

付-1.4 協議議事録

a. Proposed Scope of Work for Basic Study

- 平成4年3月23日 NPLao提出、説明

b. MEMORANDUM OF THE UNDERSTANDING REACHED AT THE TRIPARTITE COORDINATING MEETING HELD ON 30 MARCH 1992 AT NUM PAPA LAO VIENTIANE

- 三者間協議々事録 (JICA基本設計調査団、アジア開発銀行、ラオス国)。  
平成4年4月2日 署名

c. MINUTES OF DISCUSSION ON BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF WATER SUPPLY FACILITIES IN VIENTIANE PREFECTURE IN THE LAO PEOPLE'S DEMOCRATIC REPUBLIC

- JICA基本設計調査団とラオス国 (MCTPC 及び NPLao) との間の合意事項。  
平成4年4月4日 署名

d. RECORDS OF DISCUSSIONS

- JICA基本設計調査団 (Survey Team) 及びラオス側関係省庁担当者との基本設計範囲に係わる説明、協議内容記録

・添付資料

i) PROPOSED SCOPE OF REHABILITATION AND EXPANSION (表及び図)

ii) PROPOSED PIPELINE SYSTEM FROM CHINAIMO WTP TO THA DEUA (図)

e. Minutes of Tripartite Coordinating Meeting Held on 17 August 1992 at Nam Papa  
Lao, Vientiane

— 三者間協議々事録 (JICA基本設計調査団 (ドラフト説明)、アジア開発銀行、  
ラオス国)

平成4年8月18日 署名

f. MINUTES OF DISCUSSIONS ON BASIC DESIGN ON THE PROJECT FOR IMPROVEMENT OF  
WATER SUPPLY FACILITIES IN VIENTIANE PREFECTURE IN THE LAO PEOPLE'S DEMO-  
CRATIC REPUBLIC (CONSULTATION ON DRAFT REPORT)

— JICA基本設計調査団 (ドラフト説明) とラオス国 (MCTPC及びNPLao) との間の合  
意事項

平成4年8月18日 署名



23 March 1992

## Proposed Scope of Work for Basic Design Study

## 1. Background

The JICA preliminary survey mission has visited Vientiane from October to November, 1991 to have discussions on possible scope of the Japanese grant aid for Vientiane Water Supply. The Lao PDR has expressed its desire to the mission that the following scope would be covered by the coming JICA Basic Design Study.

- 1) Expansion of Chinaimo Water Treatment Plant by 40,000m<sup>3</sup>/day.
- 2) Extension of the existing distribution pipe network to the following area:
  - Phong Tong
  - Thaduea
  - Thathong district
  - Sam Khey
  - KM8 (industrial zone)
  - Road No.13 and Volvo district
  - Nong Tha
  - Muong Noy Xiangda
  - None Papao
- 3) Construction of elevated tanks(1,500m<sup>3</sup>) with reservoirs at South Vientiane and North Vientiane, and a reservoir with pumping facilities at Dong Dok.
- 4) Rehabilitation of the existing Chinaimo Water Treatment Plant
- 5) Rehabilitation of the existing distribution pipe network including replacment/repair of the old pipelines, installation of valves, fire hydrants and pipes interconnecting Chinaimo system to Kaolio system.

## 2. Financial and Technical Assistance to Date

Water supply systems in Vientiane have been developed with the aid of several international/foreign financing agencies: World Bank, ADB, JICA, etc. Major technical and financial assistance extended so far is summarized hereunder:

- 1) JICA: Construction of Kaolieo Water Treatment Plant in 1964
- 2) ADB: Construction of Chinaimo Water Treatment Plant in 1980
- 3) JICA: Rehabilitation of Kaolieo Water Treatment Plant in 1983
- 4) UNDP: Report on the Supply of Potable Water in Urban Vientiane, December 1989
- 5) UNDP  
/WB: Urban Water Supply and Sanitation Sector Review, September, 1990
- 6) WB: Leakage Detection in Major Towns and Cities in Laos, (ongoing since 1991)
- 7) WB: Computerized Billing System, 1991
- 8) ADB: Institutional Strengthening of Water Supply Sector (expected to start May, 1992)
- 9) Astrl: Overseas Training of 20 personnels and engineers at Bangkok for two weeks 1991

- 10) WB: Overseas Training of four engineers at Khong Khen University, Thailand, the two for treatment management and the other two for water quality, for one year and 6 months respectively.
- 11) NZ: On-the-job Training of Hydrochemists at Chinaimo Water Treatment Plant 1991

In addition, ADB has been intensively involved in water supply development scheme in the Lao PDR. Ongoing Southern and Northern Provincial Towns Water Supply Projects covering 11 towns in the country will contribute significantly to an improvement of living conditions when they are successfully implemented.

### 3. Possible Scope of the Japanese Grant Aid for Vientiane Water Supply

Many citizens in Vientiane are currently suffering from water shortage due to the limited production capacity of the treatment plants. The Government of Japan has considered duly the intension of the Nampapa Lao who wishes urgent expansion of Chinaimo treatment plant under finance of Japanese grant aid.

Proposed scope of work for JICA Basic Design centers on rehabilitation and expansion of Chinaimo Water Treatment Plant. Further, attention was paid to an extension of distribution mains to the area where deemed to be rapidly developed. The proposed scope of work, although subject to discussions with ADB and the Government of Lao PDR, is given below:

- 1) Expansion of Chinaimo Treatment Plant by 40,000m<sup>3</sup>/day including expansion of the pumping well, transmission pumps and their appurtenances, and construction of a reservoir (30 minutes - one hour storage).
- 2) Rehabilitation of the Chinaimo Treatment Plant, of which scope will be subject to the current JICA Basic Design Study.
- 3) Extension of distribution pipelines to Thaduea area where construction of the Mekon River bridge is expected to complete in 1994.

This tentative selection was made from the following technical points of view.

- 1) Priority: As set forth in the Minutes of Meeting agreed between the Lao PDR and JICA on November 1991, the Lao PDR has a strong desire to initiate expansion of Chinaimo Water Treatment Plant as early as possible.
- 2) Operation and Maintenance: Although some operational problems of Chinaimo Water Treatment Plant were identified during the preliminary survey, treatment process of the new plant will be, in principle, same as the one applied to the existing plant. It is recommended that the JICA Basic Design will cover the expansion and rehabilitation of Chinaimo Water Treatment Plant at the same time.
- 3) Characteristics of the Study: Feasibility study of Vientiane Water Supply was carried out by ADB, while JICA has just initiated the basic design study aiming at an immediate implementation. Pipeline design shall be based on accurate data and information on the existing pipe network which are presently not available at Nampapa.

