortage would be attributed to the following points :

- The trip rate destined to outside district/province showed a rather low tendency.
- Considering that more than half of the shortage is caused in the Upper South, excursion trips by visitors

supposedly amounted to a substantial number, especially between Phuket and Phangnga.

- Slight difference would be involved by two years gap between 1980 and 1982.

Table 3.7 Person Trip OD Table of both Residents and Non Residents in 1980

Unit : person trip/day

	1	2	3	4	5	6	7	8	9	TOTAL
1. SURAT THANI	39032	585	133	1677	495	4745	1356	2178	102	50303
2. PHANGNGA	585	11399	912	57	82	126	182	315	17	13675
3. PHUKET	133	912	8246	31	217	321	3	629	20	10512
4. KRABI	1677	57	31	13910	49	856	4	368	2	16954
5. SONGKHLA	495	82	217	49	0	0	0	0	0	843
6. OTHER L. SOUTH	4745	126	321	856	0	0	0	0	0	6048
7. RANON/CHUMPHON	1356	182	3	4	0	0	0	0	0	1545
8. BANGKOK	2178	315	629	368	0	0	0	0	0	3490
9. OTHERS	102	17	20	2	0	0	0	0	0	141
TOTAL	50303	13675	10512	16954	843	6048	1545	3490	141	103511

Source : The Team

3.2 FUTURE PASSENGER TRANSPORTATION

3.2.1 Person Trip by Residents

The same procedure was taken for future estimation based on the targetted number of population of the Upper South. The four rates used in the preceding estimation were reassessed taking account of the future prospect of the area.

- Rate of Population 7 years and over

Composition of age groups in the South is projected by Population Planning Section of NESDB up to 1995. The rate of population 7 years and over was assumed to be 89 percent for 2000 based on the projection.

- Person trip rate

Person trip rate in 2000 was assumed to be 2.4 trips/person-day in consideration of transportation studies in Thailand and abroad.

- Trip rate destined to outside district

Increase of 20 percent was assumed for the twenty years, taking account of the areal expansion of economic activities. The rates were assumed to be 4.6 percent for urban area and 6.8 percent for rural area.

- Trip rate destined to outside province

Same assumption with the above was applied to this rate, resulting 1.2 percent for urban area and 1.8 percent for rural area.

Table 3.8 shows the estimated number of person trips in 2000. Comparison between 1980 and 2000 is summarized as follows:

	Unit: 1,000/day			
	1980	2000	2000/1980	% pa
Intra provincial Trips	72.6	180.7	2.49	4.7
Inter provincial Trips	25.9	64.8	2.50	4.7
Total	98.5	245.5	2.49	4.7

The estimated number of person trips of each province were distributed to OD pairs based on the percent pattern. The result is as shown in Table 3.9.

Table 3.9 Person Trip OD of Residents in 2000

	Unit : person trip/day									TOTAL
	1	2	3	4	5	6	7	8	9	
1. SURAT THANI	98355	1081	525	4354	674	6832	2091	1806	253	115971
2. PHANGNGA	1081	23775	2303	93	32	70	312	358	27	28051
3. PHUKET	525	2303	24126	110	231	309	11	742	69	28426
4. KRABI	4354	93	110	34432	53	1050	9	520	4	40625
5. SONGKHLA	674	32	231	53	0	0	0	0	0	990
6. OTHER L. SOUTH	6832	70	309	1050	0	0	0	0	0	8261
7. RANON/CHUMPHON	2091	312	11	9	0	0	0	0	0	2423
8. BANGKOK	1806	358	742	520	0	0	0	0	0	3426
9. OTHERS	253	27	69	4	0	0	0	0	0	353
TOTAL	115971	28051	28426	40625	990	8261	2423	3426	353	228526

Source : The Team

3.2.2 Person Trip by Non Residents

The number of visitors to the Upper South is estimated by Tourism Sector as shown in Table 3.10.

Table 3.8 Person Trip by Residents in 1980

	Surat Thani		Phangnga		Phuket		Krabi		Total	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
1) Population (10 ³)	216.5	773.7	36.4	197.9	145.8	126.7	42.4	293.6	441.1	1391.9
2) Rate of Population 7 years and over (%)	990.2		234.3		272.5		336.0		1833.0	
3) Active Population : 1) x 2)	89.0		89.0		89.0		89.0		89.0	
4) Trip/Person · Day	192.7	688.6	32.4	176.1	129.8	112.8	37.7	261.3	392.6	1238.8
5) Person Trips (10 ³) : 3) x 4)	2.4		2.4		2.4		2.4		2.4	
6) Trip Rate destined outside district (%)	462.5	1652.6	77.8	422.6	311.5	270.7	90.5	627.1	942.3	2973.0
7) Trips destined outside district : 5) x 6)	2115.1		500.4		582.2		717.6		3915.3	
8) Trip Rate destined outside Province (%)	4.6	6.8	4.6	6.8	4.6	6.8	4.6	6.8	4.6	6.8
9) Trips destined outside Province : 5) x 8)	21275	112377	3579	28737	14329	18408	4163	42643	43346	202165
10) Intra Provincial Trips : 7) - 9)	133652		32316		32737		46806		245511	
	1.2	1.8	1.2	1.8	1.2	1.8	1.2	1.8	1.2	1.8
	5550	29747	934	7607	3738	4873	1086	11288	11308	53515
	35297		8541		8611		12374		64823	
	98355		23775		24126		34432		180688	

