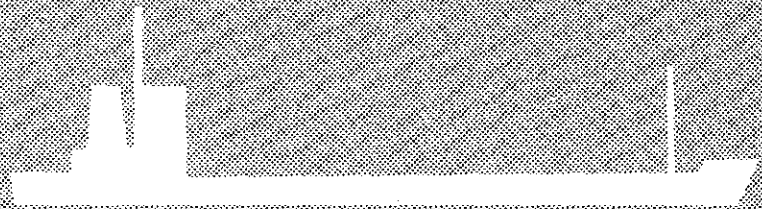


FINAL REPORT
OCTOBER 1984

**THE COMPREHENSIVE
DEVELOPMENT STUDY OF
COASTAL SHIPPING IN
THE KINGDOM OF THAILAND**

VOLUME 2—APPENDICES



JAPAN INTERNATIONAL COOPERATION AGENCY

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VOLUME 2—APPENDICES

JAPAN INTERNATIONAL COOPERATION AGENCY

国際協力事業団

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APPENDIX 1 MEMBERS OF COUNTER PART

APPENDIX 1 MEMBERS OF COUNTERPART

Members of the Government of Thailand concerned other than Ministry of Communications, who have participated in the Study are given below.

Name	Position
1. Mr. Chaiyos Chaimankong	Director Sea Transport Economics Division, Office of the Mercantile Marine Promotion Commission (MMPC)
2. Miss Sunantha Chitranukroh	Sea Transport Economics Division, MMPC
3. Miss Chantana Kasemsarn	Sea Transport Economics Division, MMPC
4. Mr. Nanthasak Runprapan	Sea Transport Economics Division, MMPC
5. Mr. Sayunh Sunantivathn	Director Harbour Master Division Harbour Department (HD)
6. Mr. Vichet Rojanadhankul	Technical Division, HD
7. Mr. Paramest Pornlert	Technical Division, HD
8. Miss Sunisa Pathommars	Technical Division, HD
9. Mrs. Vimoluck Supboonrueng	Technical Division, HD
10. Miss Vachira Chanpong	Technical Division, HD
11. Mr. Banteng Vattanasiritham	Director Technical & Planning Division Land Transport Department (DLT)
12. Mr. Termsak Yosthai	Technical and Planning Division, DLT
13. Mr. Pinyo Talaenoi	Technical and Planning Division, DLT
14. Mr. Sujin Ruangphornvisut	Chief Engineer for Southern Programming Highways Department
15. Mr. Jiroj Itharattana	Department of Technical Economic Cooperation
16. Mr. Annuparb Sunananta	Director Infrastructure Project Division National Economic Social Development Board (NESDB)
17. Mr. Sansern Wongcha-um	Infrastructure Project Division, NESDB
18. Mrs. Visutsri Chaipackdee	Infrastructure Project Division, NESDB
19. Mrs. Chunthana Chitgesornpong	Infrastructure Project Division, NESDB

- | | | |
|-----|-----------------------------|---|
| 20. | Mr. Aporn Nartdilok | Chief of Legal Division
Revenue Department
Ministry of Finance |
| 21. | Mr. Virachai Tantikul | Revenue Department
Ministry of Finance |
| 22. | Lt. Jg. Anan Panananda | Director
Import Inspection Division
Customs Department |
| 23. | Mr. Vishnu Ubolcholokett | Import Inspection Division
Customs Department |
| 24. | Mr. Verasuk Jittaverayapong | Planning Division
Board of Investment |
| 25. | Mr. Rongvit Jenpanichkarn | Department of Internal Trade
Ministry of Commerce |
| 26. | Miss Chintana Patsamarn | Department of Internal Trade
Ministry of Commerce |
| 27. | Mr. Thasanai Chantarangkul | Deputy Marketing Manager
Marketing Department
State Railway of Thailand (SRT) |
| 28. | Mr. Wayupol Chaisiri | Chief
Passenger Marketing Division, SRT |
| 29. | Mr. Umphon Liemrug | Freight Marketing Division, SRT |
| 30. | Mr. Pattana Musikthong | Market Information and Planning
Section, SRT |
| 31. | Mr. Thara Rojthana | Director of Technical Office
Port Authority of Thailand (PAT) |
| 32. | Mrs. Kanchana Ubolcholokett | Technical Office, PAT |
| 33. | Mr. Kasom Kasemsuwan | Executive Secretary
Thai Shipowners' Association |
| 34. | Mr. Boonsakdi Boonmalert | Assistant to Executive Secretary
Thai Shipowners' Association |

