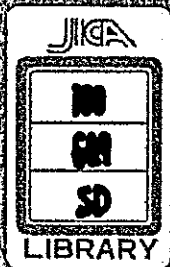


**SUMMARY OF REPORT  
ON THE SURVEY OF  
THE CONSOLIDATION PROJECTS FOR  
THE SOUTHEAST ASIA TELECOMMUNICATIONS NETWORK**

**NOVEMBER, 1967**

**OVERSEAS TECHNICAL COOPERATION AGENCY  
GOVERNMENT OF JAPAN**



国際協力事業団	
受入 月日 '84. 5. 19	100
登録No. 05947	649
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## Preface

Today the remarkable advance in the means of traffic and communication, especially that in aircraft, has made it possible to shorten the distances between various countries in the world.

On the other hand, the current state of communications in the South-east Asian countries is rather still remained unfavourable.

In view of the fact, the Government of Japan lately entrusted the Overseas Technical Cooperation Agency with the task of implementation of a basic survey for the consolidation of telecommunications network in the region of South-east Asia.

The Overseas Technical Cooperation Agency in reply to the above had organized a survey team for the said subject to be despatched to this region consisting of six experts, headed by Mr. Shinichi Hase, Director of Japan Telecommunications Consulting Association. During the period between October 7, 1967 and November 11, 1967 this team visited seven countries covering Republic of China, Republic of Indonesia, Kingdom of Laos, Federation of Malaysia, Republic of the Philippines, Kingdom of Thailand and Republic of Vietnam, and exchanged views with these Government officials on the common interest.

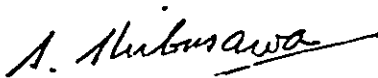
At the same time, this team performed the on-the-spot investigations and data collection in the requested field.

Hereby submitted is a summarized report based upon the outcome of the survey and study works which have been undertaken by the team so far.

Nothing would be more gratified to our Agency than if this report could be of any help for the establishment of a consolidated network of telecommunications in the South-east Asian region, and thus could contribute to the promotion of closer economic cooperation and friendship in this region.

Finally I would like to take this opportunity to express my deepest appreciation to the Parliamentary Members and Government Authorities of respective countries concerned and Japanese diplomatic missions which this survey team visited for their kind cooperation and assistance extended to it while in its assignment there.

November, 1967



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Shinichi Shibusawa  
Director General  
Overseas Technical Cooperation Agency  
Government of Japan

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1. The Survey Team made a round of calls on Republic of China, Republic of Indonesia, Kingdom of Laos, Federation of Malaysia, Republic of the Philippines, Kingdom of Thailand, and Republic of Vietnam to see into the present status of telecommunication facilities and the expansion projects thereof contemplated in these countries.

Particularly, in respect of the projects for consolidation of the telecommunications network linking up the above countries which is considered still insufficient for the smooth exchanges of communications among the Regional countries, a basic survey was conducted with a view to contributing to the establishment of a fundamental design to step forward the implementation of such consolidation projects which require a very close coordination between the countries concerned.

The consolidation projects for communications network in the Southeast Asian Region, which were the major objectives to be surveyed this time, include all those projects which had been listed in the Resolutions, Recommendations and Reports adopted at the conferences such as of the APU Standing Commission for Telecommunications network (held Aug. 1967, Tokyo), ECAFE Telecommunication Experts (Jun. 1967, Bangkok) and the Southeast Asia Transportation and Communication Senior Officials (Sept. 1967, Kuala Lumpur) as well as those projects which the Regional countries concerned desire earnestly to be taken up for consideration.

These consolidation projects are generally for the Regional network linking the countries with each other, but they could include plans for such domestic networks as being closely connected with the Regional network.

2. Regarding the said consolidation projects, the Survey Team made its effort to make clear the things of state on the following subjects and gather the data and information related thereto:-

- (1) Technical and economic feasibility of the respective projects
- (2) Communication system and circuit requirement
- (3) Priority of implementation of the projects (desired date for completion of the project)
- (4) Necessity of technical and financial assistance
- (5) Comments and remarks of the respective governments concerned
- (6) Coordination with other related projects

Furthermore, the Survey Team had an opportunity of exchanging views with the ECAFE/ITU expert in Bangkok on the consolidation projects for the Southeast Asia telecommunications network.