#### 4. Design Consideration

1) To minimize the period required for the design and construction of the planned facilities, the JICA basic design in principle will be in compliance with the criteria and standards applied originally for the existing facilities. This consideration will be beneficial to Nampapa Lao for effective maintenance and operation of the constructed facilities.

2) The JICA basic design will cover design of distribution pipelines to Thaduea, on condition that (1) all procedures required for the land acquisition should be undertaken by Lao PDR and completed before initiation of the pipelaying work, and (2) any costs to be incurred in the course of such procedures should be borne by Lao PDR.

3) In the JICA Basic Design, pumping facilities at Chinaimo water treatment plant will be expanded to transmit 80,000cmd treated water to reservoirs and elevated tanks located or to be located in the urban area, in compliance with the concept proposed by UNDP in its report on the Supply of Potable Water in Urban Vientiane, December 1989.

4) To generate maximum benefit from the project, time-lag of project completion by JICA and ADB shall be kept to a minimum. To this end, a close cooperation between JICA and ADB is indispensable.



LAO PEOPLE'S DEMOCRATIC REPUBLIC  
GOVERNMENT OF JAPAN  
ASIAN DEVELOPMENT BANK

IMPROVEMENT OF WATER SUPPLY FACILITIES IN VIENTIANE PREFECTURE  
VIENTIANE WATER SUPPLY REHABILITATION AND UPGRADING

MEMORANDUM OF THE UNDERSTANDINGS REACHED AT THE TRIPARTITE COORDINATING  
MEETING HELD ON 30 MARCH 1992 AT NAM PAPA LAO, VIENTIANE

I INTRODUCTION

1. The Government of the Lao People's Democratic Republic (the Lao Government) has requested the Government of Japan to provide assistance for Vientiane Water Supply through a formal request made in January 1989. In response to this request, the Japan International Cooperation Agency (JICA) sent the Preliminary Study Team in November 1991 and the Basic Design Study Team in March 1992 to conduct field surveys and to discuss the possible scope of the Japanese grant aid for Vientiane Water Supply.
2. The Lao Government has requested the Asian Development Bank (the Bank) to finance the rehabilitation and upgrading of the water supply system in Vientiane. The consultants employed by the Bank to carry out a feasibility study commenced work in February 1992 and will be in the field until mid-April. At the time of the meeting the Bank's consultants have just submitted their Draft Final Report (DFR). During the preparatory stages for the projects, the Co-Financing Unit of the Bank visited JICA and held discussions concerning coordination of the projects.
3. The above projects are accorded high priority by the Lao Government in view of the imminent shortage of potable water in Vientiane and the importance of water for the further development of the city and the health of its population.

II PURPOSE OF THE MEETING

4. A coordinating meeting was held at Nam Papa Lao (NPL), Vientiane, Lao PDR on 30 March 1992 between the Lao Government, the JICA Study Team and the Bank Mission in order to identify the scope of the projects to be covered by each party and to assist in the proper coordination of the projects. This memorandum records the understandings reached at the meeting.
5. The meeting was attended by the relevant representatives of each of the three parties. A full list of participants at the meeting is attached at Appendix A. The understandings reflected herein are subject to approval by higher authorities in the Lao Government, the Japanese Government and the Bank.



### III PROJECT REQUESTS

6. The project request from the Lao Government to the Government of Japan in November 1991 consists of the following parts:-

- \* Expansion of the capacity of Chinaimo Water Treatment Plant (WTP) by 40,000 cmd (from 40,000 to 80,000)
- \* Extension of pipes to areas not currently served and to suburban areas, as follows:-
  - (1) to Phone Tong
  - (2) to Tha Deua (one booster pump)
  - (3) to Tathong District
  - (4) to Sam Khey
  - (5) to Km 8 (Industrial zone)
  - (6) to Road No.13 and to Volvo District
  - (7) to Nong Tha
  - (8) to Muong Noy Xiangda
  - (9) to None Papao
- \* Construction of elevated tanks (1,500 cm each) and reservoirs in South Vientiane and North Vientiane and a reservoir at Dong Dok with pumping systems
- \* Rehabilitation of Chinaimo WTP, including the renewal of the raw water pumps, electric equipment, control devices, chemical dosage equipment and flow meters
- \* Replacement of old pipes in the old system, fire hydrants and valves interconnecting the Chinaimo supply system to the Kaolieo system

7. The project requested by the Lao Government for consideration for funding by the Bank consists of the following parts:-

- \* Rehabilitation of the intake at Chinaimo WTP
- \* Rehabilitation of Chinaimo WTP
- \* Expansion of Chinaimo WTP (from 40,000 to 80,000 cmd)
- \* Construction of a clear-water reservoir at Chinaimo WTP
- \* Construction of elevated reservoirs
- \* Rehabilitation and augmentation of the distribution (transmission) system
- \* Rehabilitation of the reticulation system
- \* Construction of new reticulation
- \* Consulting services for the Bank project
- \* Institutional strengthening for NPL

### IV PROJECT COMPONENTS

8. The scope of the JICA Basic Design Study will cover the following parts:-

- \* Expansion of Chinaimo WTP by 40,000 cmd including construction of a clear-water reservoir with 30 to 60 minutes' storage capacity
- \* Rehabilitation of Chinaimo WTP, including rehabilitation of the intake covering items such as replacement of the pumps and silt removal

9. In addition, the JICA Study Team will conduct separate negotiations with the Lao Government concerning a possible pipeline extension to Tha Deua and an elevated reservoir. Any consulting services necessary for the Japanese grant-aided project will be covered by the Japanese grant-aided project.

10. The Bank's project will consist of the following parts:-

- \* Construction of elevated reservoirs
- \* Rehabilitation and augmentation of the distribution (transmission) system
- \* Rehabilitation of the reticulation system
- \* Consulting services for the Bank project
- \* Institutional strengthening for NPL

11. The location of the elevated reservoirs to be funded by the Bank will be finally determined following the outcome of negotiations between the JICA Study Team and the Lao Government as to whether the pipeline extension to Tha Deua and the construction of an elevated reservoir in the Tha Deua region will be included in the JICA Basic Design Study. In addition, the Bank may also consider funding the construction of some new reticulation depending on the availability of sufficient funds.

#### V ASPECTS OF PROJECT COSTS AND FINANCING BY THE BANK

12. The JICA Study Team expressed the view that it is not in a position to comment on the costs estimated by the Bank's consultants. Subject to country programming considerations, the Bank at this stage expects to provide funding of some US\$7 million.

