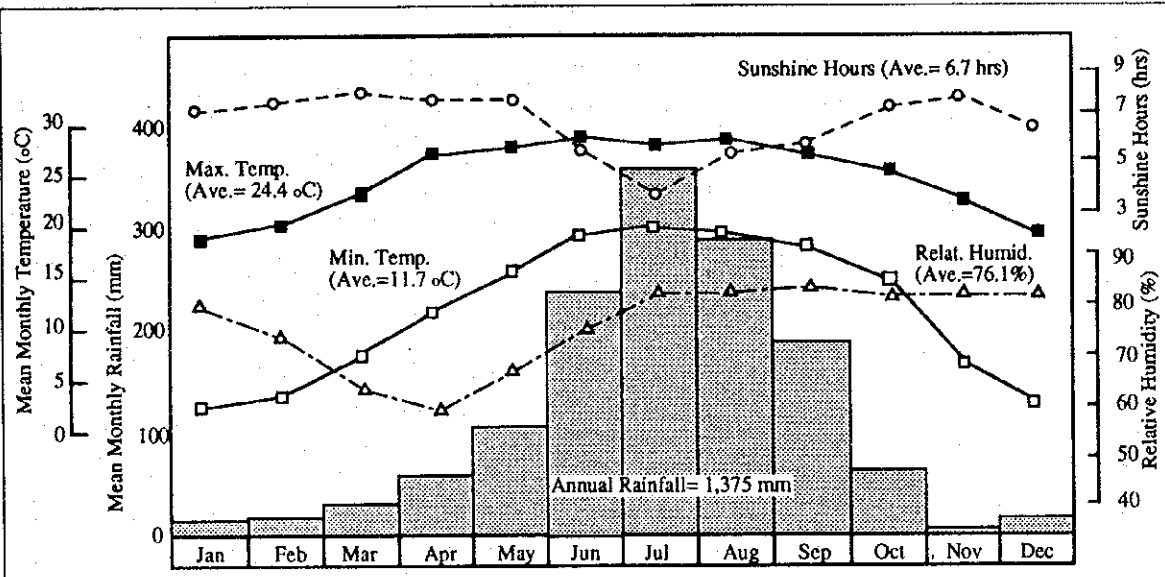
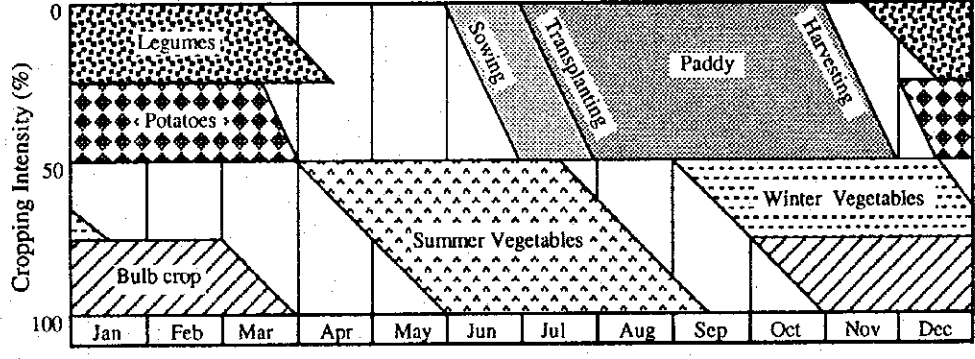


図 3-2 計画作付け体系 (1/2)  
< Intensive area >

HIS MAJESTY'S GOVERNMENT OF NEPAL  
THE STUDY ON  
THE REHABILITATION OF GOVERNMENT DEVELOPED  
IRRIGATION SCHEMES IN THE KATMANDU VALLEY  
JAPAN INTERNATIONAL COOPERATION AGENCY



Remote - I



Remote - II

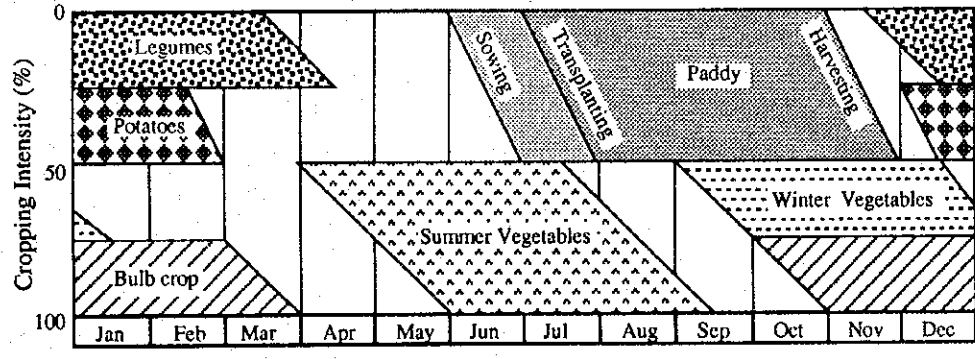


図 3-2 計画作付け体系 (2/2)  
< Remote area >

HIS MAJESTY'S GOVERNMENT OF NEPAL  
 THE STUDY ON  
 THE REHABILITATION OF GOVERNMENT DEVELOPED  
 IRRIGATION SCHEMES IN THE KATHMANDU VALLEY  
 JAPAN INTERNATIONAL COOPERATION AGENCY



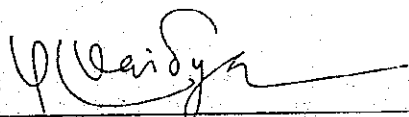
## 添付資料

- 添付資料 - 1 業務実施協定書 (Scope of Work) 及び協議議事録
- 添付資料 - 2 インセプションレポート協議議事録 (Minutes of Meeting on the Inception Report)
- 添付資料 - 3 プログレスレポート (I) 協議議事録及びフェーズ - I 調査団会議議事録 (Minutes of Meeting)
- 添付資料 - 4 中間報告書説明協議議事録 (Minutes of Meeting on the Interim Report)
- 添付資料 - 5 プログレスレポート (II) 協議議事録及びフェーズ - II 調査団会議議事録 (Minutes of Meeting)
- 添付資料 - 6 最終報告書 (案) 説明協議議事録 (Minutes of Meeting on the Draft Final Report)
- 添付資料 - 7 最終報告書 (案) に対するネパール政府のコメント (HMGN's Comments on the Draft Final Report)
- 添付資料 - 8 ネパール政府のコメントに対する返答 (Answers to the HMGN's Comments on the Draft Final Report)