APPENDIX 2 DATA FOR EXPLANATION OF SOCIO-ECONOMIC INDICATORS

APPENDIX 2 DATA FOR EXPLANATION OF SOCIO-ECONOMIC INDICATORS

Table A-2-1 Population by Province

Province	Population (1,000)	Density per km ² (1981)	Growth	
			1971/1976	1976/1981
Chumphon	337	54.1	2.47	2.07
Ranong	86	25.1	4.22	3.19
Surat Thani	605	47.3	2.47	1.92
Phangnga	179	43.7	3.01	2.66
Phuket	136	253.0	3.71	2.47
Krabi	225	48.7	4.88	3.36
Trang	435	83.4	4.22	2.21
Nakhon Si Thammarat	1,279	125.8	4.56	1.92
Phattalung	416	109.7	3.34	1.74
Satun	169	63.4	5.22	2.83
Songkhla	868	118.6	3.81	2.21
Pattani	465	220.4	2.83	2.29
Yala	281	59.5	4.22	2.83
Narathiwat	452	106.9	3.37	2.11
Total	5,935	84.5	3.23	2.17

Source: Administrative and Civil
Registration Division,
Department of Local
Administration,
Ministry of Interior

Table A.2-2 Estimation of Population by Province, 1985 and 1990

Unit : Thousand

	1981	1985	1990
Total south	5,935	6,336	6,802
Krabi	225	241	258
Chumphon	337	360	388
Trang	435	464	499
Nakhon Si Thammarat	1,279	1,366	1,466
Phuket	136	145	156
Yala	281	299	328
Ranong	86	91	99
Satun	169	180	193
Narathiwat	452	483	518
Pattani	465	496	533
Phangnga	179	191	205
Phattalung	415	443	476
Songkhla	868	927	995
Surat Thani	605	646	693

Note: 1. The estimated population for the whole south in 1985, 1990 was obtained from N.S.O.

2. The calculation of population by province is based on the assumption that the percentage in each province remains unchanged after 1981.

Table A.2-3 GPP of South, 1979 (at Constant 1972 Prices)

Unit : Million Bahts

	Agriculture										Con- struc- tion	Trans- port	Manu- facture	Others	Total		
	Crops	Fishery	Forestry	Livestock		Mining	Total	Con- struc- tion	Trans- port	Manu- facture						Others	Total
				Lives	stock												
Whole Kingdom	51,804	7,281	3,392	8,931	71,408	4,531	14,547	17,663	57,841	110,917	276,907						
Bangkok Metro.	509	27	-	17	553	-	7,486	11,013	30,487	43,176	92,715						
South	7,322	2,620	982	1,107	12,031	1,804	1,515	1,358	1,512	10,666	28,886						
Chumphon	664	272	68	55	1,059	35	61	50	103	706	2,014						
Ranong	78	165	192	22	457	133	35	64	62	385	1,136						
Surat Thani	1,043	315	78	106	1,542	76	141	90	203	1,151	3,203						
Phangnga	346	51	229	40	666	941	13	63	35	819	2,537						
Phuket	76	136	5	27	244	160	206	99	228	675	1,612						
Krabi	312	35	-	49	396	53	13	38	30	329	859						
Trang	542	341	70	90	1,043	42	49	124	38	748	2,044						
Nakhon Si Thammarat	1,095	168	26	206	1,495	189	156	138	330	1,358	3,666						
Phattalung	480	12	13	113	618	19	57	66	74	476	1,310						
Satun	218	223	40	27	508	7	10	28	22	303	878						
Songkhla	887	583	147	188	1,805	73	529	359	228	1,952	4,946						
Pattani	233	310	10	60	613	3	56	105	33	515	1,325						
Yala	438	-	64	64	566	58	139	78	67	550	1,458						
Narathiwat	910	9	40	60	1,019	15	50	56	59	699	1,898						

Source: NESDB

Table A.2-4 Growth Rate of GPP, 1973 ~ 80 (at constant 1972 prices)

