

CHAPTER 6

PROJECT EVALUATION AND CONCLUSION

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6.1 Benefits from Project Implementation

Since Western Samoa consists of two main and several small islands, considerable time and cost are involved in communicating between islands. As for telecommunication services, the introduction of digital exchanges has been finished in urban areas, and it is expected that a smooth progress of network development will be followed. However, in the rural areas, the development of communication services is delayed due to the shortage of funds, and the delivery service using PO boxes is the only means of communication. This is a serious impediment to the development policy of rural areas.

Under such circumstances, it is expected that the following benefits will be derived from the development of the rural telecommunication network under this project:

Present Situation	Measures Taken in the Project	Effects of the Project
As Western Samoa is an island country, the lack of communication media creates a barrier between the Government and municipalities or people, resulting in a wide cultural gap between urban and rural areas.	250 telephone sets are to be installed in public facilities of 86 villages in Upolu, Savaii and Manono islands, connecting each other and to major towns.	56,000 rural residents can have access to telephone services. Improvement of living standard can be expected in rural areas, by means of quick communication between urban and rural areas. Mutual understanding between island people raises national unity.
Cyclones hit every year in the rainy season, resulting in severe damage. People are still suffering from after-effects. The lack of communication media fosters this kind of damage.	Towers and wooden poles are designed in consideration of cyclones. Capacity of batteries are designed large enough to operate equipment consecutively for 10 days at repeater station and 5 days at subscriber station in case of power failure.	Getting information makes quick measures and refuge possible. Detailed information from the scene of disaster decreases further damage by means of efficient countermeasures.

Present Situation	Measures Taken in the Project	Effects of the Project
There is little communication media between emigrants and their families or friends left behind in Western Samoa.	This system is to be connected to international communication circuits.	Communication between emigrants and their families or friends becomes easy, resulting in increase of business opportunities and acquisition of foreign currencies.
The lack of communication between site of production of main exports such as coconuts, taro, and the port, makes difficult in adjusting timing and amount of shipments.	This system is to be connected to Apia port.	Timing and amount of shipments can be properly adjusted by means of telephone services, resulting in increase of exports due to improvement of efficiency of exporting.

6.2 Conclusion

As mentioned above, not only direct benefits to the 56 thousand people who live in the project areas, but also indirect benefits to the entire country owing to the increased efficiency of administration and promotion of rural industries can be expected through the implementation of this project.

Considering the importance of rural development to Western Samoa, the project is appropriate because it intends to develop the rural telecommunications infrastructure. Also, judging from the current financial status of the country and the huge damage incurred from recent cyclones, it would be difficult for the Government to implement such large scaled project with its own funds or loans for the development of a rural telecommunication network which will incur huge costs but result in little profit.

It is therefore considered that the project, which is indispensable for the development of rural infrastructure of Western Samoa, should be implemented with Japan's grant aid. Further, there are no contractual or technical problems in implementing the project, and no operation or maintenance problems expected after the completion of construction work.

In order to execute the project more smoothly and efficiently, the following items are recommended to PTD:

- (1) To secure necessary budget and laborers for implementation and maintenance of the project,
- (2) To complete reinforcement and/or repair work of existing facilities before construction work of the system,
- (3) To secure necessary technology for maintenance of the project, through OJT training during the construction work,
- (4) To maintain the system properly after the completion of construction work.

ANNEX

ANNEX-1

Member List of Mission (Field Survey)

Duty	Name	Affiliated to
Team Leader	Mr. Akira Nasu	Special Advisor for International Cooperation, Ministry of Posts and Telecommunications
Grant Aid Planner	Mr. Kiyoshi Sumita	Grant Aid Division, Economic Cooperation Bureau, Ministry of Foreign Affairs
Grant Aid Planner	Mr. Toshio Okajima	Secretary, Embassy of Japan in New Zealand
Network Planning	Mr. Hideo Shimoida	NTT International Corporation
Switching	Mr. Yoshinobu Aguni	NTT International Corporation
Transmission	Mr. Koichi Iwasa	NTT International Corporation
Outside Plant	Mr. Kuniichi Uetake	NTT International Corporation