SCOPE OF WORK  
FOR  
THE MASTER PLAN STUDY  
ON  
THE REHABILITATION FOR GOVERNMENT DEVELOPED IRRIGATION SCHEMES  
IN THE KATHMANDU VALLEY  
IN  
THE KINGDOM OF NEPAL  
AGREED UPON BETWEEN  
DEPARTMENT OF IRRIGATION  
MINISTRY OF WATER RESOURCES  
AND  
JAPAN INTERNATIONAL COOPERATION AGENCY

KATHMANDU, DECEMBER 16, 1992



Mr. Y. L. Valdyia  
Director General,  
Department of Irrigation,  
His Majesty's Government  
of Nepal



Mr. Norikazu Tsujii  
Leader,  
Preparatory Study Team,  
Japan International  
Cooperation Agency

## I. INTRODUCTION

In response to the request of His Majesty's Government of Nepal (hereinafter referred to as "HMGN"), the Government of Japan has decided to conduct the Master Plan Study on the Rehabilitation for Government Developed Irrigation Schemes in the Kathmandu Valley (hereinafter referred to as "the Study"), in accordance with the relevant laws and regulations in force in Japan.

Accordingly, Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of technical cooperation programs of the Government of Japan, will undertake the Study in close cooperation with the authorities concerned of HMGN.

The Department of Irrigation, Ministry of Water Resources (hereinafter referred to as "DOI") shall act as the counterpart agency to the Japanese study team and also as the coordinating body in relation with other governmental and non-governmental organizations concerned for the smooth implementation of the Study.

The present document sets forth the scope of work with regard to the Study.

## II. Objectives of the Study

The objectives of the Study are:

1. to formulate a master plan on the rehabilitation for government developed irrigation schemes in the Kathmandu Valley and to conduct a feasibility study in the selected model areas identified in the master plan and
2. to carry out technology transfer to the Nepalese counterpart personnel in the course of the Study.

## III. Study Area

The Study covers government developed irrigation schemes of approximately 9,000ha in the three districts (Kathmandu, Bhaktapur and Lalitpur) of the Kathmandu Valley.

## IV. Scope of the Study

In order to achieve the above objectives, the Study will consist of two(2) phases and will cover the following items.

1. Phase I

1.1. Collection and analysis of the following data and information, through the field survey on the following:

- (1) natural condition (topography, meteorology, hydrology, geology, soil, water quality, water resources, and environment);
- (2) social condition (population, regional socio-economy, social infrastructure, education, and regional development plan);
- (3) agriculture (land use, land tenure, cultivation technique, cropping pattern, yield, production, agricultural machinery, and livestock);
- (4) agro-economy (farmers economy, agricultural credit, processing, and marketing system);
- (5) agricultural infrastructure (water source, irrigation and drainage system, farm road, and rural water supply); and
- (6) agricultural supporting system (farmers' organizations, supporting organizations, and extension service organizations).

1.2. Composition of inventory list with investigation of structure scale, superannuation and damage of the irrigation and drainage facilities in the study area.

1.3. Identification of constraints of operation and maintenance of the irrigation and drainage in the study area.

1.4. Formulation of a master plan on the rehabilitation for government developed irrigation schemes in the study area and preparation of operation and maintenance manual for water management and irrigation facilities.

1.5. Selection of the model areas for the feasibility study.

1.6. Preparation of topographic maps at the scale of 1/5,000 for the model areas.

2. Phase II

2.1. Field survey for collection of supplementary data and information of the model areas.

2.2. Formulation of the agricultural development plan of the model areas by considering the following components:



- (1) Land use;
  - (2) Cropping pattern;
  - (3) Farming system;
  - (4) Irrigation and drainage;
  - (5) Rural infrastructure; and
  - (6) Agricultural supporting system.
- 2.3. Preparation of a preliminary design of the main facilities.
  - 2.4. Formulation of operation and maintenance plan.
  - 2.5. Preparation of the project implementation schedule.
  - 2.6. Estimation of the project costs and benefits.
  - 2.7. Overall evaluation of the project.
  - 2.8. Recommendation.

#### V. Study Schedule

The Study will be executed in accordance with the tentative schedule shown in the Annex.

#### VI. Report

JICA will prepare and submit the following reports in English to HMGN.

##### 1. Inception Report

Twenty (20) copies at the commencement of the Phase I field work.

##### 2. Progress Report (1)

Twenty (20) copies at the end of the Phase I field work.

##### 3. Interim Report

Twenty (20) copies at the commencement of the Phase II field work.

##### 4. Progress Report (2)

Twenty (20) copies at the end of the Phase II field work.

## 5. Draft Final Report

Twenty (20) copies at the end of the Phase II home office work. HMGN provides JICA with its comments on the Draft Final Report within one (1) month after receipt of the Draft Final Report.

## 6. Final Report

Fifty (50) copies within one (1) months after receiving HMGN's comments on the Draft Final Report.

## VII. Undertaking of HMGN

1. To facilitate smooth conduct of the Study, HMGN shall take necessary measures:

- (1) to secure the safety of the Japanese study team;
  - (2) to permit the members of the Japanese study team to enter, leave and sojourn in the Kingdom of Nepal for the duration of their assignment therein, and exempt them from foreign registration requirements and consular fees;
  - (3) to exempt the members of the Japanese study team from taxes, duties, fees and any other charges on equipment, machinery and other materials brought into the Kingdom of Nepal for the conduct of the Study;
  - (4) to exempt the members of the Japanese study team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Japanese study team for their services in connection with the implementation of the Study;
  - (5) to provide necessary facilities to the Japanese study team for the remittance as well as utilization of the funds introduced into the Kingdom of Nepal from Japan in connection with the implementation of the Study;
  - (6) to secure permission for entry into private properties or restricted areas for the implementation of the Study as and when necessity arises;
  - (7) to secure permission for the Japanese study team to take all data and documents related to the Study including photographs and maps out of the Kingdom of Nepal to Japan; and
  - (8) to provide medical services as needed. Its expenses will be chargeable on the members of the Japanese study team.
2. HMGN shall bear claims, if any arises, against the members

of the Japanese study team resulting from, occurring in the course of, or otherwise connected with, the discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or willful misconduct on the part of the members of the Japanese study team.