Unit : Percentage / year

	Agriculture										Mining	Con- struc- tion	Trans- port Δ	Manu- facture	Others	Total			
	Crops	Fishery	Fores- try			Lives stock	Total	Mining	Con- struc- tion	Trans- port Δ							Manu- facture	Others	Total
			Crops	Fishery	Fores- try														
Whole Kingdom	3.29	2.30	2.43	5.33	3.39	7.42	14.53	7.83	9.31	8.05	7.21								
Bangkok Metro.	4.89	-	-	8.92	5.76	-	19.43	9.28	9.54	7.95	9.29								
South	3.06	2.61	13.98	5.07	3.20	6.74	15.30	10.27	9.01	4.26	6.69								
Chumphon	6.47	5.96	12.21	6.67	6.62	Δ2.79	14.28	*0.00	11.65	14.37	8.87								
Ranong	3.20	*6.94	29.08	10.41	10.77	4.69	15.95	10.91	8.39	6.38	8.64								
Surat Thani	*3.85	5.71	0.23	1.70	*4.74	Δ4.10	12.18	6.95	9.05	13.18	5.83								
Phangnga	*0.00	18.64	27.39	7.57	9.36	18.21	7.81	12.99	5.70	14.48	13.56								
Phuket	0.20	3.75	0.00	7.18	2.68	1.45	20.91	13.45	15.10	13.45	10.40								
Krabi	*8.28	0.00	*12.16	0.00	*11.56	9.43	21.90	11.92	5.23	7.27	4.90								
Trang	*6.13	*5.74	7.81	5.39	*6.09	4.80	10.19	5.86	3.54	5.75	2.50								
Nakhon Si Thammarat	4.71	0.50	13.62	5.02	3.99	Δ4.30	10.03	*1.79	9.62	8.46	5.30								
Phattalung	0.93	16.99	-3.24	12.11	2.63	21.90	27.16	3.90	5.36	7.19	5.23								
Satun	1.81	0.00	*0.00	3.37	1.90	19.60	2.33	*0.00	6.79	3.89	2.09								
Songkhla	*0.00	6.49	19.98	3.24	1.81	0.00	20.05	11.14	11.88	12.85	7.42								
Pattani	2.58	17.81	*0.00	5.37	6.68	21.90	12.34	4.09	7.29	8.68	7.47								
Yala	4.53	0.00	0.00	2.54	5.01	6.39	24.96	12.64	5.45	8.23	8.42								
Narathiwat	1.97	4.20	21.39	3.12	*2.02	8.17	13.49	*0.00	*9.62	5.74	2.31								
Total																			

* Corrected Data

Δ The growth of 1976 ~ 1980

Source: NESDB

Table A.2-5 Economic Frame of the Southern Provinces

Unit : Million Bahts

	Present		Low Growth			High Growth		
	1979	1981 *	1987	1992	2000	1987	1992	2000
Chumphon	2,014	2,387	3,830	5,420	8,000	3,980	6,020	11,010
Ranong	1,136	1,341	2,120	2,970	4,390	2,200	3,290	6,020
Surat Thani	3,203	3,587	4,850	5,950	8,790	5,040	8,450	15,470
Phangnga	2,537	3,272	6,760	7,720	11,400	7,020	8,660	12,470
Phuket	1,612	1,965	3,430	5,200	7,680	3,560	5,770	10,560
Krabi	859	945	1,210	1,420	2,100	1,260	1,790	3,280
Trang	2,044	2,147	2,400	2,830	4,180	2,490	3,530	6,460
Nakhon Si Thammarat	3,666	4,065	5,330	6,380	9,430	5,540	7,610	13,930
Phattalung	1,310	1,451	1,900	2,260	3,340	1,970	2,510	4,590
Satun	878	930	1,060	1,250	1,850	1,100	1,560	2,850
Songkhla	4,946	5,707	8,440	11,160	16,480	8,770	12,410	22,720
Pattani	1,325	1,530	2,270	3,000	4,430	2,360	3,340	6,110
Yala	1,458	1,714	2,670	3,700	5,470	2,780	4,110	7,520
Narathiwat	1,898	1,987	2,190	2,590	3,830	2,280	3,230	5,910
Total	28,886	33,028	48,460	61,850	91,370	50,350	72,280	128,900
Growth Rate			(6.6)	5.0%		(7.1)	7.5%	

() 1981 ~ 1987

Source: Our Estimation

* Estimation

Table A.2-6 Rubber Growing Area by Province, 1979

Unit : Thousand rai

Province	1965	1978	1979	Growth 1979/1965	Growth 1979/1978
Chumphon	53.3	65.7	70.3	2.0%	7.0%
Ramong	9.6	21.2	22.7	6.3	7.1
Phangnga	368.4	426.7	465.5	1.5	7.0
Phuket	111.3	91.6	98.1	0.9	7.1
Krabi	488.9	536.0	573.5	1.1	7.0
Trang	827.8	911.8	975.6	1.2	7.0
Surat Thani	633.3	767.5	837.3	2.0	9.1
Nakhon Si Thammarat	1,155.9	1,212.4	1,300.4	0.8	7.3
Pattalung	400.6	443.4	474.5	1.2	7.0
Satun	94.5	143.9	154.0	3.5	7.0
Songkhla	1,213.2	1,400.8	1,498.9	1.5	7.0
Pattani	253.9	302.3	323.4	1.7	7.0
Yala	756.1	885.5	936.8	1.5	5.8
Narathiwat	623.9	826.8	804.6	1.8	2.7
Southern Total	6,990.7	8,035.6	8,527.0	1.4	6.1