Member List of Mission (Explanation of Draft Report)

Duty	Name	Affiliated to
Team Leader	Mr. Akira Nasu	Special Advisor for International Cooperation, Ministry of Posts and Telecommunications
Coordination	Mr. Toshiyuki Iwama	Second Basic Design Study Division, Grant Aid Study & Design Department, Japan International Cooperation Agency
Network Planning	Mr. Hideo Shimoida	NTT International Corporation
Switching	Mr. Yoshinobu Aguni	NTT International Corporation

Study Schedule (Basic Design Study)

Jul. 25 (Sun) 1st. party (Messrs. Nasu, Sumita, Shimoida, Aguni) departed Japan
 26 (Mon) Arrival in Wellington, meeting with Japan Embassy
 27 (Tue) Mr. Okajima joined, departure from New Zealand
 26 (Mon) Arrival in Western Samoa
 27 (Tue) Meeting with JICA Office
 Discussion with PTD (Explanation of Inception Report)
 28 (Wed) Meeting with Prime Minister
 Discussion with PTD (Contents of Request)
 29 (Thu) Visit to eastern part of Upolu island
 Discussion with PTD (Contents of Project)
 Mr. Okajima left Western Samoa
 30 (Fri) Discussion with PTD (Confirmation of scope of work to be borne)
 2nd. party (Messrs. Uetake, Iwasa) departed Japan
 31 (Sat) Intra-team meeting
 2nd. party arrived in Western Samoa
 Aug. 01 (Sun) Intra-team meeting
 02 (Mon) Signing of Minutes of Discussions
 03 (Tue) Messrs. Nasu, Sumita departed Western Samoa
 Preliminary survey, Meeting on survey schedule
 04 (Wed) Site survey (System 1: Lufilufi area)
 Ditto (System 2: Faleasiu area)
 05 (Thu) Ditto (System 1: Lufilufi area)
 Ditto (System 2: Faleasiu area)
 Messrs. Nasu, Sumita arrived in Japan
 06 (Fri) Ditto (System 3: Salelologa area)
 Ditto (System 2: Faleasiu area)
 07 (Sat) Ditto (System 3: Salelologa area)
 Intra-team meeting
 08 (Sun) Site survey (System 3: Salelologa area)
 Data arrangement
 09 (Mon) Site survey (System 3: Salelologa area)
 Data collection
 10 (Tue) Site survey (System 3: Salelologa area)
 11 (Wed) Ditto (System 4: Auala area)
 12 (Thu) Ditto (System 4: Auala area)
 Ditto (System 3: Salelologa area)

13 (Fri) Ditto (System 4: Auala area)
 Data collection
 14 (Sat) Site survey (System 4: Auala area)
 Intra-team meeting
 15 (Sun) Intra-team meeting, Data arrangement
 16 (Mon) Meeting with PTD on preliminary survey results
 Site survey (System 1: Lufilufi area)
 Data collection
 17 (Tue) Site survey (System 1: Lufilufi area)
 Data collection
 18 (Wed) Site survey (System 1: Lufilufi area)
 Data collection
 19 (Thu) Site survey (System 1: Lufilufi area)
 Data collection
 20 (Fri) Site survey (System 1: Lufilufi area)
 Data collection
 21 (Sat) Intra-team meeting
 Preparation of survey report
 22 (Sun) Ditto
 2nd. party left Western Samoa
 23 (Mon) Report to PTD on survey results
 24 (Tue) Messrs. Shimoida, Aguni left Western Samoa
 2nd. party arrived in Japan
 25 (Wed) Messrs. Shimoida, Aguni arrived in Australia
 26 (Thu) Messrs. Shimoida, Aguni arrived in Japan

Study Schedule (Explanation of Draft Report)

