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THE SOUTHEAST ASIAN REGIONAL TRANSPORTATION SURVEY (RTS)
A Summary with Comments

° How it came about:

The RTS was prepared by Arthur D. Little under a contract with the Asian Development Bank (ADB) at a cost of \$3 million. The Survey was jointly financed by the UNDP, ADB, and A.I.D.; each contributed approximately \$1 million. The study began in May 1969, was reviewed in draft by the Coordinating Committee of Southeast Asian Senior officials for Transportation and Communications (COORDCOM) in October 1971, and was completed in March 1972.

In sheer size and cost the study project may well be the largest single assessment of a regional transportation sector ever undertaken. An index for the report may be found as Appendix III.

° What it does:

The RTS presents a comprehensive assessment of the existing transportation facilities in the Region, and an analysis of their respective capacities and deficiencies. It also indicates operational and physical improvements to enlarge capacity and reduce costs. The Report projects on the basis of a systematic analysis the growth of transport demand likely to accompany prospective regional economic growth. The RTS identifies the most critical transport bottlenecks, existing and emerging, and the major opportunities to provide essential transport services to realize the development of the Region.

The scope of the report is very wide; it covers all modes of transportation in Southeast Asia (except Cambodia) and presents a 20-year plan, derived in a logical way from the survey. It is long (5 volumes, many of which are divided into several parts). The summary volume, the one that will be the most widely read, presents the essence of the material contained in the more detailed volumes. It lists the summary findings of the research tasks (reproduced as Annex II) and summarizes the recommendations for a transportation program for the region (Book 1, Part 1, Chapter VIII) that are highlighted below in tabular form along with explanations and discussion of examples of the types of projects recommended. The Report makes recommendations on transportation policies as well as physical transportation facilities. In the current draft there are no clear recommendations for a near-term action program for transport infrastructure and equipment investment, but a program is being developed for inclusion in the final Report. Implementation of most of the projects identified will require bilateral action; some will need collective action but almost all will have important regional implications. In order to ensure maximum use of the Report and achieve the kind of regional cooperation necessary for a balanced and orderly development of transportation in the Region, the Report recommends an expanded role for COORDCOM, the regional transportation coordinating and planning body.

°Problems it raises:

If all the recommendations in the survey were implemented, the total transportation investment in the 1970's for public infrastructure and vehicles (excluding private cars) would be in the order of \$25 billion. As pointed out by the ADB Steering Committee, after making some estimates on probable domestic savings and foreign resource flows into the Region for the decade, it is not realistic to contemplate such a large investment (about one-third of total available resources) in this sector. Given the magnitude of the Region's transportation needs, careful attention will have to be paid to project selection and to ways of improving the efficiency of existing facilities (the Report addresses the latter also). The countries of the Region will need to analyze the economic and social costs of problems such as the private automobile, expenditure on which is estimated to reach \$91 billion over the next 20 years unless decisions are made to adopt policies to alter the current trends in favor of other transportation modes.

Consideration of these and other similar transportation issues on a regional rather than national basis offers promise. This promise has led the authors of the Report to recommend strongly the strengthening of COORDCOM to enable it to carry out training, research, and project evaluation for the Southeast Asian transportation system.

°How it can be used:

The RTS recommendations include over 100 transportation infrastructure projects (only 80 include cost estimates), ten institutional projects, and 15 vehicle projects. The recommendations will serve as a useful basis upon which to evaluate future requests for transportation feasibility studies in Southeast Asia. (See Appendix II for detailed list.) Implementation of the program would cost about \$3.25 billion over the next 20 years. The survey does not recommend priorities among projects since this is rightfully the task of the countries concerned and COORDCOM. It does, however, indicate very rough Benefit/Cost Ratios which in themselves assume some ranking. It is unlikely that all of the recommended projects could find financing--especially in the 20-year time period focused on by the RTS. The value of the Survey's recommendations is not as much in the identification of worthy projects as in the compilation of data which are now available in organized form and permit COORDCOM or member countries to evaluate project proposals with the knowledge of available alternatives. In fact, the latter aspect may be the greatest contribution of the RTS. As a reference work on transportation problems, most of the area's developmental projects and proposals should be measured in RTS terms. The study presents a prototype for planners and administrators to follow. The RTS encourages, by outlining the path to follow, a systematic approach to project, sector or national development. As a survey of trans-sectoral significance, the linkage effects of transport investments are most apparent in the RTS.