3. DOI shall, at its own expense, provide the Japanese study team with the following, in cooperation with the Department of Agriculture and authorities concerned;

- (1) available data and information related to the Study;
- (2) counterpart personnel;
- (3) suitable office space & facilities in the study area; and
- (4) credentials or identification cards.

#### VIII. UNDERTAKING OF JICA

For the implementation of the Study, JICA shall take the following measures:

1. to dispatch study teams, at its own expense, to the Kingdom of Nepal; and
2. to pursue technology transfer to the Nepalese counterpart personnel in the course of the Study.

#### IX. OTHERS

JICA and DOI shall consult with each other in respect of any matter that is not agreed upon in this document and may arise from or in connection with the Study.

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Annex

TENTATIVE SCHEDULE

Month																			
Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
Work in Nepal	[ ]														[ ]		[ ]		
Work in Japan	[ ]					[ ]												[ ]	
Topographic Mapping	in Nepal [ ] in Japan [ ]																		
Submission of Report	*				*							*	*				*	*	
	Ic/R				P/R(1)							It/R	P/R(2)				DF/R	F/R	
Phase	← Phase I →										← Phase II →								

(Note) Ic/R : Inception Report  
 P/R(1) : Progress Report(1)  
 It/R : Interim Report  
 P/R(2) : Progress Report(2)  
 DF/R : Draft Final Report  
 F/R : Final Report

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MINUTES OF MEETING  
ON  
SCOPE OF WORK  
FOR  
THE MASTER PLAN STUDY  
ON  
THE REHABILITATION FOR GOVERNMENT DEVELOPED IRRIGATION SCHEMES  
IN  
THE KATHMANDU VALLEY IN THE KINGDOM OF NEPAL

The preparatory study team (hereinafter referred to as "the Team") organized by Japan International Cooperation Agency (hereinafter referred to as "JICA"), and headed by Mr. Norikazu Tsujii, visited the Kingdom of Nepal from December 2 to December 18, 1992 for the purpose of discussing and confirming the Scope of Work for the master plan study on the rehabilitation for government developed irrigation schemes in the Kathmandu Valley in the Kingdom of Nepal (hereinafter referred to as "the Study").

The Team had a series of discussions with the officials concerned of the Department of Irrigation, Ministry of Water Resources of His Majesty's Government of Nepal (hereinafter referred to as "DOI") on the Scope of Work for the Study. The list of participants in a series of meetings is shown in the attached paper.

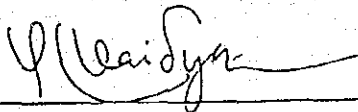
As a result of the discussions, the Team and the DOI agreed on the Scope of Work for the Study.

The following are the main issues discussed and agreed upon by both sides in relation to the Scope of Work for the Study.

1. The Team suggested approximately 3,000ha of the model areas to be studied at the level of feasibility study, but the DOI requested 5,000ha.  
As a result of examination, both sides agreed that the model areas is to be finalized depending upon outcome of master plan study.

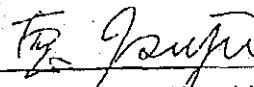
2. The office for the Japanese study team should be equipped with electricity, city water and telephone.
3. The DOI shall get a permission for using the aero-photograph covering the Study area and taking it out of the Kingdom of Nepal from the Survey Department and related authorities.
4. The DOI shall establish a coordinating committee which consists of representatives from the DOI and the Ministry of Agriculture for the Study before the beginning of the Study.
5. The DOI requested that the following equipment necessary for the Study be procured by JICA and be donated to the DOI after the termination of the Study. The Team promised to convey its request to the Government of Japan.
  - a. personal computer,
  - b. photocopy machine,
  - c. meteorology equipment,
  - d. hydrology equipment, and
  - e. water quality equipment.
6. The DOI requested the training of counterpart in Japan. The team promised to convey its request to the Government of Japan.

Kathmandu, December 16, 1992



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Mr. Y. L. Vaidya  
Director General,  
Department of Irrigation,  
His Majesty's Government  
of Nepal



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Mr. Norikazu Tsujii  
Leader,  
Preparatory Study Team,  
Japan International  
Cooperation Agency

## LIST OF PARTICIPANTS

## 1. Nepalese Side

## Department of Irrigation

Mr. Y. L. Vaidya	Director General
Mr. C. P. Rauniyar	Superintending Engineer, Planning & Design Division
Mr. K. Sharma	Acting Director, Central Regional Irrigation Directorate
Mr. M. S. Paudel	Senior Divisional Engineer, Planing Section
Mr. I. S. Thapa	Divisional Engineer, Central Regional Irrigation Directorate
Mr. B. Karki	Section Officer, Foreign Aid Division, Ministry of Finance

## 2. Japanese Side

Mr. Norikazu Tsujii	Leader of Preparatory Study Team, JICA
Mr. Yukihiro Ogawa	Member of Preparatory Study Team, JICA
Mr. Takuji Tanaka	Member of Preparatory Study Team, JICA
Mr. Yutaka Nozaki	Member of Preparatory Study Team, JICA
Mr. Tadao Ito	Member of Preparatory Study Team, JICA
Mr. Norio Naito	Staff of JICA Nepal Office

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MINUTES OF MEETING  
ON  
INCEPTION REPORT  
FOR  
THE MASTER PLAN STUDY  
ON  
THE REHABILITATION FOR GOVERNMENT DEVELOPED IRRIGATION  
SCHEMES  
IN  
THE KATHMANDU VALLEY IN THE KINGDOM OF NEPAL

1. DATE : April 8 , 1993 11:00 a.m. - 1:00 p.m.
2. PLACE : Meeting Room of DOI
3. ATTENDING PERSONNEL : As per attached list
4. SUMMARY OF DISCUSSION

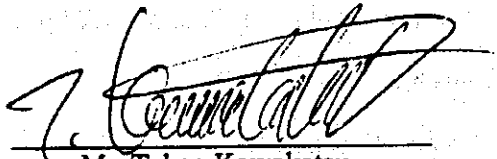
The JICA Study Team submitted the Inception Report to DOI and the Team Leader , Mr. T. Kawakatsu explained it to the attending DOI personnel. The Deputy Director General , Mr. C.P. Rauniyar expressed his general acceptance of the Report and discussion were made on almost every aspects of the project between DOI personnel and JICA Study Team , and both sides confirmed the following.