The outcomes of the survey of the respective consolidation projects are summarized as given in the appendix to this report.

Some of these projects has already been entered into the stage of starting their implementation through the completion of necessary preparations. On the other hand, not a few of the projects are deemed to be of less urgency for the time-being and rather to be left for future consideration.

Survey was also conducted to examine the present status of utilization and the projects for consolidation of the satellite communication system which had so far brought an epoch-making improvement in the long distance communications. It is realized that every country has an intention with great expectations to utilize the satellite system not only for long distance communications but for the Regional communications. However, for shorter distance communications between the neighbouring countries, they attach more importance to the use of such communication means as of microwave, cable, etc.

3. As a result of the survey made as outlined above, the following projects are chosen as the appropriate ones to receive considerations of the financial assistance, taking into account the grade of importance, priority, time-factor, and opinions and wishes expressed by the countries concerned.

#### I Consolidation projects for Regional network

Case A	Case B
(1) Island of Ishigaki --- Taipei (O/H)	Same as left
(2) Manila --- Bangkok (Submarine Cable)	"
(3) Vientiane --- Nong Khai (L/S)	"
(4) Haad Yai --- Penang (L/S)	"
(5) Penang --- Medan (L/S)	"
(6) Singapore --- Palembang (O/H) & Palembang --- Djakarta (L/S)	Singapore --- Djakarta (Submarine Cable)

#### II Consolidation projects for domestic networks (which are considered important in connection with the Regional network)

- (1) Laos: Luang Prabang --- Vientiane (HF)  
          Vientiane --- Pakse (VHF)
- (2) Indonesia: Bandung --- Surabaya (L/S)  
                  \* Palembang --- Djakarta (L/S)

\* This section forms part of the Singapore --- Djakarta link mentioned in I (6) above.

An estimate of necessary construction costs for the above network consolidation projects is shown in the attached table. The total amounts of the costs for the Regional network project are 11.13 (of which foreign currency will be 8.19) million dollars in Case A and 16.45 (15.21) million dollars in Case B. If Case A is taken up, the sum for the projects, including the cost of 9.50 (6.42) million dollars for the domestic network projects, will amount to 20.63 (14.61) million dollars in total.

The period of time required for construction of each projected network will be two or three years with some exceptions and it is estimated that the foreign currency will be needed in the second and third years of the construction period. It may be mentioned in this respect that some of the countries concerned are expecting to cover also the expenses for construction of access road and building by means of financial assistance from abroad.

4. The aforementioned consolidation projects are all required to be brought into realization at the earliest possible date. However, it is considered necessary in advance for some of the projects to be examined further by conducting a site survey and for some others to be taken up for discussions between the countries concerned in detail for better coordination.

In doing so, careful considerations should be given to the fact that there would be a variety of communication operating organizations in the Region and further that, in case an external fund is required, there would be differences of situations and conditions by country for their acceptance of such financial assistance.

In any case, it is greatly expected that in the realization of these projects, the respective countries will spare no efforts and make more close cooperation with each other, and especially that the Government of Japan will actively use its good office and render every possible cooperation and assistance to the other Regional countries.

Consolidation Projects for Communication Networks  
in the Southeast Asian Region

**I Regional Networks**

System	Section	Channel Capacity	Countries Concerned	Construction Cost (Foreign Currency)	Remarks
1 O/H	Is. of Ishigaki - Taipei	60	Ryukyu - China	million dollars 1.08 ( 0.76)	*
2 Submarine Cable	Manila - Bangkok	120	The Philippines - Thailand	3.36 ( 3.09)	**
3 L/S	Vientiane - Nong Khai	24	Laos - Thailand	0.10 ( 0.08)	
4 L/S	Haad Yai - Penang	960	Thailand - Malaysia	1.34 ( 0.83)	
5 L/S	Penang - Medan	24	Malaysia - Indonesia	0.25 ( 0.13)	
6	Singapore - Jakarta		Singapore - Indonesia		
A-1 O/H	Singapore - Palembang	60		1.80 ( 1.10)	*
A-2 L/S	Palembang - Jakarta	240		3.20 ( 2.20)	*
			Sub-total	11.13 ( 8.19)	
B Submarine Cable	Singapore - Jakarta	120		10.32 ( 10.32)	***
			Sub-total	16.45 ( 15.21)	