The survey will greatly facilitate the task of investment decision-makers by permitting them to calculate more readily least-cost solutions to specific transportation problems. The RTS will make it easier to make

comparisons between different transportation modes, decisions on improvements of existing systems versus new investment and regional versus national solutions to existing bottlenecks. Decisions will need to be made in the context of political realities: the fact that members are very attuned to their own national priorities and aware of regional opportunities makes COORDCOM a realistic forum to push for the implementation of transportation projects which will be politically as well as economically viable. Although most of the projects identified will probably be financed and implemented by a single country, most will require the cooperation of other countries within the region as well as the major trading nations of the world and the international carriers under their flags. There will be many details to work out, and many legal, nationalistic and technical problems to overcome before much of what the survey recommends can begin to be considered seriously. A strengthened regional operating transportation organization, such as the expanded COORDCOM recommended in the survey, and the very existence of the RTS itself can give Asia a leg up on some of these problems.

The RTS may, if the concerned countries are willing to push and maintain the momentum already created, put Southeast Asia ahead of many of the other regions of the world in competing for international investment capital to develop this sector. Much will depend on the seriousness of countries concerned, and this is likely to be a function of the advantages they see for themselves in specific investments. The Survey, even though it is cumbersome, to some extent necessarily superficial and quite unrealistic with respect to total capital availabilities, can still serve as the focal point and catalyst for major transportation investments in Southeast Asia for the next 20 years.

It is a unique study and it does provide the countries of the region with a great opportunity to approach their transportation problem in a cooperative, regional manner. If this approach is to work, it must have the continued and enthusiastic support of the transportation and planning ministries of the concerned countries. Their own governments as well as the international lending agencies and donor nations must be persuaded to focus on some of the potential transportation and related urban problems which are likely to beset the area over the next two decades. Even more important they will need to be provided with plans for their solution. The RTS will not in itself give the answers but if properly used it can form the base from which to start.

Highlights

Here are some of the interesting points and observations made in the Survey:

A. Cities

°This is where the biggest problems will be.

°In the next 20 years the region's urban population will increase by almost 50 million.

- °The motor vehicle growth rate is now twice the urban population growth rate.
- °Unless checked there will be five times as many vehicles in SEAsian cities by 1990 as there are today.
- °It is going to take a major effort to cope with urban traffic congestion in Southeast Asia but unless the problems are faced now, the cities will soon have traffic jams which are unmanageable.

B. Highways

- °Of the total investments recommended in the survey, by far the largest amount is for highways.
- °For the most part, the capacity of current surface links between the RTS countries is adequate and no major investment is necessary. The estimated traffic potential on these links is low.
- °Most ports in the largest cities have immediate access problems as well as congestion problems.
- °Existing transport plans will, for the most part, take care of the foreseeable needs for major arteries.
- °Access to the main Airports will probably reach capacity by 1980. New solutions such as express highway, mass transit, use of waterways, etc., should be examined. Given the long lead time for these projects, planning should begin soon.
- °Access facilities will continue to be important but in this area particularly project selectivity is vital. Hard analysis will be needed to determine which segments of farm-to-market roads have sufficient economic return to warrant investment for improvement. Because of the cost, it is clear that the entire countryside cannot be linked to the market economy.
- °Roads should be viewed as one of the essential inputs to intensive agriculture. Major rural roadbuilding efforts will relate to the needs of agriculture.

C. Ports

- °The following is a quote from the RTS: "The impact of the anticipated economic growth of Southeast Asia and its trade volumes will be felt most heavily by the ports. Total volume of trade (exports plus imports) will more than triple in the next two decades, and container traffic will rise from 1% of general cargo in 1970 to 50% in 1990. There will be a need for some \$233 million in new port investments as well as a need for major changes in port management and operation."

- °The Survey did not anticipate mainland China as an active trader in the area; to the extent she is the RTS estimates of needs will have to be revised upwards.
- °Most of the ports in the area were developed during the 19th century Colonial era. They were planned for the convenience of the Colonial powers not for the countries themselves.
- °Most of the ports are not suited to 20th century requirements-- modern ship technology needs fewer and more efficient ports in the region.
- °The strategy recommended in the RTS is to go beyond merely repairing existing facilities, making marginal changes in present practices or introducing dramatic improvements only in a few key ports.

D. Airports

- °In the next two decades there will be a spectacular growth in air passenger traffic, largely consisting of the international tourists.
- °In the same way as any other investment that contributes to economic development, investments to stimulate the growth of tourism should undergo benefit/cost analysis and should be compared with other competing uses.
- °Long planning periods are required for airports but unfortunately long-run traffic forecasting is a pretty imprecise business. No firm investments should be based on 1990 type data although land-banking new sites would be wise. Modular construction techniques are also recommended.

Notes and attachments

The Survey contains a great many recommendations, and the depth of analysis varies widely from project to project. Cost estimates have been made on most but not all the recommendations. In addition there are some recommendations in the RTS for which there is no direct reference made to the project in the text of the Survey.