Source : The Team

Table 3.10 Number of Visitors to the Upper South in 2000

Unit: 1,000 persons/year

	Thai	Foreigner	Total	Growth Rate 2000/1980	Rate % pa
Surat Thani	3,693	59	3,752	2.11	3.8
Phangnga	354	38	392	2.11	3.8
Phuket	1,150	273	1,423	2.85	5.4
Krabi	982	16	998	2.11	3.8
Total	6,179	386	6,565	2.24	4.1

This targetted number of visitors were then distributed to their origins based on the present pattern established in Table 3.6. The estimated OD table is as shown in Table 3.11, in which trips of foreign tourists and excursion trips possibly made in the Upper South by visitors are not included.

Table 3.11 Person Trip OD of Non Residents in 2000

Unit : person trip/day

	1	2	3	4	5	6	7	8	9	TOTAL
1. SURAT THANI	0	0	0	0	526	4533	1172	3314	8	9553
2. PHANGNGA	0	0	0	0	108	133	4	155	6	406
3. PHUKET	0	0	0	0	233	333	4	609	5	1184
4. KRABI	0	0	0	0	38	547	4	199	5	793
5. SONGKHLA	526	108	233	38	0	0	0	0	0	905
6. OTHER L. SOUTH	4533	133	333	547	0	0	0	0	0	5546
7. RANON/CHUMPHON	1172	4	4	4	0	0	0	0	0	1184
8. BANGKOK	3314	155	609	199	0	0	0	0	0	4277
9. OTHERS	8	6	5	5	0	0	0	0	0	24
TOTAL	9553	406	1184	793	905	5546	1184	4277	24	23872

- Note: 1) Visitors from the provinces in the Upper South are not included as they are considered residents.
 2) Foreign tourists are not included because their movements are not certain whether they visit the Upper South directly from abroad via new international air flight or via some domestic cities.
 3) Possible excursion trips are not included.

Source: The Team

3.2.3 Future Person Trip OD Table

The person trip OD tables by residents and non residents estimated above were then summed up to make a complete person trip OD table related to the Upper South. The resultant OD table is as shown in Table 3.12. A comparison between the estimated future OD table for 2000 and the present OD table is summarized in Table 3.13.

Table 3.12 Person Trip OD Table of both Residents and Non Residents in 2000

Unit : person trip/day

	1	2	3	4	5	6	7	8	9	TOTAL
1. SURAT THANI	98355	1081	525	4354	1200	11365	3263	5120	261	125524
2. PHANGNGA	1081	23775	2303	93	140	203	316	513	33	28457
3. PHUKET	525	2303	24126	110	464	642	15	1351	74	29610
4. KRABI	4354	93	110	34432	91	1597	13	719	9	41418
5. SONGKHLA	1200	140	464	91	0	0	0	0	0	1895
6. OTHER L. SOUTH	11365	203	642	1597	0	0	0	0	0	13807
7. RANON/CHUMPHON	3263	316	15	13	0	0	0	0	0	3607
8. BAKGKOK	5120	513	1351	719	0	0	0	0	0	7703
9. OTHERS	261	33	74	9	0	0	0	0	0	377
TOTAL	125524	28457	29610	41418	1895	13807	3607	7703	377	252398

Source : The Team

Table 3.13 Comparison of Person Trip OD tables of 1980 and 2000 (Generation)

Unit: 1,000 trips/day

	Intra zonal trip			Inter zonal trip			Total		
	1980	2000	% pa	1980	2000	% pa	1980	2000	% pa
Surat Thani	39.0	98.4	4.7	11.3	27.1	4.5	50.3	125.5	4.7
Phangnga	11.4	23.8	3.7	2.3	4.7	3.6	13.7	28.5	3.7
Phuket	8.3	24.1	5.5	2.2	5.5	4.7	10.5	29.6	5.3
Krabi	13.9	34.4	4.6	3.1	7.0	4.2	17.0	41.4	4.6
Others	-	-	-	12.0	27.4	4.2	12.0	27.4	4.2
G. Total	72.6	180.7	4.7	30.9	71.7	4.3	103.5	252.4	4.6

Source : The Team

3.2.4 Modal Split

Usually, modal split curve for passengers has a tendency that the shorter the travel distance, the higher percentage is burdened by road. However, beyond a certain distance, the share of road is gradually superseded mainly by railway. Then, beyond another certain distance, air transportation increases its share against railway. This phenomenon is a reflection of the balance between transportation demand that to what extent people can afford to consume time and money for a trip and transportation supply that how convenient and economically each transportation means can offer its service to the public.