**II Domestic Networks**

System	Section	Channel Capacity	Countries Concerned	Construction Cost (Foreign Currency)	Remarks
D1 VHF	Luang Prabang - Vientiane	4	Laos	million dollars 2.0 ( 1.42)	
VHF	Vientiane - Pakse	24			
D2 L/S	Bandung - Surabaya	940	Indonesia	7.50 ( 5.00)	
			Sub-total I(A)	9.50 ( 6.42)	
L/S	Palembang - Jakarta	240	Indonesia	3.20 ( 2.20)	
			Sub-total II(B)	12.70 ( 8.62)	

Total (A)	11.13 ( 8.19)	+	Domestic Networks	20.63 ( 14.61)
Total (B)	16.45 ( 15.21)	+	Regional Networks	29.15 ( 23.83)
			(except the Palembang - Jakarta (L/S) section = 25.95 (21.63) million \$)	

**REMARKS:**

**NOTE:**

\* A site survey is considered necessary.

\*\* Total amount of cost for the submarine cable system is calculated at 22.57 million dollars including the domestic connecting facilities. However, of the cost for submarine portion, the amount of 19.21 million dollars are assumed to be shared by Japan and the United States of America, and the remaining 3.36 million dollars (incl. the domestic connecting lines) are by the Philippines and Thailand.

\*\*\* Since this section seems not to include any domestic connecting lines, all the amount of cost thereof is assessed in terms of the foreign currency.

Regarding the assessment of construction cost

Construction cost includes such expenses as for equipment, installation, access road, building, etc. as well as other general expenses such as for survey.

On the basis of the data and information obtained from the countries concerned, the Survey Team has made some necessary adjustment to the assessment of construction cost.

Furthermore, the expenses for equipment, survey and alike have been assessed in terms of the foreign currency, and those for installation, access road, building, etc. in terms of the domestic currency.

SUMMARY of the SURVEY RESULT

1. Is. of Ishigaki (Ryukyu)-- Taipei (China) OH link

(1) Outline of Project:

Channel Capacity	60 channels
Link Distance	280 kilo meters
Total Construction Cost	1.08 million dollars
Construction Period	Approx. 2.5 years

(2) Remarks:

The Government of Republic of China has not included the above project in its fourth 4 year programme (1965-1968) for consolidation of telecommunication facilities, but it has no objection to take the project up for future study, taking into account the technical feasibility of this OH system and also the relation with the possible China-Japan satellite communication circuits. The Chinese Government will be ready to consider the project, upon receipt of detailed proposals from the Japanese Government which include relating questions such as of the rate arrangement, the relation with Ryukyu, etc.

It may be noted that for the consolidation of the link it is required to increase the circuit capacity of Naha-Is. Ishigaki OH link which is now under construction. In this respect, the Chinese Government wishes to study the possibility of making available the Taipei-Naha direct connection.

2. Fangshan(Kaohsing)(China) -- Vigan(Bagio)(Philippines) OH link

(1) Outline of Project:

Channel Capacity	60 channels
Link Distance	520 kilo meters
Total Construction Cost	Approx. 2 million dollars
Construction Period	Approx. 2 years

(2) Remarks:

Both telecommunication administrations of China and the Philippines have already agreed to regarding this project.

In accordance with its fourth 4 year programme, the Chinese Administration has started the construction work at the site of



Fangshan Station and is proceeding to an international bidding for the procurement of necessary equipment with a view to completing the construction by the end of 1968.

For implementation of this project, no financial assistance from abroad has been considered on China side.

On the Philippine side, however, the final blue print of the project is not completed and no start has yet been made with the construction work accordingly.

3. Chianthaburi(Thailand) -- Rach Gia(Vietnam) OH link

(1) Outline of Project:

Channel Capacity	60 channels
Link Distance	460 kilo meters
Total Construction Cost	1.26 million dollars
Construction Period	Approx. 3 years

(2) Remarks:

Both Governments of Thailand and Vietnam have not included this project in their respective long term national programmes and they do not feel it to be of urgent necessity.