#### VI PROJECT PROCESSING AND IMPLEMENTATION SCHEDULE

13. The expected schedules for the processing and implementation of the projects are set out in Appendix B. At this stage the schedules are only tentative and are subject to the various considerations affecting the Lao Government, the Japanese Government and the Bank.

14. It is anticipated that construction of the facilities under the Japanese project will be completed by the end of fiscal year 1995 (March 1996), assuming that no problems are encountered during implementation.

15. It is anticipated that construction of the facilities funded by the Bank will be completed towards the end of 1995. In order to facilitate coordination between the JICA Study Team and the Bank, the Lao Government requested that the Bank's Appraisal Mission should take place in August 1992 at approximately the same time as the visit of the JICA Study Team.

#### VII PROCUREMENT METHODS

16. Procurement of goods and services for the project funded by the Lao Government and the Bank will be carried out in accordance with the Bank's Guidelines for Procurement.

17. In the event that the Japanese Government confirms the provision of grant aid for the project, procurement of the relevant goods and services is expected to be carried out in accordance with separate arrangements between the Japanese Government and the Lao Government.

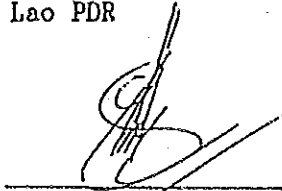
## VIII CO-ORDINATION

18. All parties accept the need to establish arrangements to facilitate the parallel processing and implementation of the Japanese and Bank-funded projects. It is considered desirable that the Lao Government establishes official arrangements to coordinate the progress of the projects.

## IX ACKNOWLEDGEMENTS

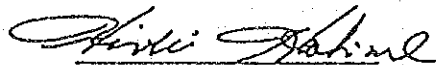
19. The Bank's Mission and the JICA Study Team wish to record their appreciation and gratitude to the officials from the Lao Government and NPL who have assisted the Bank's Mission, JICA and the Bank's consultants in facilitating their work. All parties re-affirm that this Memorandum of Understandings has been prepared with the greatest of goodwill but is subject to the agreement of their respective higher authorities.

For Government of  
Lao PDR



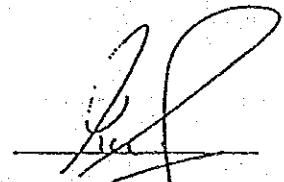
SEUNE PHETSANGHANE  
Vice-Minister  
Ministry of Communications,  
Transport, Post &  
Construction

For Government of  
Japan



HIROKI HASHIZUME  
Team Leader  
JICA Basic Design Study Team

For Asian  
Development Bank



IAN B. POWELL  
Mission Leader

Vientiane, Lao PDR  
2 April 1992

LIST OF PARTICIPANTSMinistry of Communications, Transport, Post & Construction, Lao PDR

Mr. Seune Phetsanghane	Vice-Minister, Construction
Mr. Kongfa Phoummasak	Adviser to the Vice-Minister
Mr. Khangeum Khamvongsa	Deputy Director, Department of International Relations

Ministry of Economy, Planning and Finance, Lao PDR

Mr. Chanthavong Saignasith	Director, Capital Investment
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Ministry of External Economic Relations, Lao PDR

Mr. Somchith Inthamith	Deputy Director, International Cooperation Department
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Nam Papa Lao

Mr. Boriboun Sanasisane	General Manager
Mr. Somlith Silaphet	Deputy General Manager
Mr. Pinkeo Saycocie	External Liaison Officer

Embassy of Japan, Lao PDR

Mr. Shinji Nagashima	First Secretary
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JICA Basic Design Study Team

Mr. Hiroki Hashizume	Team Leader
Mr. Hideo Miyamoto	Grant Aid Planner
Mr. Takayuki Niikura	Survey Team Leader
Mr. Hiroyasu Yoda	Water Supply Engineer

Asian Development Bank

Mr. Ian Powell	Mission Leader
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Bank Consultants

Mr. Raymond Miles	Water Supply Engineer/Team Leader
Mr. Antony Feeny	Financial Analyst/ Institutional Specialist

TENTATIVE TIME SCHEDULE OF EACH PROJECT

Japanese Project

May 1992	Completion of field survey by JICA Study Team
August 1992	Submission of DFR by JICA Study Team
August 1992	Explanation of JICA Study Team's DFR to the Lao Government
October 1992	Completion of JICA Study Team's Final Report
before March 1996	Expected project completion

Bank Project

April 1992	Completion of ADB's Fact-Finding Mission
August 1992	ADB Appraisal Mission
October 1992	Government of Lao - ADB loan negotiations
February 1993	Loan effectiveness
pre-mid 1993	Consultants appointed
pre-end 1993	Design and construction of project commences
end 1995	Expected project completion

MINUTES OF DISCUSSIONS  
ON  
BASIC DESIGN STUDY ON THE PROJECT  
FOR  
IMPROVEMENT OF WATER SUPPLY FACILITIES  
IN VIENTIANE PREFECTURE  
IN  
THE LAO PEOPLE'S DEMOCRATIC REPUBLIC

Based on the results of the preliminary study, the Japan International Cooperation Agency (JICA) decided to conduct a Basic Design Study on the Improvement of Water Supply Facilities in Vientiane Prefecture (hereinafter referred to as "the Project").

JICA sent to Lao People's Democratic Republic (the Lao PDR) a study team headed by Mr. Hiroki HASHIZUME, Deputy Director for International Cooperation, International Affairs Division, Ministry of Health and Welfare. The team is scheduled to stay in the Lao PDR from 22nd March to 14th May, 1992.

The team held discussions with the officials concerned of the Government of the Lao PDR (the Lao Government) 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 a report of the Basic Design Study.

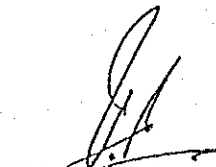
Vientiane, April 4th, 1992



Mr. HASHIZUME, Hiroki  
Leader  
Basic Design Study Team  
JICA



Mr. KHAMYONGSA, Khanngoun  
Deputy Director  
Dep. of International Relations  
Ministry of Communications,  
Transport, Post and Construction



Mr. SANASISANE, Boriboun  
General Manager  
Nam Papa Lao, MCTPC

## ATTACHMENT

### 1. Objective

The objective of the Project is to improve water supply situation in Vientiane Prefecture in order to promote public health and to upgrade living standards of inhabitants, by expanding and rehabilitating Chinaimo Treatment Plant and extending pipelines to Tha Deua area.

### 2. Project Site

The project sites are located at Chinaimo and Tha Deua area in Vientiane Prefecture.

### 3. Executing Agency

Lao Water Supply Authority (Nam Papa Lao) under the Ministry of Communications, Transport, Post and Construction (MCTPC) is responsible for the administration and execution of the Project.