In order to present an overview of this section of the Survey, it has been necessary to aggregate. Apart from the loss of detail this has also led to problems with respect to consistency between tables. Despite these draw-backs, it was still thought to be simplest to display the basic data in tabular form (the first attachment) and include notes explaining omissions and apparent inconsistencies which could be misleading.

Also attached, and taken directly from the RTS, are a listing of the transportation projects recommended by the RTS and a listing of projects identified by other sources (Appendix II), and the Table of Contents for the Report (Appendix III).

Other tables which could be added to give the reader a general overview of the RTS would be:

Transportation equipment and institutional investments

Transportation investment as a percentage of Development Investment

Regional modal concentrations

Country modal emphases

SA/IR/RD
3/14/72

Appendix I

Notes on Table I

(1) The Survey has recommendations spanning over a 20 year period. The following table only shows those recommended for the decade of the 70's. Most of the Vietnam and Laos highway projects are recommended for the 1980's and therefore do not show upon the table.

(2) The Survey has a number of recommendations categorized as "requiring more details." These have not been costed out and have had to be omitted from this summary table. All of the highway projects for the Philippines and many recommended for Thailand, Singapore and Malaysia are in this category. Thus, in this regard the table is misleading.

TABLE I

RTS Recommendation for

Transportation Infrastructure 1970-80

<u>COUNTRY</u>	<u>Aviation</u>	<u>Ports</u>	<u>Railways</u>	<u>Highways</u>	<u>Marine Mavoids</u>	<u>Total</u>
Indonesia	71 4	82 5	128 2	489 13	- -	770 24
Singapore	35 1	22 1	- -	4 1	- -	61 3
Malaysia	40 6	43 6	8 2	186 7	- -	277 21
Thailand	53 4	48 1	27 2	909 2	- -	1037 9
Vietnam	24 3	9 2	23 1	* -	- -	56 6
Laos	5 3	- -	* -	50 * 2	- -	55 5
Philippines	80 3	48 5	* -	* -	- -	128 8
Regional	- -	- -	- -	- -	10 1	10 1
Total	308 24	252 20	186 7	1638 25	10 1	2394 77

* SEE NOTES

KEY

 Millions of \$
 Projects

APPENDIX II

TRANSPORT PROJECTS

This appendix, which is designed to be used with Chapter VIII, consists of detailed back-up material for the chapter. Its first and most important section (Table A-12) contains the complete list of the transport investment projects recommended by the RTS. This is followed by a table (A-13) listing transport projects identified by other sources.

A. RTS RECOMMENDED TRANSPORT PROJECTS

The table in this section lists all the transport investment projects recommended by the RTS. It is divided into three sections. The first contains transport infrastructure projects, the second vehicle investments, and the third institutional investments.

In this section of Appendix 5, a code number is assigned to each project. The following is a key to that code.

The first letter refers to the country for which that project has greatest significance. If it is a project that has significance for the region as a whole or is one for which no single country can be specified as the prime beneficiary at this time, the first letter in the code signifies the RTS region. Specifically;

I = Indonesia

S = Singapore

M = Malaysia

T = Thailand

V = Republic of Vietnam

L = Laos

P = Philippines

R = Region

¹Ships and airplanes, primarily.

The second letter in the code refers to the mode for which the recommendation is made. (In the case of institutional investment no mode is specified.) Specifically:

A = Aviation

P = Ports

R = Railways

H = Highways

W = Inland waterways

N = Marine navigation aids

S = Shipping

I = Institutions

- The next entry in the code is a number which refers to the order in the lists. The projects are numbered sequentially, but the numbering does not indicate any priority ranking.
- The final letter in the code refers to the basis of the recommendation. Specifically:

"R" signifies that the project has been identified as a result of formal analysis in the RTS (such as the link loading analysis) and is recommended for closer consideration in the form of benefit-cost analysis or some other evaluation process.¹

¹In some cases closer consideration has already been given and the projects have been financed or are in the process of becoming financed. Where we know of this, it is noted.

A-100(A)
Lis:mf

"O" (referring to "other") signifies that the project was reviewed and found to be desirable by the RTS team, but (a) is supported by some form of analysis not performed in the RTS, or (b) has not been the subject of any formal analysis.¹

Following the code, a very brief generic description is given to identify the project. Next follows the location of the project within the country. The estimated investment appears next on the lists. It is not broken down into foreign exchange and local currency components in these summary tables; nor is the source or schedule of financing given. Thus the period, which follows next in the list, refers to construction or purchase and not to the financing schedule. The final column in the tables gives the reference to the section in the body of the survey (Book Two or Three) where greater detail regarding the project can be found. If the first symbol in this reference is a Roman numeral, it refers to the chapter in Book Two; if a letter, it refers to an appendix in Book Three.