The Vietnamese Government foresees that this project will be given an actual study by them in several years later, and they also feel at the present time that no financial assistance from abroad will be required.

4. Vientiane(Laos) -- Nong Khai(Thailand) VHF link

(1) Outline of Project:

Channel Capacity	24 channels
Link Distance	18 kilo meters
Total Construction Cost	0.1 million dollars
Construction Period	Approx. 1 year

(2) Remarks:

In October 1967, two telephone circuits were established by means of VHF system under a temporary arrangement. The Laos has a particular desire to expand the channel capacity under this project and expects greatly a financial assistance from

abroad for this purpose. The attitude of Thailand is very likely that they are always ready to cope with the development of such channel expansion as Laos may proceed with.

#### 5. Ubon (Thailand) -- Pakse (Laos) VHF Link

(1) Outline of Project:

Channel Capacity	24 channels
Link Distance	110 kilo meters
Total Construction Cost	0.2 million dollars
Construction Period	Approx. 2 years

(2) Remarks:

Both Thai and Laos Governments do not consider this project to be of urgent necessity for the present time.

Laos give priority to the expansion of domestic link between Pakse and Vientiane, and after the completion of this domestic link, they may take up the Ubon-Pakse project for consideration.

#### 6. Manila(Philippines) -- Bangkok(Thailand) Submarine Cable System

(1) Outline of Project:

Channel Capacity	120 channels (4KHz each)
System Length	1,614 nautical miles (2,989 kilometers)
Total Construction Cost	* 22.57 million dollars
Construction Period	Approx. 2 years

\* It is assumed that both terminal countries of the Philippines and Thailand will share the amount of 3.36 million dollars out of the above mentioned total construction cost.

(2) Remarks:

The Government of the Philippines has an active intention to bring this project into realization, and it seems that a detailed study is under way by the Government as to the raising of necessary funds by means of an external assistance and alike.

On the other hand, the Government of Thailand is likely to consider the provision of a small part of necessary construction

cost from its own funds. However, no start has yet been made with a study by this Government as to the introduction of possible foreign funds for the reason that the project has not been finalized yet.

Both Governments of the Philippines and Thailand have earnest desires that the Japanese Government will promptly submit for their consideration new proposals in a concrete form for the above project to cope with the present situation.

7. Penang(Malaysia) -- Haad Yai(Thailand) Microwave link

(1) Outline of Project:

Channel Capacity	960 channels
Link Distance	180 kilo meters
Total Construction Cost	1.34 million dollars
Construction Period	Approx. 2.5 years

(2) Remarks:

Both Governments of Malaysia and Thailand have strong wishes for an early implementation of this project and have entered into negotiations of the ministerial level regarding the technical aspect of the project.

As to the provision of necessary funds, both Governments expect an external assistance.

They consider it appropriate that the project will be carried out in coping with the construction of microwave link between Bangkok and Haad Yai which is now under way and is expected to be completed at the end of 1969.

8. Johore Bahru(Malaysia) -- Palembang(Indonesia) Microwave link

(1) Outline of Project:

Channel Capacity	240 channels
Link Distance	650 kilo meters
Total Construction Cost	4.2 million dollars
Construction Period	Approx. 3 years

(2) Remarks:

Both Governments of Indonesia and Malaysia have no inten-

tion to link up the above section by means of microwave system but the Government of Indonesia give the first priority to a plan for the construction of a submarine coaxial cable system between Djakarta and Singapore. (see Para. 15)

Note: In case the Palembang-Singapore link is constructed by the OH system, the outline of the project will be envisaged as follows:-

Channel Capacity	60 channels
Link Distance	550 kilo meters
Total Construction Cost	1.80 million dollars
Construction Period	Approx. 2.5 years

9. Djakarta(Indonesia) -- Palembang(Indonesia) Microwave link

(1) Outline of Project:

Channel Capacity	240 channels
Link Distance	490 kilo meters
Total Construction Cost	3.2 million dollars
Construction Period	Approx. 2 years

(2) Remarks:

Since new industries are rapidly expanding in Palembang and particularly the development of the oil resources is a very important industry in that area, it is strongly desired that communication facilities connecting this area with other major points should be consolidated preferentially at rapid pace.