Oct. 22 (Fri)	1st. party (Messrs. Shimoida and Aguni) departed Japan
23 (Sat)	Arrived in Western Samoa
24 (Sun)	Intra-team meeting
25 (Mon)	Meeting with JICA Office Discussions with PTD (Explanation of Draft Report)
26 (Tue)	Discussions with PTD (Explanation of Draft Report) 2nd. party (Messrs. Nasu and Iwama) departed Japan
27 (Wed)	2nd. party arrived in Western Samoa Discussions with PTD (Explanation of Draft Report)
28 (Thu)	Discussions with PTD (Explanation of Draft Report)
29 (Fri)	Signing of Minutes of Discussions
30 (Sat)	Departed Western Samoa
31 (Sun)	Arrived in Auckland
Nov. 01 (Mon)	Meeting with Embassy of Japan in Wellington
02 (Tue)	Departed from Auckland, Arrived in Japan

ANNEX-3

Member List of Concerning Party in Western Samoa

Prime Minister

Mr. Tofilau Eti Alesana

Finance Department

Mr. Tuilaepa Sailele Malielegaoi

Minister

Mr. Mose Asani

Senior Financial Officer

Foreign Affairs Department

Mr. Mose Sua

Secretary

Statistic Department

Mr. Patolo Taafuli

Deputy Government Statistician

Mr. Kalepo Tuautu

Statistical Officer

Mulinuu Observatory

Mr. Niko Tualevao

Observatory Officer

Labor Department

Mr. Tagata Uli

Employment Officer

Central Bank of Western Samoa

Mr. Faaoso Setu

Reserch Department Officer

Posts and Telecommunication Department

Mr. Toi Aukuso

Minister

Mr. Sapau Ruperake Petaia

Director

Mr. Talitiga Pemila

Deputy Director

Mr. Asamu E. Ah Sam

Telecommunication Controller

Mr. Colin Schulz

Chief Engineer

Mr. John Morgan

Project Manager

Mr. Petu Aiono

Chief of Radio Section

Mr. Risale Risale

Chief of Line & Cable Section

Mr. Phil Evans

Senior Engineer

Mr. Faafetai Uelese

Chief of Telegraph & Data Section

Mr. Afeleti Lui

Chief of Satellite Section

Counterpart

Mr. Mamea Leautuli
Mr. Raymond Ah Tune
Mr. Pelenato Afualo

Radio Maintenance Officer
Radio Technical Officer
Power Technical Officer

MINUTES OF DISCUSSIONS

BASIC DESIGN STUDY ON THE PROJECT FOR
IMPROVEMENT OF RURAL TELECOMMUNICATIONS IN
THE STATE OF WESTERN SAMOA

In response to a request from the Government of the State of Western Samoa, the Government of Japan decided to conduct a Basic Design Study on the Project for Rural Telecommunications (hereinafter referred to as "the Project" and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Western Samoa a study team, which is headed by Mr. Akira Nasu, Special Advisor, International Cooperation Division, Ministry of Posts and Telecommunications, and is scheduled to stay in the country from July 26 to August 24, 1993.

The team held discussions with the officials concerned of the Government of Western Samoa and conducted a field survey at the study area.

In the course of discussions and field survey, both parties have confirmed the main items described on the attached sheets. The team will proceed to further works and prepare the Basic Design Study report.

Apia, August 2, 1993

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Mr. Akira Nasu
Leader
Basic Design Study Team
JICA

S. Ruperake Petaia

Mr. Sapau Ruperake Petaia
Director
PTD
Western Samoa

ATTACHMENT

1. Objectives

The objective of the Project is to improve rural telecommunications in the State of Western Samoa by installing a digital radio multiple access subscriber system.

2. Study Area

The study area is summarized below based upon the results of discussions:

Area	Base Stn.	Repeater Stn.	Subscriber Stn.	Subscriber Lines
Lufilufi	1 station	9 stations	19 stations	To be determined
Faleasiu	1 station	1 station	6 stations	To be determined
Salelologa	1 station	3 stations	12 stations	To be determined
Auala	1 station	1 station	9 stations	To be determined
Total	4	14	46	

The number of subscriber lines will be determined after the survey, however, is to be generally based upon that of original request, 261. Then, the final components of the Project will be decided after further studies.