- (1) The basic concept and plan of operation for the Master Plan Study described in the Inception Report was accepted by DOI.
- (2) It was explained to JICA Team that a coordinating committee consisting of representatives from DOI and DOAD has been already in existence.
- (3) DOI has assigned the counterpart personnel for execution of the Master Plan Study as given in the attached list.  
DOI has also assigned a Project Manager who will act as coordinator between the officials concerned of the HMG/N and Japan.
- (4) DOI has made necessary arrangements for a suitable office space required for the Study Team.

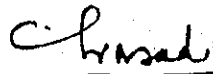


- (5) The JICA Study Team explained that there shall be provisions of trainings for counterpart personnel in Japan and DOI took note of it and assured the Study Team for the nomination of suitable personnel for this purpose.

April 9, 1993



Mr. Takao Kawakatsu  
Team Leader  
JICA Study Team for the M/P Study on  
the Rehabilitation for  
the Government Developed  
Irrigation Schemes in the Kathmandu Valley

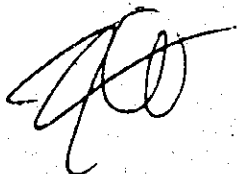


Mr. Y.L. Vaidya  
Director General  
Department of Irrigation,  
His Majesty's  
Government of Nepal

Witness



Shintaro Hayashi  
Leader of  
Advisory Committee



LIST OF ATTENDING PERSONNEL

Department of Irrigation , HMG/N

Mr. C.P. Rauniyar : DDG, DOI  
Mr. M.N. Aryal : Director, CRID  
Mr. K. Sharma : SDE , DOI  
Mr. S.P. Sharma : SDE , DOI  
Mr. M.S. Paudel : SDE , DOI  
Mr. Nobuharu Sasano : JICA Expert

Government of Japan

1. Advisory Committee

Mr. Shintaro Hayashi : Leader  
Mr. Akira Shimizu : JICA, Tokyo

2. Embassy of Japan

Mr. Hisaki Indou : Second Secretary

3. JICA Office Nepal

Mr. Norio Naito :  
Assistant Resident Representative

4. Study Team

Mr. Takao Kawakatsu : Leader  
Mr. Tatsumi Tanabe  
Mr. Masashi Shono  
Mr. Kazuyuki Ito

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**REGIONAL APPRAISAL AND CO-ORDINATION COMMITTEE**

1. REGIONAL DIRECTOR : DEPARTMENT OF AGRICULTURAL DEVELOPMENT,  
CENTRAL REGION
2. REGIONAL DIRECTOR : DEPARTMENT OF IRRIGATION,  
CENTRAL REGIONAL IRRIGATION DIRECTORATE
3. REGIONAL MANAGER : AGRICULTURAL DEVELOPMENT BANK, NEPAL
4. REGIONAL DIRECTOR : NATIONAL PLANNING COMMITTEE,  
CENTRAL REGIONAL OFFICE

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LIST OF COUNTERPART STAFF FOR M/P STUDY

<u>Name</u>	<u>Present Position</u>	<u>Task Assigned</u>
Mr. Keshav Sharma	SDE , CRID	PM / TL
Mr. M. L. Shrestha	Act. SDE , DIO , Kathmandu	D.T.L
Mr. N. D. Panday	DIE , DIO , Lalitpur	C.P. Staff
Mr. D.R. Pokharel	DIE , DIO , Bhaktapur	C.P. Staff
Mr. Rajeswar Yadav	Agro-Engineer, CRID	C.P. Staff
Mr. S. K. Shrestha	Agro-Economist , CRID	C.P. Staff
Mr. Ramesh Pradhan	Engineer, CRID	C.P. Staff

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MINUTES OF MEETING  
ON  
PROGRESS REPORT (1)  
FOR  
THE MASTER PLAN STUDY  
ON  
THE REHABILITATION FOR GOVERNMENT DEVELOPED IRRIGATION  
SCHEMES IN THE KATHMANDU VALLEY

1. DATE : August 18, 1993 12:00 a.m. - 2:00 p.m.
2. PLACE : Meeting Room of Department of Irrigation (DoI)
3. ATTENDANCE : As per attached list
4. SUMMARY OF DISCUSSION

The JICA Study Team explained the contents of Progress Report (1) in the meeting. The contents of the Progress Report (1) were basically accepted by DoI with the following suggestions.

- (1) To propose more intensive cropping pattern to match with the water balance study to be conducted and show precisely anticipated yield and production after implementation of rehabilitation projects.
- (2) To clarify more elaborately the present conditions and problems with the existing irrigation schemes by summarising the results of inventory survey to make clear the insufficient performance of the existing irrigation schemes.
- (3) To explain on-going urbanized conditions in the Kathmandu Valley clearly and forecast its impact on the sustainability of the projects to be implemented with further recommendation to the Government for the necessary action to be taken in this regard.

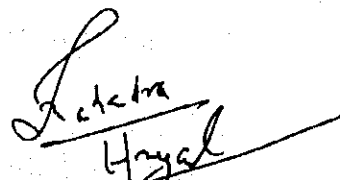
The DoI requested that the schedule for explanation of the Interim Report should be re-scheduled between Oct. 29, 1993 and Nov. 13, 1993 .