Code	Description	Location	Investment	Period	Reference
...
...
...
...
...

¹In the case of some projects, more precise schedules for implementation, the recommendations are given in the chapter dealing with that mode.

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TABLE A-12
RTS RECOMMENDED TRANSPORT INVESTMENT

<u>Code</u>	<u>Project Description</u>	<u>Location</u>	<u>Investment (\$Million)</u>	<u>Period</u>	<u>Reference</u>
<u>Infrastructure</u> IA-1(R)	Expand intercontinental airport facilities	Djakarta	21.7	1971-75	V G 2
IA-2(R)	Expand intercontinental airport facilities	Djakarta	12.0	1980-90	V G 2
TA-3(R)	Expand intercontinental airport facilities	Bangkok	20.2	1971-75	V G 5
TA-4(R)	Build additional runway and taxiway	Bangkok	7.6	1975-80	V G 5
PA-5(R)	Expand intercontinental airport facilities	Manila	13.3	1971-73	V G 7
SA-6(R)	Expand intercontinental airport facilities	Singapore	35.0	1971-75	V G 3
MA-7(R)	Expand intercontinental airport terminal facilities	Kuala Lumpur	1.8	1971-72	V G 4
MA-8(R)	Modify intercontinental airport taxiway	Kuala Lumpur	0.5	1975-80	V G 4
VA-9(R)	Expand intercontinental airport facilities	Saigon	1.7	1971-72	V G 6
VA-10(R)	Expand intercontinental airport facilities	Singapore	6.5	1976-80	V G 6
IA-11(R)	Expand regional airport facilities	Bali	3.0	1971-80	V H 2
MA-12(R)	Expand regional airport facilities	Penang	5.0	1971-80	V H 3

A 100(c)

13
Table A-12 (cont.)

<u>Code</u>	<u>Project Description</u>	<u>Location</u>	<u>Investment (\$Million)</u>	<u>Period</u>	<u>Reference</u>
MA-13(R)	Expand regional airport facilities	Kota Kinabalu	5.0	1971-80	V H 3
LA-14(R)	Expand regional airport facilities	Vientiane	0.8	1971-80	V H 5
PA-15(R)	Expand Mactan airport facilities	Cebu	2.0	1971-80	V H 7
IA-16(R)	Improve domestic airports and facilities	Indonesia	40.0	1971-80	V H 2
MA-17(R)	Improve domestic airports and facilities	Malaysia	20.0	1971-80	V H 3
TA-18(R)	Improve domestic airports and facilities	Thailand	25.0	1971-80	V H 4
LA-19(R)	Improve domestic airports and facilities	Laos	4.0	1971-80	V H 5
VA-20(R)	Improve domestic airports and facilities	Vietnam	15.0	1971-80	V H 6
PA-21(R)	Improve domestic airports and facilities	Philippines	65.0	1971-80	V H 7
IA-22(R)	Improve the air navigation aid and aeronautical communications systems	Indonesia	6.1	1971-80	V I 2(b)

A 100 (D)

Table A-12 (Cont.)

<u>Code</u>	<u>Project Description</u>	<u>Location</u>	<u>Investment (\$Million)</u>	<u>Period</u>	<u>Reference</u>
SA-23(R)	Improve the air navigation aid and aeronautical communications systems	Singapore	(a)	1971-80	VI 2(c)
MA-24(R)	Improve the air navigation aid and aeronautical communications systems	Malaysia	8.1	1971-80	VI 2(d)
TA-25(R)	Improve the air navigation aid and aeronautical communications systems	Thailand	1.6	1971-75	VI 2(e)
LA-26(R)	Improve the air navigation aid and aeronautical communications systems	Laos	0.4	1971-80	VI 2(f)
VA-27(R)	Improve the air navigation and aeronautical communications systems	Vietnam	0.3	1971-75	VI 2 (g)
IA-28(R)	Improve the aviation search and rescue capabilities	Indonesia	0.1	1971-80	VI 2(b)
MA-29(R)	Improve the aviation search and rescue capabilities	Malaysia	0.1	1971-75	VI 2(d)
TA-30(R)	Improve the aviation search and rescue capabilities	Bangkok	0.1	1971-73	VI 2(c)

A 100(E)

Table A-12 (Cont.)