### 4. Items Requested by the Lao Side

After discussions with the Basic Design Study Team (the Study Team), the followings were finally requested by the Lao side, among the items requested in November, 1991.

(1) Expansion of Chinaimo Treatment Plant by 40,000m<sup>3</sup>/day including construction of a clear water reservoir with 30 - 60 minutes' storage capacity.

(2) Rehabilitation of Chinaimo Treatment Plant to recover design production capacity of 40,000m<sup>3</sup>/day, including rehabilitation of the intake such as silt removal and replacement of raw water pumps to meet production capacity of 80,000m<sup>3</sup>/day.

As regards pipeline extension to Tha Deua, Nam Papa Lao addressed necessity of urgent implementation. The Study Team recognized its necessity because of rapid development in the area as expected in connection with "Mittaphap (Friendship) Bridge" under construction. Both parties agreed that the scope of the present Study includes the pipeline extension to Tha Deua and construction of a related elevated reservoir.

However, the final items of the Project will be decided after further studies.

### 6. Japan's Grant Aid System

(1) The Lao Government has understood the system of Japanese Grant Aid explained by the Study Team.

(2) The Lao Government will take 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.

### 7. Schedule of the Study

(1) The Study Team will proceed to further field surveys in the Lao PDR until May 14, 1992.

(2) JICA will prepare the draft report in English and dispatch a mission in order to explain its contents around August, 1992.

(3) In case that the contents of the report is accepted in principle by the Lao side, JICA will complete the final report and send it to the Lao Government by October, 1992.

#### 8. Other Relevant Issues

(1) On condition that Japan's Grant Aid is extended to the Project;

1) The Lao Government will allocate the necessary budget to the Project for operation and maintenance.

2) The Nam Papa Lao will recruit the necessary personnels for smooth operation and maintenance of the Project.

(2) In order to effectively operate and maintain facilities/equipment to be provided under the Project on condition that Japan's Grant Aid is extended, both sides recognized the necessity to improve technical and managerial capability of Nam Papa Lao and had discussions on this matter as follows:

1) The Lao side expressed the hope for (i) technical guidance/advice by a Japanese long-term expert, and (ii) training opportunity of counterpart personnels in Japan.

2) The Study Team explained the Japanese technical cooperation system and pointed out necessity of separate requests to be made by the Lao Government through diplomatic channel when such cooperation is needed.

3) The Study Team also suggested the Lao side to utilize every possible opportunity to enhance its technical and managerial aspects.



Annex: Necessary measures to be taken by the Lao Government in case Japan's Grant Aid is executed.

1. To secure the site for the Project.
2. To clear, level and reclaim the site prior to commencement of the construction.
3. To undertake incidental outdoor works such as gardening, fencing, gates and exterior lightening in and around the site.
4. To construct the access road to the site prior to commencement of the construction.
5. To provide facilities for distribution of electricity, water supply, telephone, drainage, sewage and other incidental facilities to the Project site.
  - 1) Electric distributing line to the site.
  - 2) Water distribution main to the site.
  - 3) Drainage main to the site.
  - 4) Telephone trunk line to the main distribution panel of building.
  - 5) General furniture such as carpets, curtains, tables, chairs and others.
6. To bear commissions to the Japanese foreign exchange bank for the banking services based upon the Banking Arrangement.
7. To exempt taxes and to take necessary measures for customs clearance of the materials and equipment brought for the project at the port of disembarkation.
8. 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 into the Lao PDR and stay therein for the performance of their work.
9. To maintain and use properly and effectively that the facilities constructed and equipment purchased under the Grant.
10. To bear all the expenses, other than those to be borne by the Grant, necessary for construction of the facilities as well as for the transportation and the installation of the equipment.

Date: 7 May, 1992

Mr. Boriboun SANASISANE  
General Manager  
Nam Papa Lao

Re: Submittal of Records of Discussions

Dear Sir,


We are sending herewith records of discussions between Nam Papa Lao, the agencies concerned of the Lao PDR and the JICA Study Team on May 5, 1992. The records describe the major issues discussed and confirmed at the Meeting.

For your reference, the JICA Study Team has further developed a table that lists the proposed scope of rehabilitation and expansion of Chainaimo Water Treatment Plant, on the basis of the results of above discussions.

It should be noted that the scope of the JICA basic design will be subject to an approval by higher officials in the Government of Japan.

We deeply appreciate Nam Papa Lao's cooperation and assistance extended to the JICA Study Team during its stay in Vientiane.

Yours sincerely,



T. NIKURA  
Survey Team Leader  
JICA Basic Design Team

cc: All attendants list attached to the record of discussion

## RECORDS OF DISCUSSIONS

1. DATE: 9:30am - 11:30am, 5 May, 1992
2. PLACE: Meeting room of Nam Papa Lao office
3. ATTENDANTS: Refer to Attendant List attached hereto.
4. ISSUES DISCUSSED:

Succeeding to the discussions hold on 30 April between officials of Nam Papa Lao and the JICA Study Team, an explanation to the agencies and ministries concerned of the Lao PDR was made to clarify the possible scope of the JICA basic design.

1) After an opening remark by Mr. Boriboun, the JICA Study Team explained the proposed scope of rehabilitation and expansion of Chinaimo Water Treatment Plant, of which basic design will be completed in Japan by the end of September, 1992.

2) A question was raised by Nam Papa Lao regarding necessity of power generators. The JICA Study Team explained that the generators for emergency use generally require much investment and maintenance cost for periodical testing. According to operation records compiled in Chinaimo Water Treatment Plant, power failures have been observed twice or three times annually in the past few years, less frequent in high tension line than in low power line to the domestic users. The generators will be less frequently in use after completion of distribution network and elevated tanks which will be constructed under financial aid from ADB to alleviate water shortage during power failure. Under the circumstances, installation of power generators will merely increase Nam Papa Lao's expenditures for maintenance.

3) The JICA Study Team, further, explained the proposed scope of the pipeline extension to Tha Duea based on field surveys conducted in cooperation with Nam Papa Lao staff and the Team.

4) Nam Papa Lao asked the JICA Study Team's assistance in explaining to a land owner the necessity of land acquisition for the proposed site of the elevated tank.

5) The concept, scope and components proposed by the JICA Study Team were accepted by Nam Papa Lao and the Lao PDR.