August 19, 1993



Takao Kawakatsu  
Team Leader

JICA Study Team  
For the Master Plan Study on  
the Rehabilitation for the  
Government Developed Irrigation Schemes  
In the Kathmandu Valley



Mahendra Nath Aryal  
Regional Director

Central Regional Irrigation  
Directorate  
Department of Irrigation,  
His Majesty's  
Government of Nepal

LIST OF ATTENDING PERSONNELDepartment of Irrigation (DoI), IIMG/N

- Mr. Mahendra Nath ARYAL : Regional Director,  
Central Regional Irrigation Directorate (CRID)
- Mr. Sharada Prasad SHARMA : Sr. Divisional Eng.  
Planning, Design & Research Division, DoI
- Mr. Madhu Sudan PAUDEL : Sr. Divisional Eng.  
Planning, Design & Research Division, DoI
- Mr. Keshab SHARMA : Sr. Divisional Eng.  
Deputy Director for CRID, Chief Counterpart
- Mr. Ramesh PRADHAN : Engineer, Counterpart, CRID
- Mr. Santosh Kokh SHRESTHA: Engineer, Counterpart, Agro-Economy, CRID
- Mr. Rajeswar YADAV : Engineer, Counterpart,  
Agriculture Engineer, CRID
- Mr. Nobuharu SASANO : JICA Expert for DoI

Department of Agriculture, IIMG/N

- Mr. Prem Lal CHITRAKAR : Regional Director,  
Central Regional Agriculture Development Office

Nepal Planning Committee (NPC), IIMG/N

- Mr. Ram Prasad SHRESTHA : Director, NPC Central Regional Office

JICA Study Team

- Mr. Takao Kawakatsu : Team Leader
- Mr. Tatsumi Tanabe : Co-Team Leader, Irrigation & Drainage  
Engineer cum O & M Expert
- Mr. Masashi Shono : Agro - Economist & Project Evaluation
- Mr. Kunita Okuwa : Hydrologist
- Mr. Kazuyuki Ito : Agronomist

MINUTES OF STAFF MEETING

No.1

1. Date : April 18, 1993
2. Place : Central Regional Irrigation Directorate
3. Attendance :

JICA Study Team

Takao KAWAKATSU  
 Tatemi TANABE  
 Masashi SHONO  
 Yuki MATSUO  
 Kunita OKUWA  
 Hiroshi NAGATA

Counterpart Personnel

Keshav SHARMA  
 Ramesh PRADHAN  
 S. K. SHRESTA  
 Rajeswar YADAV

## 4. Summary of Discussion

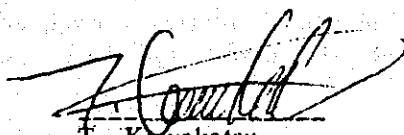
Team Leader of the JICA Study Team, T. Kawakatsu expressed the thanks for arrangement of office and attendance of the counterpart personnel, and explained activity of the team in last week.

Major work carried out last week was as follows :

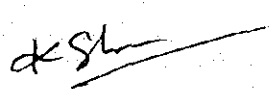
- Field Reconnaissance together with the member of Advisory Committee of Japanese Government, Secretary of Embassy of Japan and in-charge of JICA Nepal Office. All member of the Advisory Committee of Japanese Government left for Tokyo on April 11, 1993.
- Arrangement for Office and Data Collection.
- Contract negotiation for Farm Survey with a local consultants firm.
- Second group of the Team arrived at Kathmandu on April 17, 1993.

As for office spaces and counterpart personnel, Project Manager expressed that library in first floor may be used for temporary works in addition to three rooms in third floor, and some overseers will be assigned as additional counterpart personnel.

5. Prepared by \_\_\_\_\_ and confirmed by \_\_\_\_\_



T. Kawakatsu  
 Team Leader of  
 JICA Study Team



Keshav Sharma  
 Project Manager  
 Chief Counterpart



MINUTES OF STAFF MEETING

No.2

1. Date : April 23, 1993
2. Place : Central Regional Irrigation Directorate
3. Attendance :

JICA Study Team  
 Takao KAWAKATSU  
 Tatemi TANABE  
 Kunita OKUWA  
 Masashi SHONO  
 Kazuyuki ITO  
 Yuki MATSUO  
 Hiroshi NAGATA

Counterpart Personnel  
 Keshav SHARMA  
 Rajeswar YADAV  
 Ramesh PRADHAN  
 S. K. SHRESTA  
 U. BARAL

## 4. Summary of Discussion

Each expert of the JICA Study Team attended explained his activity during a week, summary of finding until this week end, required help by the Directorate and proposed schedule in coming week as summarized below :

- (1) Team Leader, T. Kawakatsu request further coordination to collect social data, especially regarding foreign aid for irrigation projects in past from India, UNDP, IBRD, ADB, and so on. In early next week, it is scheduled to visit National Planning Committee.
- (2) Irrigation Engineering : Reconnaissance survey on 14 schemes had been completed, beside he requested respective District Engineers, which are his counterpart personnel, to fill up questionnaire to identify Government developed schemes. The Directorate is requested to support them to reply as soon as possible, even if some of them will not be filled up.

Regarding the list of proposed priority schemes in previous document, some projects might be replaced with others.

Study team will consider priority not only from this list but also others identified. However, some schemes which will not be identified will not be considered.

- (3) Soil Survey and Land Use : Soil survey will be commenced from next week as in this week a local consultants firm was engaged to support soil survey and carry out soil analysis.
- (4) Hydrology : Such preparatory work for data collection as review of previous reports, check of equipment, request letters for authority concerned was done

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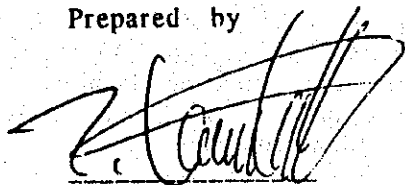
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and data collection will be done in next week. Decision of location to be installed and cost estimation for installation of water level recorder and rain gauge will be made by the District Engineer.