3. Executing agency

Posts and Telecommunications Department is responsible for the administration and execution of the Project.

4. Items requested by the Government of Western Samoa

After discussions with the Basic Design Study Team, the following items were finally requested by the Western Samoan side:

- 1) To take appropriate measures against cyclones mainly in the local cable system

5. Japan's Grant Aid system

- (1) The Government of Western Samoa has understood the Japanese Grant Aid explained by the team.
- (2) The Government of Western Samoa will take necessary measures, described in Annex I for smooth implementation of the Project, on condition that the Grant Aid Assistance by the Government of Japan is extended to the Project.

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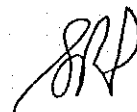
6. Schedule of the Study

- (1) The consultants will proceed to further studies in Western Samoa until August 24, 1993.
- (2) JICA will prepare the draft report in English and dispatch a mission in order to explain its contents around October, 1993.

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Annex I NECESSARY MEASURES TO BE TAKEN BY WESTERN SAMOA

1. To secure lands and/or spaces for installation of base, repeater and subscriber station equipment.
2. To clear, level and reclaim the sites when needed.
3. To provide civil works for the Project:
 - (1) Fences with a small door at the sites of facilities
 - (2) Access roads to sites when needed
 - (3) Foundations for poles and solar power units under supervision of the contractor
4. To provide installation works for the Project:
 - (1) Telephone Sets and subscriber cables between subscriber stations and telephone sets
 - (2) Connection cables between MDF and existing switching equipment
 - (3) Distribution of commercial power when needed
5. To procure telephone sets for the Project.
6. To bear the following commissions to the Japanese foreign exchange bank for the banking services based upon the Bank Arrangement (B/A):
 - (1) Advising commission of the Authorization to Pay (A/P)
 - (2) Payment commission
7. To ensure unloading and customs clearance at the port of disembarkation in Western Samoa.
8. To exempt any equipment, materials and supplies brought into and/or purchased in Western Samoa in connection with the performance of the works from any tax, duties and levies which are imposed in Western Samoa.
9. To accord Japanese nationals whose services may be required in connection with the supply of products and the services under the verified contract such facilities as may be necessary for their entry and stay for the performance of their works.



10. To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid.

11. To bear all the expenses, other than those to be borne by the Grant Aid, necessary for construction of facilities as well as for the transportation and installation of the equipment.

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MINUTES OF DISCUSSIONS

BASIC DESIGN STUDY ON THE PROJECT FOR
THE IMPROVEMENT OF RURAL TELECOMMUNICATIONS
IN
THE STATE OF WESTERN SAMOA
(CONSULTATION ON DRAFT REPORT)

In July, 1993, the Japan International Cooperation Agency (JICA) dispatched a Basic Design Study Team on the project for the Improvement of Rural Telecommunications (hereinafter referred to as "the Project") to the State of Western Samoa, and through discussions, field survey, and technical examination of the results in Japan, has prepared the draft report of the study.

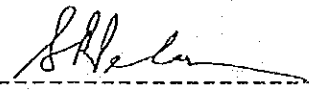
In order to explain and to consult Western Samoa on the components of the draft report, JICA sent to Western Samoa a study team (the Team), which is headed by Mr. Akira Nasu, Special Advisor for International Cooperation, Ministry of Posts and Telecommunications, and is scheduled to stay in the country from October 23 to 30, 1993.

As a result of discussions, both parties confirmed the main items described on the attached sheets.

Apia, October 29, 1993

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Akira Nasu
Leader
Basic Design Study Team
Japan International
Cooperation Agency



Sapau Ruperake Petaia
Director
Post and Telecommunications
Department
Western Samoa

ATTACHMENT

(1) Components of draft report

The Government of the State of Western Samoa has agreed and accepted in principle the components of the draft report proposed by the Team.