Source : Rubber Research Institute, Ministry of Agriculture and
Cooperative

Table A.2-7 Fishery Factories by Province, 1980

Province	Number of Fishing Boat 1980 (1978)	Number of Fish Meal (Fish Canned) Factory	Number of Ice Plant	Ice Plant Capacity/Day
Chumphon	718 (725)	10	11	7,962
Ranong	221 (214)	3	8	7,600
Surat Thani	1,945 (1,222)	5(1)	12	6,295
Phangnga	266 (248)	-	2	300
Phuket	178 (126)	3(1)	5	3,968
Krabi	729 (503)	-	3	370
Trang	633 (359)	6(1)	9	6,690
Nakhon Si Thammarat	3,587 (2,181)	12	12	6,350
Satun	943 (239)	3	4	4,400
Songkhla *	1,477 (1,053)	10	21	15,310
Pattani	628 (344)	3	9	3,820
Narathiwat	428 (93)	-	1	270
Southern Total	11,753 (7,307) (60.2%) (58.3%)	55(3) (53.4%)	97 (56.4%)	63,335 (50.0%)
Whole Country	19,511 (12,529)	103(8)	172	126,479

Note*: Including Phattalung

Source: Statistics of Fisheries Factory 1980

Department of Fisheries

Table A.2-8 Production of Fish Meal by Province
(1970 ~ 1981)

Unit: Thousand tons

Year	1976	1977	1978	1979	1980	1981	Share of 1981	Ratio of Growth
Province Total	120.0	138.3	197.2	182.8	184.0	186.2	-	9.2% (12.6)
Southern	67.6 (56.3%)	78.7 (56.9%)	118.4 (60.0%)	129.6 (70.9)	124.5 (67.7%)	101.7 (54.6%)	100%	8.5% (71.5)
Chumphon	13.7	10.8	14.0	19.1	23.3	19.3	19.0%	7.1% (2.0)
Ranong	5.3	8.0	9.0	8.1	11.7	10.3	10.1%	14.2% (1.0)
Surat Thani	3.2	6.1	16.1	7.4	6.6	9.0	8.8%	23.0% (0.6)
Phuket	2.4	3.0	8.7	9.4	3.4	5.2	5.1%	16.7% (0.5)
Nakhon Si Thammarat	7.0	8.5	13.2	20.9	9.7	13.0	12.8%	13.2%
Trang	13.7	17.9	21.7	20.2	22.4	12.9	12.7%	-1.2%
Satun	2.9	2.6	2.6	3.1	3.9	2.7	2.7%	-1.4%
Songkhla	15.7	19.6	24.0	28.5	30.4	21.9	21.5%	6.9% (26.6%)
Pattani	3.7	2.2	9.1	12.9	12.1	7.4	7.3%	14.8%

Source: Statistics of Fisheries Factory 1981.

Table A.2-9 Forestry Products in the South

Unit: Thousand m³

	1974	1975	1976	1977	1978	1979	1980
<u>Wood</u>							
Chumphon	366	561	685	860	1378	1911	1193
Ranong	294	311	605	650	970	1347	1228
Surat Thani	2424	3330	2100	2206	3361	2392	1792
Yala	968	980	948	867	753	832	830
Narathiwat	717	392	561	688	833	1146	1192
Sub Total	4769 (4982)	5574 (5223)	4975 (5199)	5271 (5722)	7373 (6911)	7268 (7216)	6235 (6583)
<u>Firewood</u>							
Ranong	879	1158	1559	1718	1762	1657	1983
Phangnga	2131	2069	1881	2035	1384	1714	1835
Krabi	1712	1444	1473	1512	1355	-	-
Satun	1121	631	873	943	714	316	-
Trang	1050	1239	1183	2064	530	402	456
Sub Total	6893 (6805)	6541 (6736)	6969 (7188)	8272 (7315)	5745 (6377)	4089 (4054)	2291 (2740)
Total	11662 (11775)	12115 (11959)	11944 (12387)	13543 (13037)	13118 (12874)	11717 (11270)	8526 (9323)

Source: Royal Forestry Department

Note: () Adjusted value

Table A.2-10 Relation between Products and Transport to Bangkok

Unit : Thousand tons

	Product	Transport to Bangkok	Trans./Product	Distance	
1977	Chumphon	860	107	0.1244	460
	Ranong	2368	208	0.0878	500
	Surat Thani	2206	50	0.0227	670
	Yala	867	0	0	1060
	Narathiwat	688	5	0.0073	1130
	Phangnga	2035	26	0.0128	730
	Krabi	1512	19	0.0126	830
	Satun	943	1	0.0011	1000
	Trang	2064	9	0.0044	900
1978	Chumphon	1378	86	0.0624	460
	Ranong	2732	150	0.0549	500
	Surat Thani	3361	67	0.0199	670
	Yala	753	0	0	1060
	Narathiwat	833	6	0.0072	1130
	Phangnga	1384	25	0.0181	730
	Krabi	1355	30	0.0221	830
	Satun	714	4	0.0056	1000
	Trang	530	11	0.0208	900