Modal split curve for passenger transportation was established based on the compiled modal split ratios of three OD pairs, namely, Surat Thani - Songkhla, Surat Thani - Bangkok and Songkhla - Bangkok. Modal split curve was prepared by trip purposes of "business and tourism" and "other purposes", the former to be applied for the person trip by non residents and the latter to be applied for the person trip by residents, as shown in Figure 3.1.

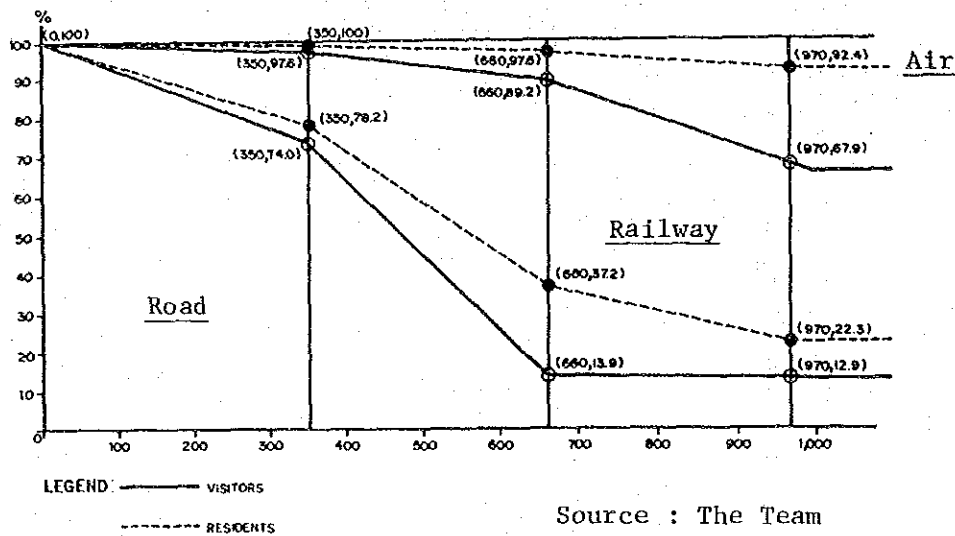


Fig. 3.1 Modal Split Curve for Person Trip

Table 3.14 shows the estimated result of person trips by transportation means on the premise that railway linkage between Khiri Ratthanikhom and Phuket is implemented. The application of the present modal split curve for the future estimation implies that transportation service supplied by each mode will be improved proportionately and that people's preference for transportation service of higher quality will remain as it is now.

Table 3.14 Passenger OD Table in 2000

(1) by Road

Unit : person trip/day

	1	2	3	4	5	6	7	8	9	TOTAL
1. SURAT THANI	0	984	452	4354	915	9569	2827	132	54	20287
2. PHANGNGA	984	0	2188	93	94	166	253	127	7	3912
3. PHUKET	452	2188	0	110	262	484	11	279	15	3801
4. KRABI	4354	93	110	0	90	1597	11	419	4	6678
5. SONGKHLA	915	94	262	90	0	0	0	0	0	1361
6. OTHER L. SOUTH	9569	166	484	1597	0	0	0	0	0	11816
7. RANON/CHUMPHON	2827	253	11	11	0	0	0	0	0	3102
8. BAKGKOK	1132	127	279	419	0	0	0	0	0	1957
9. OTHERS	54	7	15	4	0	0	0	0	0	80
TOTAL	20287	3912	3801	6678	1361	11816	3102	1957	80	52994

(2) by Railway

	1	2	3	4	5	6	7	8	9	TOTAL
1. SURAT THANI	0	97	74	0	274	1796	436	3588	184	6449
2. PHANGNGA	97	0	115	0	41	37	63	337	22	712
3. PHUKET	74	115	0	0	186	158	4	868	51	1456
4. KRABI	0	0	0	0	0	0	2	232	2	236
5. SONGKHLA	274	41	186	0	0	0	0	0	0	501
6. OTHER L. SOUTH	1796	37	158	0	0	0	0	0	0	1991
7. RANON/CHUMPHON	436	63	4	2	0	0	0	0	0	505
8. BAKGKOK	3588	337	868	232	0	0	0	0	0	5025
9. OTHERS	184	22	51	2	0	0	0	0	0	259
TOTAL	6449	712	1456	236	501	1991	505	5025	259	17134