<u>Code</u>	<u>Project Description</u>	<u>Location</u>	<u>Investment (\$Million)</u>	<u>Period</u>	<u>Reference</u>
VA-31(R)	Improve the aviation search and rescue capabilities	Vietnam	0.1	1971-75	V I 2(g)
SA-32(R)	Improve the aviation search and rescue capabilities	Singapore	0.1	1971-80	V I 2(c)
IP-33(R)	Expand or install facilities to handle conventional and container cargo	Belawan	16.3	1971-80	III D 4
IP-34(R)	Expand or install facilities to handle conventional and container cargo	Tandjung Priok	22.6	1971-80	II D 2
IP-35(R)	Expand or install facilities to handle conventional and container cargo	Surabaya	28.8	1971-80	III D 3
PP-36(R)	Expand or install facilities to handle conventional and container cargo	Manila (Luzon)	24.9(b)	1971-80	III D 17
SP-37(R)	Expand or install facilities to handle conventional and container cargo	Singapore Jurong	22.2	1971-80	III D 6
MP-38(R)	Expand or install facilities to handle conventional and container cargo	Port Swettenham	10.8	1971-80	III D 8

A 100(F)

Table A-12 (Cont.)

<u>Code</u>	<u>Project Description</u>	<u>Location</u>	<u>Investment (\$Million)</u>	<u>Period</u>	<u>Reference</u>
MP-39(R)	Expand or install facilities to handle conventional and container cargo	Sibu	5.1	1971-75	III D 12
MP-40(R)	Expand or install facilities to handle conventional and container cargo	Kuching	5.7	1971-73	III D 11
TP-41(R)	Expand or install facilities to handle conventional and container cargo	Sattahip/ Bangkok	48.0	1971-80	III D 14
IP-42(R)	Expand or install facilities to handle dry bulk	Surabaya	(c)	1971-80	III D 3
TP-43(R)	Expand or install facilities to handle dry bulk	Sattahip	(d)	1971-80	III D 14
SP-44(R)	Expand or install facilities to handle dry bulk	Jurong	(e)	1971-80	III D 6
VP-45(R)	Expand or install facilities to handle dry bulk	Can Tho	7.4	1972-80	III D 16
MP-46(R)	Expand or install facilities to handle liquid bulk	Port Swettenham	(f)	1971-80	III D 8
MP-47(R)	Expand or install facilities to handle liquid bulk	Kuantan	10.6	1971-80	III D 9

A 100 (G)

Table A-12. (Cont.)

<u>Code</u>	<u>Project Description</u>	<u>Location</u>	<u>Investment (\$Million)</u>	<u>Period</u>	<u>Reference</u>
MP-48(R)	Install facilities to handle liquid bulk	Johore Bahru	1.0	1971-80	III D 10
IP-49(R)	Expand or install conventional cargo handling facilities	Bitung	8.6	1971-80	III D 5
PP-50(R)	Expand or install conventional cargo handling facilities	Cebu	2.0	1971-74	III D 18
PP-51(R)	Expand or install conventional cargo handling facilities	Davao	1.5	1980	III D 20
PP-52(R)	Expand or install conventional cargo handling facilities	N. Mindanao	13.0	1971-80	III D 19
PP-53(R)	Consider construction of major container port	N. Mindanao	30.0	1980-88	III D 19
VP-54(R)	Expand or install conventional cargo handling facilities	Saigon	1.5	1971-72	III D 15
MP-55(R)	Expand or install conventional cargo handling facilities	Kota Kinabalu	9.8	1971-80	III D 13
IP-56(R)	Consider international port and a container facility	Kalimantan	(g)		III C 2
MP-57(R)	Construct a container port	Penang	18.0	1983-90	III D 2

A 100 (H)

Table A-12 (Cont.)

/6

<u>Code</u>	<u>Project Description</u>	<u>Location</u>	<u>Investment (\$Million)</u>	<u>Period</u>	<u>Reference</u>
IP-58(O)	Upgrade feeder ports, whose principal function is to accept and transship cargo destined to major ports	Indonesia	5.0-7.0	1971-80	III C 2
IP-59(O)	Develop a new deep-sea port to replace Djambi and Palembang	S. Sumatra	7.5	1981-90	(p)
MP-60(O)	Install mechanical equipment	Sibu (Sarawak)	0.1	1972	(p)
PP-61(O)	Eliminate the pile cluster fender system in Philippine ports	Philippines	(g)	1972-80	(p)
PP-62(O)	Upgrade feeder ports, whose principal function is to accept and transship cargo destined to major ports.	Philippines	5.5-7.0	1971-80	III C 7
IH-63(O)	Rehabilitate priority roads	Indonesia	79.1	1971-75	(p)
IH-64(O)	Improve and upgrade highway from Balikpapan to Samarinda (120 km.)	E. Kalimantan	6.6	1971-75	(p)
IH-65(O)	Improve and upgrade highway from Sidjungjung to Lubkinggau (498 km.)	W. Sumatra	55	1971-75	(p)
IH-66(O)	Improve and upgrade highway from Djakarta to Jjiawi (50 km.)	W. Java	28.7	1971-80	(p)
IH-67(O)	Improve and upgrade highway for Surabaya to Malang (90 km.)	E. Java	43.6	1971-80	II E 3
IH-68(O)	Improve and upgrade highway from Telukbetung to Sumur (88 km.)	S. Sumatra	8.5	1971-80	(p)
IH-69(R)	Improve and upgrade highway from Djakarta to Tjirebon (246 km.) ^(h)	W. Java	114.7	1975-80	II D 6