Source: Royal Forestry Department and MOC

Table A.2-11 Main Mineral Products by Province in the South

Unit : Thousand tons /year

Province Mineral	Nakhon Si Thammarat	Surat Thani	Narathiwat	Songkhla
Barite	21.1~47.5	15.7	-	2.9
Feldspar	2.6~0.2	-	-	-
Gypsum	-	91.1~152.9	-	-
Kaolin	-	0.6~0.8	0.7~3.7	-
Manganese	-	-	1.2~2.1	-
Limestone	512~854	-	-	-
Shale	103~206	-	-	-
Tin Ore	1.0~1.8	1.0~1.2	0.1	1.3~1.7
Tungsten Ore	0.7~1.4 4.4	-	-	0.1

Source: Mineral Statistics of Thailand 1979 ~ 1981

**APPENDIX 3 BREAKDOWN OF CARGO FLOWS BY COMMODITY AND BY
MODE OF TRANSPORT, 1981**

APPENDIX 3 BREAKDOWN OF CARGO FLOWS BY COMMODITY AND
BY MODE OF TRANSPORT, 1981

The following Table A.3-1 shows the breakdown of cargo flows by commodity and by mode of transportation for the year 1981. As can be seen, some commodities are carried exclusively by one mode of transportation and some are carried exclusively in one direction. These tendencies are illustrated in Table A.3-2.

The following observations can be made from the above mentioned tables:

1. Road (truck) is clearly the dominant mode of cargo transportation in Thailand.

2. As seen particularly in the cases of petroleum products and fertilizer, the primary competitor for coastal shipping in Thailand is road transport.

3. Petroleum, carried almost exclusively in one direction, is the only commodity that is of primary importance to domestic coastal shipping. This very heavy dependence of shipping on one commodity is out of balance with the other two modes of transportation: of the total cargo volume carried south by ship in 1981, 83 percent was petroleum (versus 12.6 percent for trucks and 8.9 percent for rail).

4. Fertilizer is the only other commodity that is carried by ships in any significant quantity. Like petroleum, this commodity also is transported primarily to the South.

5. Ships transport only small quantities or no quantity at all of all the other commodities.

6. The only direction in which ships carry any great quantity of commodities is from Bangkok to the South.

This dependence of shipping on one direction only also is far out of balance with the other two modes of transportation. 94.9 percent of the total volume carried by ship went south (versus 47.9 percent for trucks and 64.4 percent for rail), while only a very small 5.1 percent went north.

Table A.3-1 Cargo Flows by Commodity, Bangkok to the South, 1981

Unit: Tons

Commodity	i) Bangkok - the South				ii) the South - Bangkok			
	Road	Rail	Ship	Total	Road	Rail	Ship	Total
Rice	39,751	27,400	376	67,527	14,902	38,300	0	53,202
Agriculture Products	1,960	48,200	7,488	57,648	7,266	14,300	346	21,912
Food	38,639	8,700	4,000	51,339	297,719	100	2,681	300,500
Feed	0	2,400	0	2,400	79,740	15,000	0	94,740
Fertilizer	64,526	15,300	55,035	134,861	0	0	0	0
Construction Materials	87,984	10,200	6,253	104,437	56,138	17,200	1,995	75,333
Wood Products	7,371	300	0	7,671	291,425	48,800	18,973	359,198
Petroleum Products	121,475	32,700	708,167	862,342	4,975	1,800	180	6,955
Rubber	0	300	0	300	15,860	32,500	0	48,360
Beverages	21,206	22,500	0	43,706	3,216	2,400	0	5,616
Miscellaneous	579,560	199,300	69,327	848,187	276,792	32,700	21,773	331,265
Total	962,472	367,300	850,646	2,180,418	1,048,033	203,100	45,948	1,297,081

Source: MOC, Economic Division and SRT

Table A.3-2 Relative Volumes of Cargo Flow by Commodity, Bangkok to the South, 1981

⊙ = Primary Quantity, ○ = Secondary Quantity, △ = Minor Quantity, X = No Quantity Carried
 Symbol on left is southbound; right is northbound.