(3) by Air

	1	2	3	4	5	6	7	8	9	TOTAL
1. SURAT THANI	0	0	0	0	11	0	0	401	23	435
2. PHANGNGA	0	0	0	0	5	0	0	49	4	58
3. PHUKET	0	0	0	0	16	0	0	203	8	227
4. KRABI	0	0	0	0	1	0	0	68	3	72
5. SONGKHLA	11	5	16	1	0	0	0	0	0	33
6. OTHER L. SOUTH	0	0	0	0	0	0	0	0	0	0
7. RANON/CHUMPHON	0	0	0	0	0	0	0	0	0	0
8. BAKGKOK	401	49	203	68	0	0	0	0	0	721
9. OTHERS	23	4	8	3	0	0	0	0	0	38
TOTAL	435	58	227	72	33	0	0	721	38	1584

Source : The Team

The number of air passengers in the four provinces is to be increased by the estimated number of foreign visitors, assuming that every foreign visitors to the area will use air transportation. The estimated air passengers to each province are calculated as shown in Table 3.15.

Table 3.15 Number of Trips by Air in 2000
(Departure)

Unit: person trip/day

	Thai	Forelgnr	Total
Surat Thani	435	162	597
Phangnga	58	104	162
Phuket	227	748	975
Krabi	72	44	116
Total	792	1,058	1,850

Source : The Team

4. KRABI-SURAT THANI LINK

4.1 ROLES AND FUNCTIONS OF THE LINK

The Central Lowland stretching from South Surat Thani to North Krabi is one of the few remaining areas which has a low population and high agricultural potential. The main road network serving in this area consists of Routes 4035, 4037, 4019, 4110 and 4133. Route 4035 with asphalted surface is connecting Route 4 on the Andaman Sea Coast with Route 41 in the center of the peninsula.

This area is best suited for oil palm cultivation, and, accordingly, oil palm cultivation in this area has been spreading in recent years. The Team proposes a master plan for developing the Central Lowland, oil palm plantation in particular. The road network supporting the development will be composed of collector road in the plantation area, connecting road between plantation and oil extracting plant and major road to the market. Every road construction in this area should be incorporated into the master plan so as not to induce scattered development and unintended environmental destruction.

Future functions required for the road network in this area can be classified as follows:

- To support the development of unused suitable land for agriculture in the area.
- To provide better transportation network to the market.
- To provide better linkage between Surat Thani and Krabi, on top of supporting the development of the Central Lowland.

4.2 FUTURE TRANSPORTATION DEMAND

Oil palm produced in Surat Thani and Krabi in 2000 is estimated to be 952 and 936 thousand tons, respectively in terms of fresh fruit bunch. These fresh fruit bunches are mostly transported by pick up truck to extracting plant as quick as possible for preventing the quality deterioration. It is estimated that the total number of truck trips engaging in this transport will amount to 4,000 - 5,000 trips/day in the area. The traffic volume will have a considerable hourly fluctuation in accordance with the harvesting pattern in a day.

On the other hand, transportation demand between Krabi and Surat Thani was estimated based on the estimated cargo and person OD tables. The result are as shown in Table 4.1. Traffic volume between Surat Thani and Krabi was estimated to be 7,500 pcu/day in 2000.

Table 4.1 DAILY TRANSPORTATION DEMAND ON KRABI LINK IN 2000

		Volume	Vehicle	PCU
Cargo (ton)	Inter zonal	3,743	1,526	2,261
	Intra zonal	1,317	442	796
	Total	5,060	1,698	3,057
Person (trip)	Inter zonal	10,190	760	1,368
	Intra zonal	22,954	1,713	3,083
	Total	33,144	2,473	4,451
G. Total	Inter zonal	-	2,016	3,629
	Intra zonal	-	2,155	3,879
	Total	-	4,171	7,508

Note : 1) Average cargo load = 2.98 ton/truck

2) Average passenger load = 13.4 persons/vehicle

3) Truck, Vehicle = 1.8 pcu

Based on Roadside Interview Survey

The estimated traffic is approaching to the designated traffic of 8,000 ADT for primary road. This will indicate that if some portions of fresh fruit bunch are transported on Surat Thani - Krabi Link, it will affect the traffic flow of the others to a considerable extent. It is expected that Phra Saeng would be a crucial junction from a viewpoint of land suitability for oil palm and estimated traffic flow between Surat Thani and Krabi.

4.3 DEVELOPMENT SCENARIO

Development of road network in the Central Lowland contains two development objectives:

- To extend the oil palm plantation to the unused suitable land.
- To provide an efficient transportation link between Surat Thani and Krabi.

As for the former objective, new road construction plan should be closely coordinated with the Central Lowland development plan from the aspect of both location and timing. Possible routes for this purpose are