List of Attendants (Alphabetical order)

Time: 9:30 - 11:30am

Date: 5 May, 1992

<u>No.</u>	<u>Name</u>	<u>Position &amp; Organization</u>
1.	Mr. Boriboun Sanasisane	General Manager, Nam Papa Lao
2.	Dr. Bountheuang	Deputy Director, Ministry of Foreign Economic Relations
3.	Mr. Ishii Yutaka	JICA Study Team
4.	Mr. Miyake Akihiro	JICA Study Team
5.	Mr. Niikura Takayuki	Survey Team Leader, JICA Study Team
6.	Mr. Ochai Hitoshi	JICA Study Team
7.	Mr. Oth Keomanivong	Nam Papa Lao
8.	Mr. Phaytoun Thoumpaseuth	Vientiane Prefecture
9.	Mr. Pinkeo Saycocie	Nam Papa Lao
10.	Mr. Sichanh Souphanthavong	Nam Papa Lao
11.	Mr. Somlith Silaphet	Nam Papa Lao
12.	Mr. Somphone Dethoudom	Director, Department of Housing and Urban Planning, MCTPC
13.	Mr. Ueda Takashi	JICA Study Team
14.	Mr. Yoda Hiroyasu	JICA Study Team



TABLE - PROPOSED SCOPE OF REHABILITATION AND EXPANSION (1)

FACILITIES	REHABILITATION	EXPANSION	REMARKS
<p>1. RAW WATER INTAKE</p> <p>a. Raw Water Pumps</p> <p>b. Silt Removal</p> <p>c. Geared Trolley Type Chain Hoist</p> <p>d. Raw Water Level Meter</p> <p>e. Motor Control Center (MCC)</p> <p>f. Bank Protection</p>	<p>18m<sup>3</sup>/min x 14.8m x 75kw - 3 sets overhaul</p> <p>Manual lifting to motor driven</p> <p>Replaced by differential-pressure type</p> <p>Dismantled</p> <p>Bank protection for drain channel and pier at the downstream of the intake</p>	<p>18m<sup>3</sup>/min x 14.8m x 75kw - 2 sets installation</p> <p>One crab-bucket as dredger - fixed type with concrete foundation (pier)</p> <p>Extended I-beam both for new and existing</p> <p>MCC expanded for control of six pumps and silt removal</p>	

TABLE - PROPOSED SCOPE OF REHABILITATION AND EXPANSION (2)

FACILITIES	REHABILITATION	EXPANSION	REMARKS
<p>2. RAW WATER TRANSMISSION</p> <p>a. Pipeline</p> <p>b. Pipeline</p> <p>c. Flow Meter Chamber</p> <p>d. Receiving Well</p> <p>e. Sampling Pipes</p>		<p>Dia. 800 mm - SP branch up to flow meter chamber</p> <p>Dia. 1,100mm - SP from meter chamber to receiving well.</p> <p>Dia. 1,100mm ultrasonic flow meter and flow control valve with meter chambers</p> <p>Reinforced concrete structure</p> <p>Dia. 25mm - PVC</p>	<p>See DWG- 2</p>

TABLE - PROPOSED SCOPE OF REHABILITATION AND EXPANSION (3)

FACILITIES	REHABILITATION	EXPANSION	REMARKS
<p>3. FLOCCULATION AND SEDIMENTATION</p> <p>a. Civil Work</p>	<p>Dia. 800mm SP pipeline from Receiving Well to Rapid Mixing Chamber</p> <p>Rapid Mixing Chamber construction</p> <p>Mechanical mixing flocculation basin to vertical zig-zag flow type</p> <p>Split Roll to perforated wall</p> <p>Two perforated walls</p> <p>Overflow-weir trough installation</p> <p>Separation walls for desludging</p>	<p>Flocculation and sedimentation basins with 40,000 m<sup>3</sup>/day capacity</p>	<p>See DWG- 1</p> <p>See DWG- 3</p> <p>See DWG- 3</p>
<p>b. Flash Mixer</p>	<p>Existings to be used after overhaul and installed at new mixing basins</p>	<p>One flash mixer newly installed</p>	
<p>c. Sludge Drain Valve</p>	<p>4 top valves dismnnited and replaced by flat valves</p>	<p>Same as rehabilitation</p>	



TABLE - PROPOSED SCOPE OF REHABILITATION AND EXPANSION (4)

FACILITIES	REHABILITATION	EXPANSION	REMARKS
<p>d. Washing Pipes</p> <p>e. Washing Pump</p> <p>f. Flushing pipes</p> <p>g. Settled Water Channel Drain Valve</p> <p>h. Settled Water Collecting Channel Drain Valve</p> <p>i. Water Level Alarm Devices</p>	<p>Hose hanger box dismantled and pipes installed in higher level up to freeboard</p> <p>0.72m<sup>3</sup>/min x 25m x 5.5kw - one set to be replaced</p> <p>Dia. 250mm pipe installation at the end bottom of sedimentation basin</p> <p>Dia. 100mm flat valve x 2 sets newly installed</p> <p>Dia. 100mm top-valve dismantled</p> <p>Installed at settled water channel</p>		

TABLE - PROPOSED SCOPE OF REHABILITATION AND EXPANSION (5)

FACILITIES	REHABILITATION	EXPANSION	REMARKS
<p>4. FILTERS</p> <p>a. Filter Influent Valves</p> <p>b. Air Blower</p> <p>c. Air Compressor</p> <p>d. Vacuum Pump</p> <p>e. Console Desk</p> <p>f. Clogging Meter</p> <p>g. Filtered Water Flow Meter</p> <p>h. Flow Control Valve</p> <p>i. Filter Media &amp; Underdrain</p>	<p>Clap valves to be replaced by gates to be operated by pneumatic actuator</p> <p>Overhaul</p> <p>Overhaul</p> <p>Dismantled</p> <p>4 differential pressure type meters installed</p> <p>Filter media to be supplemented and porous concrete slabs to be renewed.</p>	<p>Four (4) filters with a capacity of 40,000m<sup>3</sup>/day</p> <p>Same as rehabilitation</p> <p>One newly installed</p> <p>Two newly installed</p> <p>New console desk for whole system</p> <p>Same as rehabilitation</p> <p>An overflow Weir</p> <p>Dia. 1,100mm butterfly valve</p>	

TABLE - PROPOSED SCOPE OF REHABILITATION AND EXPANSION (6)

FACILITIES	REHABILITATION	EXPANSION	REMARKS
j. Backwash Tank Water Level Alarm Devices	Dismantled and replaced by electrode type detector		

TABLE - PROPOSED SCOPE OF REHABILITATION AND EXPANSION (7)