A 100(I)

Table A-12 (Cont.)

<u>Code</u>	<u>Project Description</u>	<u>Location</u>	<u>Investment (\$Million)</u>	<u>Period</u>	<u>Reference</u>
IH-70 (O)	Improve and upgrade highway from Tondano to Airmadidi (18 km.)	N. Sulawesi	2.5	1971-80	II E 3
IH-71 (O)	Improve and upgrade highway from Kupang to Border (291 km.)	Timor	28.7	1971-80	II E 2
IH-72 (R)	Improve and upgrade highway from Semarang to Surabaya (345 km.) ^(h)	E. Java	51.4	1975-80	II D 6
IH-73 (O)	Improve and upgrade highway from Kotamobagu to Inandi (46 km.)	N. Sulawesi	2.1	1971-80	(P)
IH-74 (R)	Improve and upgrade highways in Southwest Java (415 km.) ^(h)	W. Java	44.4	1975-80	II D 6
IH-75 (O)	Improve and upgrade highway from Pontianak to Border (175 km.)	W. Kalimantan	23.6	1971-80	II E 2
IH-76 (R)	Improve access roads to ports (Tg. Priok, Surabaya, Belawan)	Java N. Sumatra	(g)	1971-80	II E 3
IH-77 (O)	Improve access transportation to airport (Djakarta)	Java	(g)	1971-80	II E 3
IH-78 (O)	Improve urban transportation system (Djakarta, Surabaya)	Java	(g)	1971-80	II H

A 100(J)

Table A-12 (Cont.)

<u>Code</u>	<u>Project Description</u>	<u>Location</u>	<u>Investment (\$Million)</u>	<u>Period</u>	<u>Reference</u>
VH-79(O)	Improve access roads to port (Saigon)	Vietnam	(g)	1971-80	II E 3
VH-80(R)	Rehabilitate QL-9 Highway from Dong Ha to Lao Bao (83 km.)(i)	Vietnam Laos	8.0	1981-90	II D 6
VH-81(O)	Construct My-Thuan Bridge (2240 m.)	Vietnam	21.3	1981-90	(P)
LH-82(R)	Rehabilitate RIG-9 from Savannakhet to Lao Bao (246 km.)(i)	Laos- Vietnam	24	1981-90	II D 6
LH-83(O)	Improve and upgrade RIG 13 from Vientiane to Savannakhet	Laos	36	1971-80	II D 6
LH-84(O)	Construct Vientiane plain roads (195 km.)	Laos	13.6	1971-80	(P)
SH-85(R)	Construct second causeway	Singapore- W. Malaysia	25.0	1981-90	II D E, H
SH-86(R)	Improve and expand Woodland Road	Singapore	3.7	1971-80	II D E, H
SH-87(O)	Improve urban transportation system	Singapore	(g)	1971-80	II H
SH-88(O)	Improve access transportation system to the airport	Singapore	(g)	1971-80	II E
TH-89(O)	Construct feeder roads (18,000 km.)	Thailand	900.0	1971-90	II G

A-100(K)

Table A-12 (Cont.)

<u>Code</u>	<u>Project Description</u>	<u>Location</u>	<u>Investment (\$Million)</u>	<u>Period</u>	<u>Reference</u>
TH- 90(O)	Construct truck terminal	Greater Bangkok	(g)	1971-75	(p)
TH- 91(O)	Improve urban transportation system	Greater Bangkok	(g)	1971-75	II H
TH- 92(R)	Construct second highway from Nakhon R. to Nongkhai (360 km.)	N. E. and C. Thailand	30.0	1981-90	II D 6
TH- 93(O)	Improve access road to the port of Bangkok	Greater Bangkok	(g)	1971-75	II D, E 3
TH- 94(O)	Improve access transportation to the airport of Bangkok	Greater Bangkok	(g)	1971-80	II E 3
TH-95 (O)	Improve highway, Sri Racha-Sattahip-Rayong (94km.)	S. E. Thailand	9.2	1971-75	II E 3
MH-96 (R)	Construct Kuantang-Segmat highway (177 km.)	Pahang (W. Malaysia)	26.0	1971-80	II D 6
MH-97 (O)	Complete East-West Highway from Kota Baru to Butterworth (355 km.)	W. Malaysia	56.0	1971-80	II D 6
MH-98 (R)	General improvement of Route 1 (400 km.) (j)	W. Malaysia	22.5	1971-75	II D 6

A 100 (L)

Table A-12 (Cont.)