This project is originally considered as part of the project for Johore Bahru -- Palembang -- Djakarta Microwave Link. However, in view of the fact that the Government of Indonesia is now in haste to construct the trans-Sumatra microwave link, it would be desirable to review the substance of the project so as to give a top priority to the realization of the proposed project. (see Para. 16)

In carrying out this project, the Government of Indonesia wishes to raise necessary funds by introducing a foreign fund (joint venture, etc.) or in terms of financial assistance from abroad such as long term loans.

## 10. Domestic Communications Network Consolidation Project in Laos

### (1) Outline of Project:

#### a) Luang Prabang - Vientiane HF Circuit

Number of Channels	4 channels
Link Distance	200 kilo meters
Total Construction Cost	0.20 million dollars
Construction Period	Approx. 1.5 years

#### b) Vientiane - Pakse VHF Link

Channel Capacity	24 channels
Link Distance	470 kilo meters
Total Construction Cost	1.80 million dollars (including those costs for development of the local telephone facilities in principal cities)
Construction Period	Approx. 3 years

### (2) Remarks:

The domestic communications network in Laos is still in an underdeveloped stage, and a quick arrangement of the network is strongly required from the viewpoints of politics, economics as well as the development of national resources.

The Government of Laos has adopted as one of its urgent policies this plan for the arrangement of the domestic telecommunication networks, and for its implementation the Government is looking for a financial assistance from abroad.

It may be added that this plan will need a thorough and detailed survey prior to its implementation.

## 11. Penang(Malaysia) -- Medan(Indonesia) VHR link

### (1) Outline of Project:

Channel Capacity	24 channels
Link Distance	272 kilo meters
Total Construction Cost	0.25 million dollars
Construction Period	Approx. 2 years

### (2) Remarks:

The Medan area in Sumatra is well developed, and it has a large communication demands across the Strait with Penang to reflect their close relations on economic activities.

Both Malaysia and Indonesia have agreed that the establishment of this communication system is the top priority plan between the two countries, and the propagation tests carried out in early 1967 proved satisfactory.

For the implementation of this project, both Malaysian and Indonesian Governments wish to have a financial assistance from abroad, but this project does not require a large scale of financing.

In future when the planned trans-Sumatra micro-wave communication link is completed, the Penang-Medan circuit will become more important.

## 12. Kuala Lumpur(Malaysia)--Singapore(Singapore) No. 2 Microwave link

### (1) Outline of Project:

Channel Capacity	960 channels
Link Distance	Approx. 350 kilo meters
Total Construction Cost	1.0 million dollars
	(an addition of the facilities to the presently used No. 1 system)
Construction Period	Approx. 2 years

### (2) Remarks:

At present a micro-wave system having 600 channels is operated between Kuala Lumpur and Singapore. However, due to the rapid increase of traffic demands, the present system has been used to its full capacity, and the Malaysian Government has under consideration as one of the high priority plans the project to set up the second route as soon as possible.

The Government has an intention to make a contract for supply of the necessary facilities by the end of 1968 at the latest.

## 13. Kuching -- Brunei -- Jesselton Microwave link in Malaysia

### (1) Outline of Project:

Channel Capacity	960 channels
Link Distance	Approx. 960 kilo meters
Total Construction Cost	Approx. 12.30 million dollars
Construction Period	Approx. 5 years

### (2) Remarks:

The Malaysian Government holds the development of East Malaysia (North Borneo) as one of its important policies, and is

considering the construction of this transversal micro-wave system as a future plan.

In view of the fact that even the roads are not well developed at present, it is considered that the construction of the micro-wave system will require a considerably long period of time.

The Malaysian Government does not include this micro-wave project in its 5-year program, but they have an intention to implement the project under the financial support of foreign source.

14. Kuching -- Johore Bahru OH Link in Malaysia

(1) Outline of Project:

Channel Capacity	60 channels
Link Distance	745 kilo meters
Total Construction Costs	Approx. 2.0 million dollars
Construction Period	Approx. 2.5 years

(2) Remarks:

The Malaysian Government is attaching great importance to this project and gives it top priority, because this OH system will connect East Malaysia with West Malaysia and also provide a trunk for international communications of East Malaysia. Propagation tests of the OH route are being made with the technical assistance of Japan and tenders for the supply of necessary facilities are being invited.