(2) Japan's Grant Aid system

(a) The Government of Western Samoa has understood the system of Japanese Grant Aid explained by the Team.

(b) The Government of Western Samoa will take the necessary measures, described in Annex, for smooth implementation of the Project on condition that the Grant Aid assistance by the Government of Japan is extended to the Project.

(3) Future schedule

The Team will make the final report in accordance with the confirmed items, and send it to the Government of Western Samoa by January, 1994.

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Annex

Necessary measures to be taken by the Government of Western Samoa in case Japan's Grant Aid is executed:

1. To provide and secure land and equipment rooms necessary for implementation of the Project,
2. To construct foundations for antenna poles under the supervision of Japanese engineers,
3. To install connection cables between MDF and existing switching equipment,
4. To install cables to connect subscriber station equipment to the subscriber premises, and telephone apparatus,
5. To secure access roads necessary for the construction of facilities, and to construct fences,
6. To arrange lead-inn of commercial power to sites.
7. To bear the following commissions to the Japanese foreign exchange bank for the banking services based upon the Banking Arrangement (B/A):
 - (1) Advising commission of the Authorization to Pay (A/P)
 - (2) Payment commission
8. To ensure unloading and customs clearance at the port of disembarkation in Western Samoa.
9. To exempt any equipment, materials and supplies brought into and/or purchased in Western Samoa in connection with the performance of the works from any tax, duties and levies which are imposed in Western Samoa.

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10. To accord Japanese nationals whose services may be required in connection with the supply of products and the services under the verified contract such facilities as may be necessary for their entry and stay for the performance of their works.
11. To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid.
12. To bear all the expenses, other than those to be borne by the Grant Aid, necessary for construction of facilities as well as the transportation and installation of the equipment.

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List of Collected Data

- (1) Seventh Development Plan 1992-1994
- (2) Public Sector Investment Program 1992/93-1994/95
- (3) The 1993-1994 Budget Statement
- (4) Legislative Assembly 1993, 1994
- (5) The Labor and Employment Regulations
- (6) Labor and Employment
- (7) Annual Statistical Abstract 1990, 1991
- (8) 1991 Census Population and Housing
- (9) Quarterly Statistical Bulletin January-June 1992
- (10) Quarterly Statistical Bulletin July-December 1992
- (11) Central Bank of Samoa Bulletin
- (12) Apia Observatory Metrological Service
- (13) Telephone Directory
- (14) Geological Maps

ANNEX-6

Installation Cost to be Borne by Western Samoa

1. Conditions of Estimates

(1) Installation work, such as cable installation, subscriber connection, connection between MDF and existing exchange, will be undertaken by PTD.

(2) Civil work, such as tower foundations, access roads, fences, commercial power lead-in will be undertaken by local companies under the contract with PTD.

2. Summary of Installation Cost

(Unit: Tala)

Item	Component		Cost
Cable line installation 428,443	Materials 209,569	Cable lines materials	122,083
		Subscriber connection materials	45,572
		Articles for consumption	41,914
	Installation 51,748	Accommodations	47,700
		Ferryboat	4,048
	Transportation of materials		6,460
	Indirect cost		160,666
Civil work 338,501	Tower foundations		71,001
	Access roads		65,000
	Fences		183,000
	Commercial power lead-in		19,500
Administration cost			230,083
Grand total			997,027

3. Cost Breakdown

(1) Cost of cable line materials

Cost was estimated based on the material list provided by PTD during the basic design study.

Cost of cable line materials (101,736 x 1.2)	122,083 Tala
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(2) Cost of subscriber connection materials

Cost was estimated based on the material list provided by PTD during the basic design study.

Cost of subscriber connection materials (37,977 x 1.2)	45,572 Tala
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(3) Cost of articles for consumption

Cost was estimated at 25% of total materials cost above.

$(122,083+45,572) \times 0.25 = 41,914$	41,914 Tala
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(4) Cost of accommodations

Accommodation cost applies only to installation work of local cable network in Savaii island.