- (5) **Agriculture** : Data collected through statistic offices were confirmed at three Agricultural District Offices and some selected farmers beside farm survey which has been ordered to a local consultants firm.
- (6) **Agro-Economy** : Sampling method for farm survey was instructed to the local consultants who was engaged for farm survey in the Project area, and some sample interview survey was made with the local consultant. Data collection from three Agricultural District Offices was made. The study area is delineated in 38 villages of which cultivated area, total household, population and farm household are as follows:

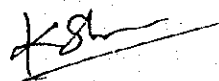
Area	Cultivated area	Total household	Total population	Farm household
Kathmandu Valley (130 villages)	17,673 ha	203,142	1,100,176	97,217
Study Area ( <del>28</del> 38 villages)	9,527 ha	52,489	294,845	34,174

5. Prepared by



T. Kawakatsu  
Team Leader of  
JICA Study Team

and confirmed by



Keshav Sharma  
Project Manager  
Chief Counterpart

MINUTES OF STAFF MEETING

No.3

1. Date : April 30, 1993
2. Place : Central Regional Irrigation Directorate
3. Attendance :

JICA Study Team

Takao KAWAKATSU  
 Tatemi TANABE  
 Kunita OKUWA  
 Masashi SHONO  
 Kazuyuki ITO  
 Hiroshi NAGATA

Counterpart Personnel

Keshav SHARMA  
 Rajeswar YADAV  
 Ramesh PRADHAN  
 S. K. SHRESTA  
 U. BARAL

## 4. Summary of Discussion

Each expert of the JICA Study Team attended and explained their activity during a week, summary of finding until this week end, required help by the Directorate and proposed schedule in coming week as summarized below :

- (1) Team Leader, T. Kawakatsu explain general activity of the study team and request to supply data on ISP and to commence preliminary arrangement on farmer's participation including confirmation of the farmer's willing on the respective government developed irrigation schemes. Because, socio- and agro-economic data and data on agriculture show that investment of expensive cost for the rehabilitation on the Government developed irrigation schemes will not be economically feasible without more intensive farming and crop diversification or other incentives for the farmers. So, team requested the Regional Director to confirm the farmers' willing and intention to demand for realization of the rehabilitation projects on respective schemes.
- (2) Irrigation Engineering : Reconnaissance survey on 15 schemes had been completed in this week (29 schemes in total completed) and inventory list will be prepared based on these results. It is requested to supply data on O&M budget of the both Government managed and farmers' managed irrigation schemes. Chief Counterpart, Mr. K. Sharma requested to check geotechnical condition on the head works in Tikabairawa-II scheme specially, because its head works was washed out twice during a decade after reconstructed. In next week, field investigation on the remaining schemes including Tikabairawa-II will be carried out continuously.
- (3) Soil Survey and Land Use : Soil survey was commenced and is continued. Expert is in the field so he not attend in this meeting.

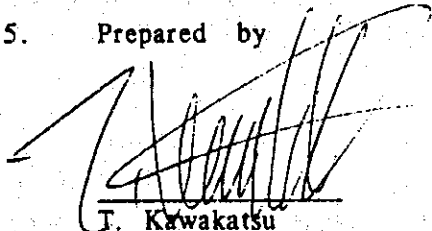
1/2

- (4) Hydrology : Data collection was commenced and continued, including field survey and investigation. Location to be installed water level recorder and rain gauge was decided and cost estimation is on going.
- (5) Agriculture and Agro-Economy : Data collection and their analysis including confirmation survey in the field were carried out and the followings are pointed out.
- (1) Rapid increase of population,
  - (2) Decrease of farm land,
  - (3) Prevalence of high yield productivity and modernized farming compare with other regions and
  - (4) Steep rise in land price

These facts will show much difficulty to verify economical feasibility on the Project. Additional data collection and confirmation survey will be continued in next week too.

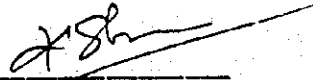
- (6) Team Leader request to Mr. K. Sharma to arrange meeting to explain our finding and discuss the way to study on the Project together with Regional Director, Deputy Director General and, if necessary, Director General of DOI in next Friday, May 7, 1993 at DOI, including JICA Expert Mr. N. Sasano, as Team Leader, T. Kawakatsu will leave Kathmandu on May 9, 1993.

5. Prepared by



T. Kawakatsu  
Team Leader of  
JICA Study Team

and confirmed by



Keshav Sharma  
Project Manager  
Chief Counterpart

## MINUTES OF DISCUSSION

1. Date : May 7, 1993
2. Place : Department of Irrigation (DoI)
3. Attendance : as per attached list
4. Summary of Discussion

After opening by Mr. Y. L. Vaidya, Director General of DoI, based on the Field Report prepared by the JICA Study Team, activities and major findings during the dry season study of Phase-I on the Master Plan Study on the rehabilitation of Government developed irrigation schemes in the Kathmandu valley were explained by the Team Leader and each expert as summarized below :

- (1) Team Leader expressed that the need of survey of farmers' willing and demand for the rehabilitation, because socio- and agro-economic data and data on agriculture show that heavy investment for the rehabilitation will not be so economically feasible without more intensive farming and crop diversification or other incentives for the farmers. Accordingly, CRID, DoI are kindly requested to collect "Project Request Form" in accordance with Design Manuals for Irrigation Projects in Nepal or equivalent survey on farmers' demand for the rehabilitation of each schemes. The schemes on which high priority will be given and farmers' demands will be surveyed, shall be selected in collaboration with the Study Team.

- (2) Irrigation Engineering : Inventory survey on 42 schemes was completed, and most of existing irrigation schemes need rehabilitation for their intake and canals, O&M of them is poor condition and farmers' association are yet to be developed.

Out of 71 existing government developed irrigation schemes, 11 schemes are outside of the Kathmandu valley, 4 schemes have been improved under Irrigation Sector Program (ISP) with ADB's Loan, and 11 schemes were approved and listed as ISP sub-projects.

- (3) Soil Survey and Land Use : Soil in Study area is divided into to two types, i.e. soil on the alluvial plain and soil on the terrace, and generally suitable for farming with their deep A and B horizons.
- (4) Hydrology : In the water supply plan for the Kathmandu and Lalitpur, there are two water resources development plans with construction of high dam in the Nakhu Khola and Khodu Khola of



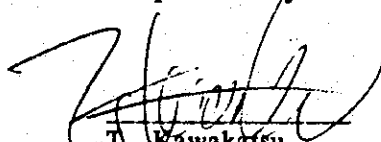
which location are same location of the existing irrigation schemes, Tikabhauraw and Kotkhu in Lalitpur district. In the selection of priority for the rehabilitation, this facts shall be considered.