15. Djakarta(Indonesia) -- Singapore(Singapore) Submarine Cable System

(1) Outline of Project:

Channel Capacity	120 channels
Link Distance	Approx. 625 nautical miles (via Rio Isl.) (1,158 kilo meters)
Total Construction Cost	10.32 million dollars (except those for connecting landline facilities beyond the cable landing stations on both ends to the respective domestic networks)
Construction Period	Approx. 2 years

(2) Remarks:

This project is under consideration by Indonesian Government for early implementation in order to improve communication services with Singapore, Hong Kong, the Philippines etc. with which Indonesia has a large volume of international traffic. The Government hopes to have a financial and technical assistance

from abroad, for instance, by introducing foreign capitals.

16. Trans-Sumatra Microwave link in Indonesia

(1) Outline of Project:

Channel Capacity	120 - 240 channels
Link Distance	Approx. 3,400 kilo meters
Total Construction Cost	Approx. 37 million dollars
Construction Period	Over 5 years

(2) Remarks:

Sumatra Island is the area where the export industries are most active and has the largest population next to Java Island, thus making the development of Sumatra so important a problem in this country.

Accordingly, this micro-wave project is considered to be a preferential one, but it will take a long period of time to complete the system because of its largeness of the scale.

For the implementation of the project, the Indonesian Government authorities are expecting a financial as well as technical assistance such as the introduction of foreign capitals, etc.

It is considered necessary to make a field survey prior to the determination of the detailed plan and the amount of money required.

It would be practical to proceed with the construction of the link in the order of the following three sections:

Djakarta	-	Palembang Section
Palembang	-	Padang Section
Padang	-	Medan Section

17. Bandung -- Semalang -- Soerabaja(Trans-Java) Microwave link in Indonesia

(1) Outline of Project:

Channel Capacity	960 channels
Link Distance	Approx. 1,100 kilo meters
Total Construction Cost	Approx. 7.5 million dollars
Construction Period	Approx. 3 years

(2) Remarks:

The Djakarta - Bandung telephone link (240 channels) has



recently been completed as a part of this project, and the telephone service between these two points has been remarkably improved, resulting in a rapid increase of traffic demands.

In succession, the Indonesian Government authorities have a strong desire to achieve as soon as possible the commencement and completion of the construction of the Bandung - Semalang section and then the Semalang - Soerabaja section, giving this project the highest priority over other national communications network projects.