730 poles	3 poles by 3 persons per day	730 M/D
240 guys	4 guys by 3 persons per day	180 M/D
30km cable laying	150 m by 4 persons per day	800 M/D
200 splicing	4 connections by 2 persons per day	100 M/D
130 tel. sets	4 tel. sets by 3 persons per day	98 M/D
Total		1,908 M/D

1,908 M/D x 25 Tala	47,700 Tala
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(5) Cost of transportation by boat

Cost was estimated on condition that PTD's personnel returns back to Upolu island once a month.

Section	Unit cost	Times	Cost
Upolu-Savaii	12/round trip/person	54	648 Tala
	60/round trip/car	25	1,500 Tala
Upolu-Manono	10/round trip/person	190	1,900 Tala
Total			4,048 Tala

(6) Cost of transportation of materials

Cost was estimated based on the unit cost of hired truck with a crane including driver and fuel costs.

Island	Item	Unit cost	Amount	Cost
Savaii	Transportation	78/hour	9 hours x 6 times	4,212 Tala
	Ferryboat	130/round trip	6 times	780 Tala
Manono	Transportation	78/hour	6 hours x 1 time	468 Tala
	Boat	200/round trip	5 times	1,000 Tala
Total				6,460 Tala

(7) Indirect cost

Indirect cost was estimated at 60% of total direct cost.

$267,777 \times 0.6 = 160,666$	160,666 Tala
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(8) Cost of tower foundations

Concrete cost

Pole	Number	Concrete/pole	Concrete	Unit cost	Cost
10 m	17	0.7 m ³	11.9 m ³	350/m ³	4,165 Tala
15 m	13	1.0 m ³	13.0 m ³	350/m ³	4,550 Tala
20 m	10	3.1 m ³	31.0 m ³	350/m ³	10,850 Tala
25 m	17	7.3 m ³	124.1 m ³	350/m ³	43,435 Tala
Total	57	-	-	-	63,000 Tala

Installation cost

Pole	Number	MD/pole	M/D	Unit cost	Cost
10 m	17	3	51	12/MD	612 Tala
15 m	13	6	78	12/MD	936 Tala
20 m	10	6	60	12/MD	720 Tala
25 m	17	9	153	12/MD	1,836 Tala
Total	57	-	342	-	4,104 Tala

Accommodation cost in Savaii island

$25 \text{ Tala} \times 147 \text{ persons} = 3,675$	3,675 Tala
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Cost of transportation by boat

Section	Unit cost	Amount	Cost
Upolu-Savaii	12/round trip/man	3 persons x 2 times	72 Tala
	60/round trip/man	1 car x 2 times	120 Tala
Upolu-Manono	10/round trip/man	3 persons x 1 time	30 Tala
Total	-	-	222 Tala

Total cost of tower foundations

63,000+4,104+3,675+222=71,001	71,001 Tala
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(9) Cost of access roads

Road is gravel-surfaced with 3m wide.

Site	Distance	Unit cost/new	Unit cost/repair	Cost
Lemafa Pass	300 m	50/m		15,000 Tala
Afugalu	400 m	50/m		20,000 Tala
Mt. Tafua	200 m	50/m		10,000 Tala
Mt. Fogalepulu			5,000/site	5,000 Tala
Lalomanu			5,000/site	5,000 Tala
Taga Point			5,000/site	5,000 Tala
Mt. Lepiutai			5,000/site	5,000 Tala
Total	900 m	-	-	65,000 Tala

(10) Cost of fences

Dimension of fence is 2.4mW x 2.4mD x 2.0mH.

Place	No. of sites	Unit cost	Cost
Upolu island	33	3,000	99,000 Tala
Savaii island	24	3,500	84,000 Tala
Total	57	-	183,000 Tala

(11) Cost of commercial power lead-in

No. of sites	Unit cost	Cost
39	500/site	19,500 Tala

(12) Administration Cost

Cost was estimated at 30% of total installation cost.

$(428,443+71,001+65,000+183,000+19,500) \times 0.3 = 230,083$	230,083 Tala
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JICA