- (5) Agriculture and Agro-economy : According to the data collected so far the following are found,
- (1) Rapid increase of population,
  - (2) Decrease of farm land,
  - (3) Prevalence of high yield productivity and modernized farming compare with other regions, and
  - (4) Steep rise in land price.

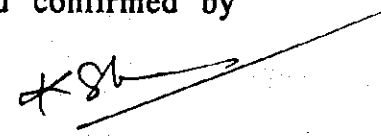
These facts will show much difficulty to verify economic feasibility on the Project. Survey on farmers' intention and willing for the Project shall be investigated.

- (6) As a conclusion, it is understood that water resources are more important for drinking water. Farmers' intention shall be surveyed, and formulation of the farmers' organization shall be accelerated beside confirmation through farm survey on farming practice and used quantities of fertilizer, machines, price of agricultural input, etc.

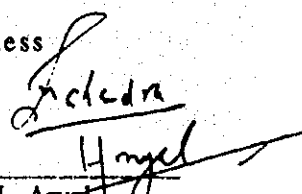
5. Prepared by

  
T. Kawakatsu  
Team Leader of  
JICA Study Team

and confirmed by

  
Keshav Sharma  
Project Manager  
Chief Counterpart

Witness

  
M. N. Azyal  
Regional Director  
Central Regional  
Irrigation Directorate, DoI

LIST OF ATTENDANCEHMGN

Mr. Y. L. Vaidya	Director General, DoI
Mr. M. N. Aryal	Regional Director, CRID
Mr. S. P. Sharma	Senior Divisional Engineer, DoI
Mr. M. S. Paudel	Senior Divisional Engineer, DoI
Mr. Keshav Sharma	Senior Divisional Engineer, CRID
	Project Manager, Chief Counterpart
Mr. Ramesh Pradhan	Engineer, CRID, Counterpart
Mr. S. K. Shrestha	Agro-Economist, CRID, Counterpart
Mr. Prem Lal Chitrakar	Regional Director, Department of Agricultural Development
Mr. Ram <sup>Prasad</sup> <del>Purad</del> Shrestha	Director, Central Regional Office, National Planning Committee
Mr. Nande R. Vaidya	Controller, Agricultural Development Bank, Nepal

JICA Study Team

Mr. Takao Kawakatsu	Team Leader
Mr. Tatsumi Tanabe	Co-Team Leader cum Irrigation and Drainage Engineer, Operation and Maintenance
Mr. Masashi Shono	Agro-economist cum Farmers' Organization and Project Economist
Mr. Kunita Okuwa	Hydrologist
Mr. Yuki Matsuo	Pedologist cum Land Use

## MINUTES OF STAFF MEETING(NO.4) Ref.No.

Date: July 2, 1993.

Place: Central Regional Irrigation Directorate

Attendance:

JICA Study TeamCounterpart Personnel

Masashi SHONO  
Tatsumi TANABE  
Kunita OKUWA  
Kazuyuki ITO

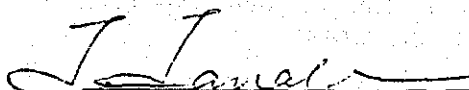
Keshav SHARMA  
Ramesh PRADHAN  
Rajeswar YADAV  
S.k. SHRESTA  
B.R. SHARMA

1. Summary of Discussions

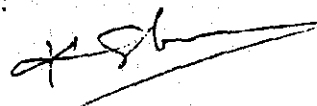
- (1) Co-team leader of JICA study team, Mr. T. Tanabe, briefed the activities of JICA study team during the week after their arrival at Kathmandu on 25th of June 1993, and expressed thanks to Mr. Keshav Sharma for his arrangement of counterparts and rooms for the team. Mr. T. Tanabe also briefed the work schedule of JICA study team for the next week, including information of arrival dates of Messrs. T. Kawakatsu, team leader of JICA study team, Y. Matsuo and H. Nagata at Kathmandu.
- (2) Each expert of JICA study team also briefed their activities for the next week according to the work schedule submitted already to Mr. Keshav Sharma on 29th of June, 1993, and Mr. Keshav Sharma accepted their work plan.
- (3) A request was made by JICA study team to Mr. Keshav Sharma to provide additional two counterparts for Mr. K. Ito(Agronomist) and Mr. Y. Matsuo(Pedologist) to support their activities during the study. Responding to this, Mr. Keshav Sharma told JICA study team that DOI had already taken action for that and one counterpart for Mr. K. Ito is expected to attend him next week and another counterpart for Mr. Y. Matsuo is under request through Ministry of Agriculture.

Prepared by:

Confirmed by:



T. Tanabe  
Co-team Leader of  
JICA Study Team.



Keshav Sharma  
Project Manager,  
Chief Counterpart.



**MINUTES OF STAFF MEETING**

No.6

1. Date : July 9, 1993
2. Place : Central Regional Irrigation Directorate
3. Attendance :

JICA Study Team  
 Takao KAWAKATSU  
 Tatsumi TANABE  
 Kunita OKUWA  
 Masashi SHONO  
 Kazuyuki ITO

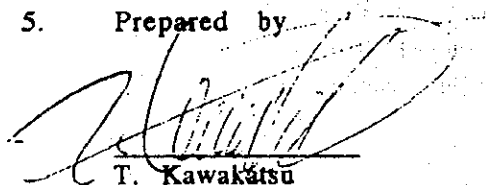
Counterpart Personnel  
 Keshav SHARMA  
 Rajeswar YADAV  
 S. K. SHRESTA  
 M. TIWARY  
 B. R. SHARMA

## 4. Summary of Discussion

Each expert of the JICA Study Team explained their activities during this week, required help by the Directorate and proposed schedule in coming week as summarized below :


- (1) Counterpart personnel : As a counterpart in the field of agronomy, Mr. M. Tiwary was newly assigned since beginning of this week. However, counterpart in the field of pedology is not available so far. All other counterpart personnel has joined survey and study together with JICA study team.
- (2) Irrigation Engineering : Inventory survey's results were reviewed and list of additional inventory survey to be confirmed was prepared. Field survey will be resumed next week upon arrival of Irrigation and Drainage Design Engineer. Team leader confirmed to the Chief Counterpart the progress on the beneficiaries' (farmers') willing survey which was requested to CRID at the end of previous field study period.
- (3) Hydrology : Data collection was continued, and 80 to 90 percent of required data were collected. Counterpart, Mr. R. Pradhan is collecting some data today, accordingly, he could not attend this meeting. Study on availability of for some particular irrigation scheme will be commenced next week.
- (4) Agriculture and Agro-Economy : Data collection and their analysis including confirmation survey in the field were carried out, especially, vegetable farming and their market mechanism and prices.