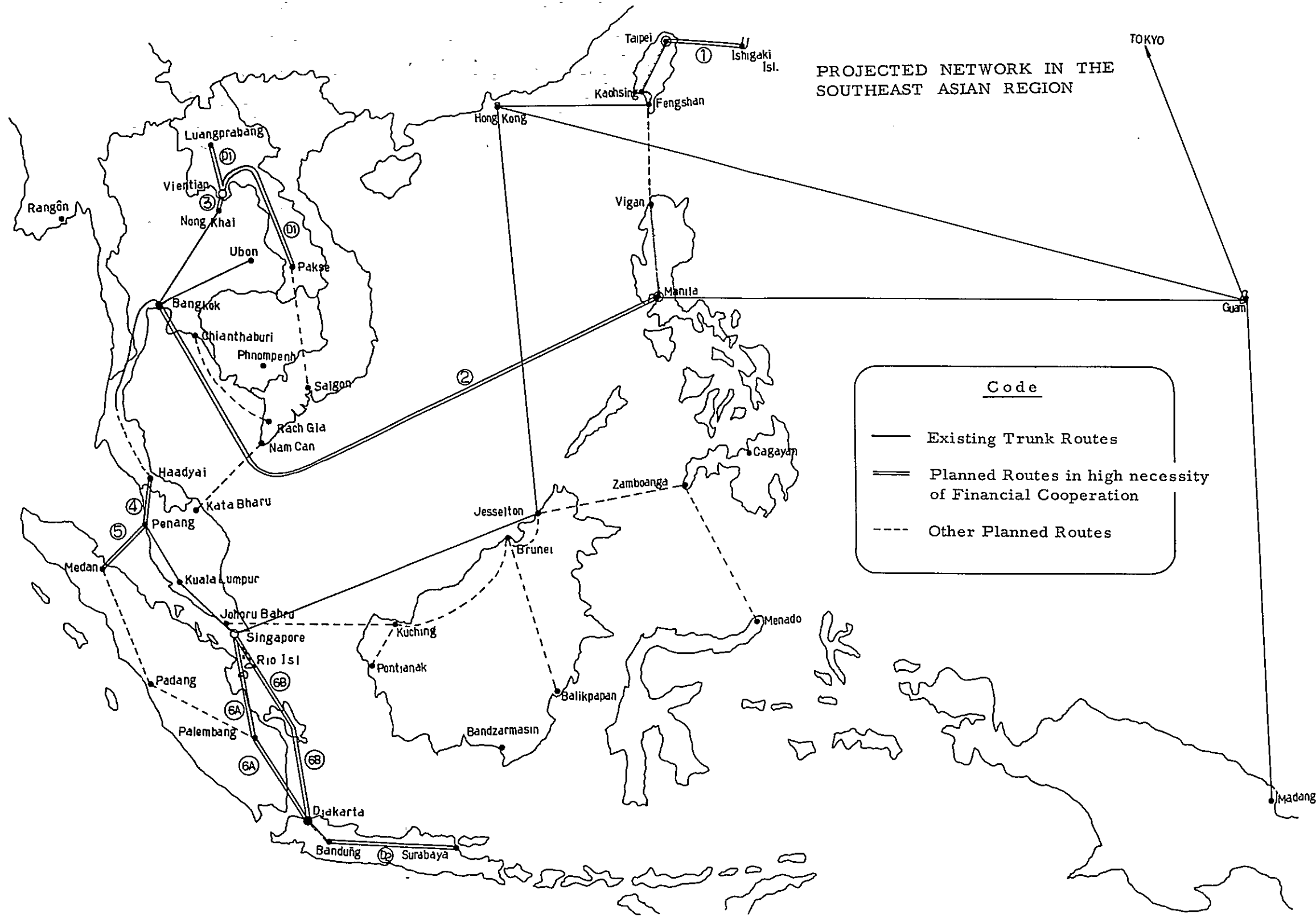
The Indonesian Government earnestly desires to have a financial aid from abroad, such as introduction of foreign funds, long-term loans, etc.

18. In addition to the projects mentioned above, the countries in the Southeast Asian region have the future plans to construct communication links connecting to points in their neighboring countries as well as connecting between principal points in their national boundaries.

Most of these projects will expect for their implementation the financial and technical assistance from foreign countries, and the particulars of these plans seem to become fixed according as the detailed survey and examination develop.

The items of these future plans are as listed below:

- (1) Zamboanga (Philippines) - Jesselton (Malaysia)  
- OH Link
- (2) Zamboanga (Philippines) - Menando (Indonesia)  
- OH Link or submarine cable system
- (3) Haad Yai (Thailand) - Kota Bahru (Malaysia)  
- Micro-wave Link
- (4) Kuching (Malaysia) - Pontianak (Indonesia)  
- Micro-wave/VHF Link
- (5) Jesselton (Malaysia) - Balikpapan (Indonesia)  
- Micro-wave/VHF Link
- (6) Kota Bahru (Malaysia) - Nam Can (Vietnam)  
- OH Link
- (7) Pakse (Laos) - Saigon (Vietnam)  
- VHF Link



PROJECTED NETWORK IN THE SOUTHEAST ASIAN REGION

Code

- Existing Trunk Routes
- == Planned Routes in high necessity of Financial Cooperation
- - - Other Planned Routes

TOKYO

Map labels include: Taipei, Kaohsiung, Fengshan, Hong Kong, Luangprabang, Vientian, Nong Khai, Ubon, Pakse, Bangkok, Chianthaburi, Phnompenh, Saigon, Rach Gia, Nam Can, Haadyai, Kata Bharu, Penang, Medan, Kuala Lumpur, Johoru Bahru, Singapore, Rio Isi, Padang, Palembang, Jakarta, Bandung, Surabaya, Jesselton, Brunei, Kuching, Pontianak, Balikpapan, Bandzarmasin, Zamboanga, Cagayan, Manila, Vigan, Ishigaki Isl., and Madang.