FACILITIES	REHABILITATION	EXPANSION	REMARKS
5. DISTRIBUTION FACILITIES			
a. Distribution Pumps	Overhaul (motors)	14m <sup>3</sup> /min x 56m x 180kw - 3 sets installed	
b. Distribution Pump Discharge Valve	Manual to motor driven control	3 sets of motor driven valves	
c. MCC	Overhaul	Newly installed for monitoring and operating whole system	
d. Distribution Flow Meter	Dismantled	Ultrasonic flow meter	
e. Distribution Pressure Meter		Bourdon tube pressure meter	
f. Clear Water Reservoir		Effective storage capacity of 3,000m <sup>3</sup>	One hour storage of production

TABLE - PROPOSED SCOPE OF REHABILITATION AND EXPANSION (8)

FACILITIES	REHABILITATION	EXPANSION	REMARKS
6. CHEMICAL DOSAGE			
a. Alum			
1) Solution Tank	Dismantled and I-beam extended to the tank	Tanks uni-acid, with a capacity of 8.4m <sup>3</sup> - 4 units	
2) Mixer	Dismantled	ditto - 4 units	
3) Feeder		ditto - 2 units (+1 unit)	
b. Lime			
1) Solution Tank	Dismantled	10m <sup>3</sup> RC made tank - 2 units	
2) Mixer	Dismantled	ditto - 2 units	
3) Feeder		Pre-Lime - 1 unit (+1 unit), Post-Lime - 1 unit	
c. Hypochlorite			
1) Solution Tank	Dismantled	Pre-C12 - 1 unit, Post-C12 - 2 units	
2) Mixer	Replaced	Mixers - 3 unit	
3) Feeder		Pre-C12 - 1 unit, Post-C12 - 1 unit (+ 1 unit)	
d. MCC	Dismantled	New MCC installed	

TABLE - PROPOSED SCOPE OF REHABILITATION AND EXPANSION (9)

FACILITIES	REHABILITATION	EXPANSION	REMARKS
<p>7. ELECTRICAL FACILITY &amp; INSTRUMENTATION</p> <p>a. Power Substation</p>		<p>Capacity 2,000KVA to be constructed for parallel operation</p>	
<p>b. Monitoring Panel</p>	<p>Graphic panel to be installed in Administration Building</p>		

TABLE - PROPOSED SCOPE OF REHABILITATION AND EXPANSION (10)

FACILITIES	REHABILITATION	EXPANSION	REMARKS
<p>8. OTHERS</p> <p>a. Interphone</p> <p>b. Draft Chamber</p>	<p>One existing sink dismantled</p>	<p>Installed at central control room to communicate with raw water pump station, distribution pump station and control room.</p> <p>New sink installed</p>	

LAO PEOPLE'S DEMOCRATIC REPUBLIC  
GOVERNMENT OF JAPAN  
ASIAN DEVELOPMENT BANK

IMPROVEMENT OF WATER SUPPLY FACILITIES IN VIENTIANE PREFECTURE  
REHABILITATION AND UPGRADING OF VIENTIANE WATER SUPPLY

Minutes of Tripartite Coordination Meeting Held  
on 17 August 1992 at Nam Papa Lao, Vientiane

I. INTRODUCTION

1. The Government of the Lao People's Democratic Republic (the Lao Government) has requested the Government of Japan to provide grant assistance for Improvement of Water Supply Facilities in Vientiane Prefecture. In response to this request, the Japan International Cooperation Agency (JICA) sent a Preliminary Study Team in November 1991 and a Basic Design Study Team in March 1992 to conduct field surveys and to discuss the possible scope of the Japanese grant for Improvement of Water Supply Facilities in Vientiane Prefecture. In August 1992, the JICA Basic Design Study Team visited Lao PDR again to explain the draft final report of the Basic Design Study and to confirm the scope of the Japanese assistance although the scope is subject to final approval by higher authorities of the Japanese Government.

2. The Lao Government has requested the Asian Development Bank (the Bank) to finance the rehabilitation and upgrading of the water supply system of Vientiane. A feasibility study carried out by consultants engaged by the Bank for this purpose was finalized in April 1992. The Bank mounted a Fact-Finding Mission in March/April 1992 to further develop the Rehabilitation and Upgrading of Vientiane Water Supply Project. Discussions were held between the Lao Government, JICA and the Bank to coordinate the efforts of JICA and the Bank towards the improvement of the Vientiane water supply system. In August 1992, an Appraisal Mission from the Bank visited Lao PDR to firm up the scope of the project and implementation arrangements. The visits of the JICA Study Team and Bank Appraisal Mission in August were timed to coincide, so that there was an optimum opportunity for project coordination between the Lao Government, JICA and the Bank.

3. The projects are accorded high priority by the Lao Government in view of the imminent shortage of potable water in Vientiane and the importance of water supply for the further development of the city and the health of its population.

4. A tripartite coordination meeting was held at Nam Papa Lao (NPL), Vientiane, Lao PDR on 17 August 1992 between the Lao Government, the JICA Study Team and the Bank Mission to confirm the scope of the project components to be covered by JICA and the Bank and to ensure proper coordination between the components. These minutes record the main issues discussed at the meeting and the understandings reached. The understandings reflected herein are subject to approval by higher authorities in the Lao Government, the Japanese Government and the Bank. A list of participants of the meeting is attached hereto as Annex A.



## II. PROJECT COMPONENTS

5. The components covered by the Japanese grant will comprise the following:

- (i) Rehabilitation of intake at Chinaimo water treatment plant (WTP);
- (ii) Rehabilitation of Chinaimo WTP;
- (iii) Expansion of Chinaimo WTP from 40,000 cmd to 80,000 cmd capacity;
- (iv) Provision of a new 3,300 cm groundlevel reservoir of Chinaimo;
- (v) Provision of about 15 km of transmission and distribution main pipeline to the Tha Deua area;
- (vi) Provision of a 1,500 cm elevated storage tank; and
- (vii) Provision of consulting services for design and construction supervision.

6. The JICA Study Team explained that the above physical components would be implemented in three steps, namely:

- (1) Rehabilitation of intake;
- (2) Expansion of WTP; and
- (3) Rehabilitation of WTP and provision of pipeline and elevated storage tank.

The JICA Study Team highlighted the importance of (i) project coordination between the Japanese grant-aided and Bank-financed components; (ii) training of NPL staff; and (iii) effective O&M.

7. The Bank financed components will include:

- (i) rehabilitation and expansion of reticulation system;
- (ii) construction of transmission pipelines;
- (iii) construction of new service reservoirs including new pipelines and rehabilitation of existing service reservoirs; and
- (iv) Project implementation assistance, including consulting services for design and construction supervision, and institutional strengthening of NPL, including consulting services to provide on-site training.

In addition to the above components which would be financed under the Bank loan, a technical assistance grant would be provided by the Bank in conjunction with the loan for setting up a Management Information System (MIS) within NPL and to assist NPL in the implementation of its computerized billing system.