Commodity	Road		Rail		Ship	
	S	N	S	N	S	N
Rice	⊙	○	○	⊙	△	X
Agriculture Products	△	○	⊙	⊙	△	△
Food	⊙	⊙	△	△	△	△
Feed	X	⊙	△	△	X	X
Fertilizer	⊙	X	△	X	⊙	X
Construction Materials	⊙	⊙	△	○	△	△
Wood Products	△	⊙	△	△	X	△
Petroleum Products	○	△	X	△	⊙	△
Rubber	X	○	△	⊙	X	X
Beverages	○	○	⊙	○	X	X
Miscellaneous	⊙	⊙	○	△	△	△

Note: If a commodity, such as petroleum, is primarily carried in only one direction, this commodity never receives a ⊙ symbol for the other direction because it is evaluated only on the basis of the relative quantity carried by each mode of transportation.

In recent years, road transportation, mainly by 10-wheeled trucks, has grown to a great extent due to the remarkable development of roads between Bangkok and Southern Thailand. The advantages and disadvantages to shipping are evaluated in the table below.

	Domestic Coastal Shipping	Truck	Railways
Cargo Handlings	△	⊙	○
Pilferage	△	⊙	○
Damage	△	⊙	○
Transit Time	△	⊙	○
Service Frequency	○	⊙	○
Cost	⊙	△	○

⊙ Advantageous

○ Normal

△ Inferior

Among these three means of transportation, road transport is the most advantageous in terms of speed and convenience. In the case of long-distance transport (usually more than 500 ~ 600 km), domestic coastal shipping will have the possibility of becoming competitive with trucks and railways if the total cost is taken into consideration. However, certain institutional matters are seen in Thailand which block the development of domestic coastal shipping.

APPENDIX 4 REVIEW OF CARGO FLOWS (ALL MODES)

APPENDIX 4 REVIEW OF CARGO FLOWS (ALL MODES)

Table A.4-1 Cargo Flows by Road, Rail and Shipping 1975~1982

Unit: tons

(i) Bangkok → the South Year	1975 (%)	1976	1977 (%)	1978 (%)	1979	1980	1981 (%)	1982
Road (Dry) (Ptro) (Total)	450,593 (46) 89,791 540,384 (36)	694,460 (54) 146,614 841,074 (42)	767,740 (58) 98,338 866,078 (40)	179,531 689,230 868,761	518,012 754,084 1,272,096	840,996 (64) 121,475 962,471 (44)		
Shipping (Dry) (Ptro) (Total)	167,446 (17) 417,544 584,990 (38)	150,026 494,706 644,732	144,818 (11) 545,026 689,844 (34)	115,237 (9) 698,402 813,629 (38)	120,812 718,284 839,096	142,479 (11) 708,167 850,646 (39)		
Rail (Dry) (Ptro) (Total)	357,200 (37) 42,900 400,100 (26)	377,900 24,400 402,300	456,500 (35) 26,200 482,700 (24)	427,800 (33) 32,600 460,400 (22)	431,500 38,100 469,600	334,600 (25) 32,700 367,300 (17)		238,700 33,200 271,900
Grand Total (Dry) (Ptro) (Total)	975,239 (100) 590,235 1,525,474 (100)	527,926 519,106 1,047,032	1,295,778 (100) 717,840 2,013,618 (100)	1,310,777 (100) 829,930 2,450,707 (100)	611,631 727,330 1,338,961	1,318,075 (100) 862,342 2,180,417 (100)		238,700 33,200 271,900
(ii) the South → Bangkok								
Road (Dry) (Ptro) (Total)	697,463 (73) 1,469 698,932 (73)	1,091,383 (79) 2,457 1,093,840 (70)	1,079,024 (82) 2,223 1,081,247 (82)	1,043,059 (80) 4,975 1,048,034 (81)				
Shipping (Dry) (Ptro) (Total)	118,943 (12) 28 118,971 (12)	101,556 0 101,556	109,048 (8) 0 109,048 (8)	74,747 (6) 1,810 76,557 (6)	70,805 0 70,805	62,539 26 62,565	45,768 (4) 180 45,948 (3)	
Rail (Dry) (Ptro) (Total)	138,300 (15) 0 138,300 (15)	177,900 0 177,900	186,400 (13) 0 186,406 (13)	164,300 (12) 1,700 166,000 (12)	156,900 900 157,800	226,100 2,400 228,500	201,300 (16) 1,800 203,100 (16)	181,300 600 181,900
Grand Total (Dry) (Ptro) (Total)	954,706 (100) 1,497 956,203 (100)	279,456 0 279,456	1,386,831 (100) 2,457 1,389,294 (100)	1,318,071 (100) 5,733 1,323,804 (100)	225,557 900 226,457	288,639 2,426 291,065	1,290,127 (100) 6,955 1,297,082 (100)	181,300 600 181,900