<u>Code</u>	<u>Project Description</u>	<u>Location</u>	<u>Investment (\$Million)</u>	<u>Period</u>	<u>Reference</u>
MH-99(R)	Improve specific sections of Route-1 (250 km.) ⁽ⁱ⁾	W. Malay-sia	57.0	1971-75	II D 6
MH-100(R)	Improve Route 2 from Kuala Lumpur to Kerak ^(j)	W. Malay-sia	14.0	1971-75	II D 6
MH-101(O)	Improve West Coast Road (165 km.)	Sabah	4.9	1971-75	II E
MH-102(O)	Improve Ulu Blg. Mukah to Bintulu Road (137 km.)	Sarawak	5.7	1971-75	II E
MH-103 (O)	Improve access roads to ports (Kuantan, Johore Bahru, Sibul)	Malaysia	(g)	1971-80	II E
MH-104(O)	Improve urban transportation system (Kuala Lumpur)	W. Malay-sia	(g)	1971-80	II H
PH-105 (R)	Improve access roads to ports (Manila, Batangas ^(k) , Davao Cebu, N. Mindanao)	Philippines	(g)	1971-80	II E 3
PH-106 (R)	Construct Sayre Highway from Tinao to Maramag to Kabakan (242 km.)	Mindanao	(g)	1976-80	II E 3
PH-107 (O)	Construct truck terminal	Greater Manila	(g)	1971-80	(P)

A 100(M)

Table A-12 (Cont.)

<u>Code</u>	<u>Project Description</u>	<u>Location</u>	<u>Investment (\$Million)</u>	<u>Period</u>	<u>Reference</u>
PH-100 (O)	Improve access transportation to airport (Manila)	Greater Manila	(g)	1971-80	II E
PH-102(O)	Improve urban transportation system	Greater Manila	(g)	1971-80	II H
PH-110(R)	Improve highway from Taguigarao to Cabanatuan (250 km.) ⁽¹⁾	Luzon	16.5	1980-90	E
TR-111 (R)	Extend Thai Royal State Railways from Ban Pachi to Khlong Sip Kao (75 km.)	Thailand	8.5 ^(o)	1971-75	II B 5; E 3
TR-112 (R)	Extend Thai Royal State Railway from Chachoengsao to the proposed port of Sattahip (161 km.)	South and East of Bangkok	18.0	1971-75	II B 5; E 3
VR-113(O)	Rehabilitate rail system	RVN	15.0-30.0		(p)
IR-114(O)	Rehabilitate PNKA ^(m)	Indonesia	100.0-140.0	1971-75	(p)
IR-115(O)	Rehabilitate West Sumatra Railway ⁽ⁿ⁾	Sumatra	8.0	1971-75	II B 5
IR-116(O)	Improve signalling and telecommunication system	West Malaysia	7.3	1971-80	(p)
IR-117(O)	Construct a new marshalling yard at Kuala Lumpur	West Malaysia	1.0	1971-80	(p)
RI-118(R)	Improve regional navigation aid system	Region	5.0-15.0	1971-76	(p)

A 100(N)

<u>Code</u>	<u>Project Description</u>	<u>Location</u>	<u>Investment (\$Million)</u>	<u>Period</u>	<u>Reference</u>
<u>Vehicles</u>					
RV-119(R)	Enter a major world-wide container ship consortium (q)	Region	221.8	1975-80	IV A
RV-120(R)	Acquire parcel tankers for palm oil and other bulk	Region	10.1(x)	1970-80	IV C 3
RV-121(R)	Acquire log and lumber carriers	Region	44.2(x)	1970-80	IV C 3
RV-122(R)	Acquire dry bulk carriers for maize, ores, sugar and possibly rice	Region	31.5(a)	1970-80	IV C 3
PV-123(R)	Replace domestic shipping fleet with multi-purpose vessels	Philippines	144.0	1971-90	IV D 2
IV-124(R)	Replace domestic shipping fleet with multi-purpose vessels	Indonesia	118.5	1975-90	IV D 2
RV-125(R)	Modify selected cargo ships of the region	Region	(g)		IV C 2
RV-126(R)	Develop multi-purpose ship for regional and domestic trade	Region	(g)		IV C 3

A 100 (0)

Table A-12 (Cont.)