8. The Bank Mission stressed the importance of cost recovery and explained that this issue, including tariff adjustment, had been incorporated as one of the vital elements in the Institutional, Operational and financial Action Plan. This Action Plan, aimed at improving NPL's operations, had been developed in consultation between NPL and the Bank Mission and would be implemented by NPL during project implementation.

### III. TIME SCHEDULE FOR IMPLEMENTATION

9. Implementation of the JICA components is expected to be completed by the end of fiscal year 1995 (March 1996) if smoothly implemented. The Bank components are expected to be largely completed around the same time. Some more time (until end 1996) would be needed for the rehabilitation of the reticulation network. Also, the Bank implementation schedule includes a contract maintenance period under the project. For this reason, the Bank's implementation schedule runs until mid 1997. The Bank Mission confirmed that the implementation schedule for the transmission lines has been set up in such a way that it would tie in with the completion date for the WTP rehabilitation under the JICA component.

### IV. IMPLEMENTATION ARRANGEMENTS

10. It was discussed and agreed that a Project Management Unit (PMU) and a Project Implementation Coordination Committee (PICC) will be established for the Vientiane water supply project. Staffing, equipment and office space rental would be funded under the Bank loan.

11. It was agreed that, while the project implementation consultants provided under the JICA component and those provided under the Bank component would be engaged separately under different rules, it is very important that they coordinate their work closely with each other. The Bank Mission suggested that this should also be stipulated in the terms of reference for the consultants for both components. The PMU would be responsible for coordination between the consultants.

12. The Lao Government emphasized the importance of cost recovery and in connection therewith, tariff reviews, O&M and training. It is the Lao Government's policy to aim for water tariffs at such level that full cost recovery can be achieved without any subsidies. As a measure of Government's commitment to this policy, it cited recent increases in tariffs in Pakse, Saravane, Attapeu and Sekong and said that it was considering an increase in the tariff in Vientiane.

### V. TIMETABLE FOR FURTHER PROCESSING

13. The JICA Study Team explained that the project proposal based on the results of the Basic Design Study would be submitted for approval to the Cabinet Meeting which would be held in October/November 1992. If approved by the Cabinet, the implementation of the project under the grant-aid would be officially confirmed in an Exchange of Notes between the Japanese Government and the Lao Government. Such Exchange of Notes could be expected to take place by the end of 1992. The Exchange of Notes would cover the funding for one year; the funding required for the project in the following year would need to be confirmed in a new Exchange of Notes, and so forth until project completion.

14. The Bank Mission stated that one of the conditions for effectiveness of the Bank loan (in addition to standard conditions, such as provision of a satisfactory legal opinion) would be confirmation by the Lao Government that the provision of the grant by the Japanese Government for the project would be confirmed. For this purpose, it would be sufficient if the Lao Government would inform the Bank that the Exchange of Notes between the Japanese Government and the Lao Government in respect of the JICA component of the project had taken place.

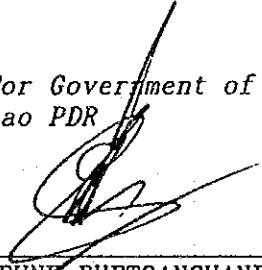
15. The Bank's tentative schedule for further processing of the loan is:

- Loan Negotiations                      Week IV October 1992
- Board Consideration                      Week IV November 1992

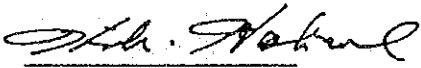
#### VI. ACKNOWLEDGEMENTS

16. The Bank's Mission and the JICA Study Team wish to express their appreciation and gratitude to the officials and staff of the Lao Government and NPL for assisting the Bank's Mission and the JICA Study Team and facilitating their work.


For Government of  
Lao PDR

  
SEUNE PHETSANGHANE  
Vice Minister  
Ministry of Communications,  
Transport, Post and  
Construction

For Government of  
Japan

  
HIROKI HASHIZUME  
Team Leader  
JICA Basic Design  
Study Team

For Asian  
Development Bank

  
IAN B. POWELL  
Mission Leader

Vientiane, Lao PDR  
18 August 1992

Annex:

- A. List of Participants

LIST OF PARTICIPANTSMinistry of Communications, Transport, Post and Construction (MCTPC)

Mr. Seune Phetsanghane	Vice Minister
Dr. Somphone Dethoudom	Director, Housing and Town Planning Department

Ministry of External Economic Relations (MEER)

Dr. Bountheuang Mounlasy	Deputy Director, Bilateral Cooperation Department
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NAM PAPA LAO

Mr. Boriboun Sanasisane	General Manager
Mr. Somlith Silaphet	Deputy General Manager
Mr. Bounnou Homsombat	Deputy General Manager
Mr. Pinkeo Saycocie	Deputy Project Manager
Mr. Khamsouk Khamphilavanh	Project Advisor

Vientiane Municipality

Mr. Oudone Vathanaxay	Chief, Bureau Economic External Relation
-----------------------	---

Japan International Cooperation Agency (JICA) Basic Design Study Team

Mr. Hiroki Hashizume	Team Leader
Mr. Hideo Miyamoto	Grant Aid Planner
Mr. Takayuki Niikura	Survey Team Leader (Nihon Suido Consultants)
Mr. Akihiro Miyake	Manager (Nihon Suido Consultants)
Mr. Yutaka Ishii	Pipeline Engineer (Nihon Suido Consultants)

Asian Development Bank

Mr. Ian B. Powell	Mission Leader
Ms. Eveline Fischer	Counsel
Mr. Arjun Thapan	Financial Analyst
Mr. Lindsay Black	Staff Consultant



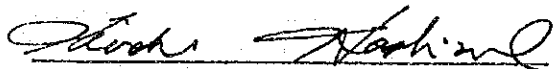
MINUTES OF DISCUSSIONS  
ON  
BASIC DESIGN ON THE PROJECT  
FOR  
IMPROVEMENT OF WATER SUPPLY FACILITIES  
IN VIENTIANE PREFECTURE  
IN  
THE LAO PEOPLE'S DEMOCRATIC REPUBLIC  
(CONSULTATION ON DRAFT REPORT)

In March 1992, the Japan International Cooperation Agency (JICA) dispatched a Basic Design Study Team on the Project for Improvement of Water Supply Facilities in Vientiane Prefecture (hereinafter referred to as 'the Project') to the Lao People's Democratic Republic (the Lao PDR), and through discussion, field survey, and technical examination of the results in Japan, has prepared the draft report of the study.