Source: MOC, Statistics

Table A.4-2 (1) Cargo Flows by Road (Bangkok to the South, 1981)

Unit: Thousand Tons

Commodity	To	Krabi	Chumphon	Trung	Nakhan	Narathiwat	Pattani	Phthalung	Phangnga	Phuket	Yala	Ranong	Songkhla	Satun	Surat Thani	Total
Rice		0	4	1	3	0	1	0	0	2	0	1	3	0	1	16
Stone, Soil, Sand		-	0	-	-	-	-	-	-	0	-	-	-	-	0	0
Cement		0	2	1	1	0	1	0	0	0	0	0	4	1	1	12
Construction (metal)		1	2	2	1	-	0	1	1	2	0	1	3	-	2	16
Other Construction		0	0	-	1	1	1	0	0	1	-	0	2	1	1	8
Wood		-	0	-	0	-	-	-	-	0	0	1	0	-	0	1
Fuel Wood		-	-	-	-	-	-	-	-	0	-	0	0	-	0	0
Fuel Oil		1	23	0	3	0	1	-	3	6	-	11	2	0	4	54
Minerals		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vegetable & Fruit		0	1	1	2	1	0	-	0	0	0	0	1	-	0	6
Tapioca		-	0	0	-	-	-	0	-	-	-	0	-	-	-	0
Maize		-	-	-	0	-	-	-	-	-	-	-	-	-	-	0
Sugar		-	0	-	-	-	0	-	-	-	0	-	0	-	0	0
Bean		-	-	-	0	-	0	-	-	-	-	-	0	-	-	0
Jute, Kenaf		-	0	-	0	-	0	-	-	-	-	0	-	-	0	0
Beverage		-	3	-	0	0	-	-	1	2	-	1	1	-	1	9
Grocery		-	0	1	1	-	0	-	-	0	-	-	3	-	0	5
Land Animals		0	0	-	0	0	-	-	-	-	-	-	-	-	-	0
Aquatic Animals		0	-	-	0	-	0	-	0	0	-	0	2	-	-	2
Fertilizer		1	6	1	4	1	1	0	1	4	0	2	3	-	4	28
Household Product		-	1	0	1	0	0	-	0	1	0	1	2	-	0	6
Miscellaneous		7	37	14	20	4	12	3	4	32	8	26	50	0	23	240
Others		0	1	0	2	-	1	0	0	0	1	0	2	0	1	8
Total		10	80	21	39	7	18	5	10	50	9	44	78	2	38	411

Source: Land Transport Department

Table A.4-2 (2) Cargo Flows by Road (The South to Bangkok, 1981)

Unit: Thousand Tons

To Commodity	Krabi	Chumphon	Trung	Nakhon wat	Narathin- wat	Pattani- Phitalung	Phangnga	Phuket	Yala	Panong	Songkhla	Satun	Surat Thani	Total
Rice	-	2	0	1	-	1	0	0	-	-	2	-	1	9
Stone, Soil, Sand	-	1	0	0	-	0	-	0	0	2	0	0	0	3
Cement	-	1	0	4	-	0	-	-	-	1	1	-	1	8
Construction (metal)	0	1	1	1	0	1	2	5	1	1	3	-	1	17
Other Construction	-	0	0	0	-	0	-	0	-	-	0	-	0	0
Wood	7	29	9	10	15	9	4	3	8	12	11	1	9	130
Fuel Wood	1	6	0	1	-	0	3	6	-	15	1	-	2	35
Fuel Oil	0	0	-	0	-	-	0	0	-	-	2	-	0	2
Minerals	-	-	-	0	-	-	-	1	-	1	0	-	0	2
Vegetable & Fruit	0	18	-	12	1	1	0	2	2	1	3	-	35	75
Tapioca	-	2	-	0	-	-	-	0	-	1	0	-	0	3
Maize	-	0	-	0	-	-	-	0	-	-	-	-	0	0
Sugar	1	0	0	-	-	-	-	-	-	0	0	-	-	1
Bean	-	-	-	-	-	-	-	-	-	-	0	-	0	0
Jute, Kenaf	-	0	-	-	-	-	-	-	-	-	1	-	-	1
Beverage	0	0	1	-	-	-	-	-	0	0	-	-	0	1
Grocery	1	3	0	1	-	0	-	2	0	1	3	0	4	15
Land Animals	-	0	-	-	-	0	0	-	0	0	0	-	-	0
Aquatic Animals	3	48	6	6	0	3	1	16	1	20	59	-	8	151
Fertilizer	0	13	2	3	-	2	0	6	0	6	4	-	8	44
Household Product	0	0	-	1	-	0	0	1	0	0	1	-	0	3
Miscellaneous	1	6	1	3	1	1	0	6	1	3	7	-	3	34
Others	5	6	3	3	1	3	1	4	1	3	9	0	7	47
Total	19	136	23	46	18	21	10	52	14	67	87	1	79	581