<u>Code</u>	<u>Project Description</u>	<u>Location</u>	<u>Investment (\$Million)</u>	<u>Period</u>	<u>Reference</u>
IV-127(O)	Purchase new rolling stock and rehabilitate existing equipment	Indonesia	(t)	1971-75	II B 5
IV-128(R)	Purchase new rolling stock for West Sumatra R. R.	Sumatra	(u)	1971-75	(P)
IV-129(R)	Purchase additional railroad rolling stock for Thai RSR	Thailand	13.0	1972-76	II B 5
IV-130(R)	Extend Thai Royal State Railways from Ban Pachi to Khlong Sip Kao	Thailand	(v)	1971-75	II B 5
IV-131(R)	Extend Thai Royal State Railway from Chachoengsao to the proposed Port of Sattahip	Thailand	11.5	1971-75	II B 5
IV-132(O)	Purchase new goods wagons	W. Malaysia	10.1	1971-80	(P)

A 100(P)

Table A-12 (Cont.)

<u>Code</u>	<u>Project Description</u>	<u>Location</u>	<u>Investment (Million)</u>	<u>Period</u>	<u>Reference</u>
<u>Institutional</u>					
II-133(R)	Rehabilitate aviation training school	Djakarta	3.5	1971-73	V L 6
TI-134(R)	Expand aviation training school	Bangkok	1.6	1971-73	V L 6
PI-135(R)	Expand aviation training school	Manila	1.0	1971-73	V L 6
PI-136(R)	Establish an Air Services Corporation to own, manage and provide air navigation aids, communications and traffic control services	Philippines	(g)		V I 3
II-137(R)	Establish an Air Services Corporation to own, manage and provide air navigation aids, communications and traffic control services	Indonesia	(g)		V I 3
PI-138(R)	Establish a Civil Aviation Assistance Group to assist in air transport planning	Philippines	(g)		V I 3
II-139(R)	Establish a Civil Aviation Assistance Group to assist in air transport planning	Indonesia	(g)		V I 3

A 100(Q)

Table A-12 (Cbnt.)

<u>Code</u>	<u>Project Description</u>	<u>Location</u>	<u>Investment (\$Million)</u>	<u>Period</u>	<u>Reference</u>
IT-140(R)	Improve maritime training facilities	Indonesia	(g)		IV E 4
RI-141(R)	Establish regional nav aids flight inspection service	Region	3.8	1971-73	V M 5

A 100(R)

NOTES TO TABLE A-12

- (a) Included in SA-6 (R).
- (b) If the container port is placed close to but not at Manila, \$22 million of this sum will be for the new container port.
- (c) Included in IP-35(R).
- (d) Included in TP-41(R).
- (e) Included in SP-37(R).
- (f) Included in MP-38(R).
- (g) Needs further study before more details can be given.
- (h) Proposed by consultants to IBRD. Also, link loading analysis shows a capacity problem between 1975 and 1980.
- (i) Link loading analysis shows a capacity problem before 1975, but from an economic point of view these projects will not be feasible until the port of Da Nang is developed.
- (j) Link loading analysis shows capacity problem for these links; the projects are to be financed by the government, the IBRD and the ADB, respectively.
- (k) Depends on whether or not container port is put in Batangas.
- (l) This project is included in the IBRD 1st Package, and final engineering is now under way.
- (m) Feasibility study.
- (n) Feasibility study is now underway.
- (o) Includes TV-130(R).
- (p) Although this project was reviewed by the RTS team and considered desirable for further consideration or action on the part of the national government, no direct reference is made to the project in the survey.

(q) Requires close watch of world container situation, and could lead to a decision to purchase container ships and containers at a cost of \$20-\$25 million for one ship plus containers. Assumes regional ships will carry 10% of trade flows by 1980, with 50% moving in containers.

(r) Capital cost of one 15,000 DWT ship is \$3.39 million. Assumes regional ships will carry 10% of 1980 trade flows.

(s) Capital cost of one 30,000 DWT ship is \$6.3 million. Assumes regional ships will carry 10% of 1980 trade flows.

(t) Included in IR-114(O).

(u) Included in IR-115(O).

(v) Included in TR-111(R).

A 100(T)

B. TRANSPORT PROJECTS IDENTIFIED BY SOURCES OTHER THAN THE RTS

The projects listed in this section of Appendix 5 are of two basic types:
(1) Those as to which the RTS takes no position, and (2) those as to which the analysis of the RTS led to a negative evaluation. The latter type are identified by an asterisk (*).

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