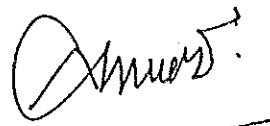
In order to explain and to consult the Lao side on the components of the draft report, JICA sent to the Lao PDR the Team, which is headed by Mr. Hiroki HASHIZUME, Deputy Director for International Cooperation, International Affairs Division, Ministry of Health and Welfare, and is scheduled to stay the country from August 12 to 19, 1992.

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


Vientiane, August 18, 1992



Mr. HASHIZUME, Hiroki  
Leader  
Basic Design Study Team  
JICA



Mr. DETHOUDOM, Somphone  
Director of Housing and Town  
Planning Department,  
Ministry of Communications,  
Transport, Post and Construction



Mr. SANASISANE, Boriboun  
General Manager  
Nam Papa Lao, MCTPC

ATTACHMENT:

1. Component of draft report

The Lao side expressed their views on such items as the alum solution tanks and the motors for the row water pumps. And after discussion, the Government of the Lao PDR has agreed and accepted in principle the components of the draft report proposed by the Team.

2. Japan's Grant Aid system

1) The Government of the Lao PDR has understood the system of Japanese Grant Aid explained by the Team.

2) The Government of the Lao PDR 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. Further schedule

The Team will make the final report in accordance with the confirmed items, and send it to the Government of the Lao PDR by October 20, 1992.

Annex: Necessary measures to be taken by the Lao Government in case Japan's Grant Aid is executed.

1. To secure the sites for the Project such as;
  - 1) Acquisition of land for the elevated storage tank
  - 2) Provision of land for pipe yard
  - 3) Others
2. To clear, level and reclaim the site prior to commencement of the construction.
3. To undertake incidental outdoor works such as gardening, fencing, gates and exterior lighting in and around the site.
4. To construct access roads to the site prior to commencement of the construction.
5. To provide facilities for distribution of electricity, water supply, telephone, drainage, sewage and other incidental facilities to the Project site.
  - 1) Electric distribution line to the site.
  - 2) Water distribution main to the site.
  - 3) Drainage main to the site.
  - 4) Telephone trunk line to the main distribution panel of building.
  - 5) General furniture such as carpets, curtains, chairs and others.
6. To bear commissions to the Japanese foreign exchange bank for the banking services based upon the Banking Arrangement.
7. To exempt taxes and to take necessary measures for customs clearance of the materials and equipment brought for the Project at the port of disembarkation.
8. To accord Japanese Nationals whose services may be required in connection with the supply of the products and services under the verified contract such facilities as may be necessary for their entry into the Lao PDR and stay therein for the performance of their work.
9. To maintain and use properly and effectively that the facilities constructed and equipment purchased under the Grant.
10. To bear all the expenses, other than those to be borne by the Grant, necessary for construction of the facilities as well as for the transportation and installation of the equipment.





付-1.5 収集資料リスト

- 分類 : 地図  
出所 : Geographic Service Office  
内容 : ヱィエンチャン市, 計画対象地域平面図, 縮尺1/10,000 (青焼コピー)
- 分類 : 社会経済  
出所 : A Joint Publication of the Ministry of External Economic, Relation and the National Chamber of Commerce & Industry INAUGURAL ISSUE, JUNE, 1991.  
内容 : 近年のラオス国の経済動向, INVESTMENT OPPORTUNITIES IN THE LAO PDR.
- 分類 : 社会経済  
出所 : Data files of the World Bank  
内容 : 人口動態, World Population Projection, 1989-1990 Edition
- 分類 : 社会経済  
出所 : The Economist Intelligence Unit  
内容 : 人口・経済・国家予算・貿易等に係わる年次報告書  
Indochina : Vietnam, Laos, Cambodia Country Profile 1991-92
- 分類 : 社会経済  
出所 : 国際開発ジャーナル 1991年3月及び1992年2月号  
内容 : ラオス国産業・財政・貿易及びインフレ率の推移等
- 分類 : 一般事項  
出所 : JICA 任国情報 1990年  
内容 : ラオス国 国土, 気候等の一般事項
- 分類 : 報告書  
出所 : UNDP/MCTPC, Lao Gov.  
内容 : ヱィエンチャン市マスタープラン  
SCHEMA DIRECTURE ET D' AMENAGEMENT URBAIN.  
PROGRAM DE DEVELOPMENT URBAN DE LA PREFECTURE DE VIENTIANE LAO/85/003,  
RAPPORT FINAL MAY 1989.

分類 : 報告書  
出所 : UNDP  
内容 : ヱィエンチャン市水道計画に係わる報告書  
PROJECT UNDP-UNCHS LAO/85/003-URBAN DEVELOPMENT PROGRAM IN THE  
PREFECTURE OF VIENTIANE  
REPORT ON SUPPLY OF POTABLE WATER IN URBAN VIENTIANE, DECEMBER 1989.  
(JICA資料)

分類 : 報告書  
出所 : UNDP/WORLD BANK, RAS/86/160  
内容 : 都市水道及び衛生セクターレビュー  
LAOS URBAN WATER SUPPLY AND SANITATION SECTOR REVIEW (JICA資料)  
VOL. -1 THE MAIN REPORT September 30, 1990  
VOL. -2 Annexes

分類 : 報告書  
出所 : MCTPC/ADB  
内容 : ヱィエンチャン市水道改善計画, フィージビリティスタディ  
VIENTIANE WATER SUPPLY, REHABILITATION AND UPGRADING, PROJECT T. A.  
1596-LAO  
- DRAFT FINAL REPORT, VOL. 1 - MAIN REPORT, MARCH 1992.  
- DRAFT FINAL REPORT, VOL. 2 - APPENDICES.

分類 : 報告書  
出所 : MCTPC  
内容 : メコン河橋梁建設後の地域開発計画 (架橋付近地域開発M/P)  
Report of Complex Planning of Mekong River Bridge (ラオ語の英文訳)  
Institute of Engineering Study - Urbanism  
MCTPC, Lao People's Democratic Republic

付属資料-2

付-2 ラオス国側負担経費

ラオス国側負担経費内訳

1. 資材倉庫工事 (チナイモ浄水場敷地内)

平屋 : 柱梁コンクリート造り、壁レンガ積  
床面積 : 432 m<sup>2</sup> (12 m x 36 m) 1 式 22,000 千Kip

2. 高架水槽用土地購入費等

敷地面積 : 4900 m<sup>2</sup> (約 70 m x 70 m) 1 式 42,000 千Kip  
門、フェンス、倉庫、守衛建物工事 1 式 15,000 千Kip

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合 計 1 + 2 79,000 千Kip  
(約15百万円)





JICA