Source: Land Transport Department

Table A.4-2 (3) Cargo Flows by Road (Bangkok to the South, 1982)

Unit: Thousand Tons

To Commodity	Krabi	Chumphon	Trung	Nakhan wat	Pattani	Phthalung	Phangnga	Phuket	Yala	Ranong	Songkhla	Satun	Surat Thani	Total
Rice	2	2	1	1	0	2	1	3	1	4	2	1	2	22
Stone, Soil, Sand	-	-	-	0	-	-	-	-	-	1	-	-	-	1
Cement	1	5	2	1	0	2	1	1	0	0	5	-	10	28
Construction (metal)	1	1	1	2	1	2	2	1	1	1	2	-	4	19
Other Construction	1	1	1	1	0	-	0	2	1	-	3	-	3	13
Wood	0	1	-	1	0	-	0	-	-	-	0	-	1	3
Fuel Wood	-	-	-	0	-	-	-	-	-	-	-	-	-	0
Fuel Oil	-	26	1	6	3	0	5	9	1	4	2	-	8	65
Minerals	-	-	-	-	-	-	0	-	-	-	-	-	-	0
Vegetable & Fruit	0	2	1	7	1	0	0	1	0	0	4	-	2	20
Tapioca	-	-	-	-	-	-	-	-	-	-	0	-	-	0
Maize	-	-	-	-	-	-	-	-	-	-	1	-	-	1
Sugar	-	-	-	1	-	0	-	0	-	-	-	-	0	1
Bean	-	-	0	-	1	-	-	-	-	-	1	-	-	2
Jute, Kenaf	-	1	-	-	-	-	-	-	-	-	-	-	-	1
Beverage	1	2	-	-	-	-	1	4	-	2	2	2	2	16
Grocery	-	2	1	1	1	-	-	1	1	0	7	0	1	15
Land Animals	-	0	-	0	-	0	0	-	0	-	0	0	0	0
Aquatic Animals	0	0	-	0	0	-	-	-	-	-	4	-	-	4
Fertilizer	2	9	2	10	2	2	1	7	2	1	8	-	6	53
Household Product	-	1	0	1	0	0	2	1	0	0	2	-	1	8
Miscellaneous	14	45	22	33	11	2	8	45	12	28	55	1	37	317
Others	1	3	1	1	0	-	1	2	-	1	2	-	1	13
Total	23	99	33	66	9	10	22	77	19	42	100	4	78	602

Source: Land Transport Department

Table A.4-2 (4) Cargo Flows by Road (The South to Bangkok, 1982)

Unit: Thousand Tons

Commodity	To	Krabi	Chumphon	Trang	Nakhan wat	Narathi- wat	Pattani	Phitsaiung Phangnga	Phuket	Yala	Panong	Songkhla	Satun	Surat Thani	Total
Rice	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
Stone, Soil, Sand	-	0	1	1	0	0	1	1	0	0	5	1	1	0	8
Cement	-	0	1	1	0	0	0	0	0	0	1	0	0	1	3
Construction (metal)	-	1	0	0	1	0	1	2	10	1	1	4	1	1	22
Other Construction	-	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Wood	10	30	21	35	23	23	12	9	5	11	16	14	4	28	226
Fuel Wood	2	8	1	2	0	0	0	4	8	0	27	1	0	1	54
Fuel Oil	-	0	0	0	0	0	0	3	0	0	0	0	0	0	3
Minerals	1	0	0	0	0	0	0	0	2	0	1	1	0	0	5
Vegetable & Fruit	0	28	0	8	0	0	1	0	1	0	0	2	0	16	56
Tapioca	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Maize	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sugar	0	1	0	0	0	0	0	0	0	0	0	0	1	0	2
Bean	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jute, Kenaf	-	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Beverage	-	2	0	0	0	0	0	0	0	0	0	1	0	1	4
Grocery	-	2	2	2	0	0	0	0	4	0	0	3	0	3	16
Land Animals	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aquatic Animals	3	76	14	12	1	1	3	1	24	1	42	41	1	25	244
Fertilizer	1	17	5	3	0	0	3	0	10	0	14	12	1	8	74
Household Product	1	0	1	0	1	0	0	0	0	1	0	1	0	1	6
Miscellaneous	0	5	1	4	1	1	1	2	8	1	3	3	0	5	35
Others	7	15	2	9	2	2	4	2	10	2	7	7	1	8	76
Total	25	186	49	76	28	24	25	9	82	17	117	91	9	99	837

Source: Land Transport Department