5. Prepared by



T. Kawakatsu  
 Team Leader of  
 JICA Study Team

and confirmed by



Keshav Sharma  
 Project Manager  
 Chief Counterpart

**MINUTES OF STAFF MEETING**

No.7

1. Date : July 23, 1993
2. Place : Central Regional Irrigation Directorate
3. Attendance :

JICA Study Team

Takao KAWAKATSU  
 Tatsumi TANABE  
 Kunita OKUWA  
 Masashi SHONO  
 Kazuyuki ITO  
 Yuki MATSUO  
 Hiroshi NAGATA

Counterpart Personnel

Keshav SHARMA  
 Ramesh PRADHAN  
 S. K. SHRESTA

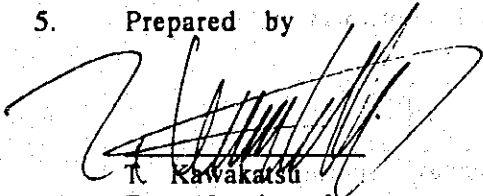
## 4. Summary of Discussion


JICA Study Team explained activities during last two weeks. Due to the General Strike and Anti-Government demonstration, field work and study are little behind the schedule. However, study team is trying to make the best effort for successful completion of the study on time. A part of draft report on Irrigation Sector was submitted to the Chief Counterpart for his review and necessary arrangement to discuss with DoI officials. Major items discussed are summarized below :

- (1) Counterpart personnel : Although a counterpart in the field of pedology is not available, Mr. Matsuo continued the study without counterpart. All other counterpart personnel has joined and continued survey and study together with JICA study team.
- (2) Irrigation Engineering : Topographic survey on the head works site on two schemes were carried out. Survey results of the farmers' intention in the form of the "Request Form" of rehabilitation of 14 schemes were given to the Study team. Remaining some reports in Nepalese language will be given after compilation in English version, in due course.
- (3) Other Sectors : Study on collected data was carried out.
- (4) After reading a draft paper to select priority schemes which has been given from Irrigation Engineer to the Chief Counterpart, necessary arrangement for explanation to the DoI will be proceeded.

5. Prepared by

and confirmed by

  
 Takao Kawakatsu  
 Team Leader of  
 JICA Study Team

  
 Keshav Sharma  
 Project Manager  
 Chief Counterpart

**MINUTES OF STAFF MEETING**

No.8

1. Date : July 30, 1993
2. Place : Central Regional Irrigation Directorate
3. Attendance :

JICA Study Team

Takao KAWAKATSU

Tatsumi TANABE

Kunita OKUWA

Masashi SHONO

Kazuyuki ITO

Yuki MATSUO

Hiroshi NAGATA

Counterpart Personnel

Keshav SHARMA

Ramesh PRADHAN

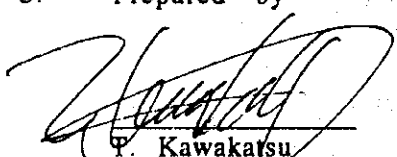
4. Summary of Discussion

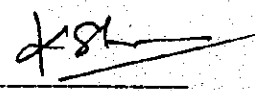
JICA Study Team explained activities during last week. The most of field survey scheduled in this field study period was finished except some supplementary survey to confirm the data and information collected recently, in spite of limitation of fuel supply in the Kathmandu valley due to the interruption of surface transportation by flood damage. Major items discussed are summarized below :

- (1) Counterpart personnel : Mr. S. N. Mandal was assigned as a counterpart of Mr. Matsuo, Soil and Land Use Expert. All counterpart personnel continued survey and study together with JICA study team.
- (2) Irrigation Engineering : Check survey scheduled for some irrigation schemes in this study period was finished.
- (3) Other Sectors : Study on collected data was carried out.
- (4) Although there are scheduled two National Holidays in Next week, one on 10-th August, Study Team will continue their study and prepare the Progress Report by the Mid-August. Fortunately, three days traffic strike which was scheduled in Mid-August will be postponed by about two weeks. The Chief Counterpart is kindly requested to arrange to hold a meeting with DoI for explanation and discussion on the Progress Report on middle of third week of August, 1993.

5. Prepared by

and confirmed by

  
 T. Kawakatsu  
 Team Leader of  
 JICA Study Team

  
 Keshav Sharma  
 Project Manager  
 Chief Counterpart

**MINUTES OF STAFF MEETING**

No.9

1. Date : August 06, 1993
2. Place : Central Regional Irrigation Directorate
3. Attendance :

JICA Study Team  
 Takao KAWAKATSU  
 Tatsumi TANABE  
 Kunita OKUWA  
 Masashi SHONO  
 Kazuyuki ITO

Counterpart Personnel  
 Keshav SHARMA  
 Rajeswar YADAV  
 Ramesh PRADHAN  
 S. K. SHRESTHA

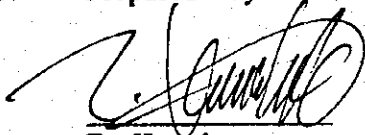
## 4. Summary of Discussion

JICA Study Team explained activities during last week. Major items discussed are summarized below :

- (1) Personnel : Mr. H. Nagata and Mr. Y. Matsuo left Kathmandu for Tokyo this day, after finishing their duty in this study period.
- (2) Engineering sector : Preparation of the progress report was commenced. An abstract on the part of the selection criteria and selected schemes tentatively, were explained to DDG of DoI last Thursday. "Request Form".for the schemes in Kathmandu district will be given to the Team at the beginning of next week.
- (3) Other Sectors : Preparation of the progress report was commenced.
- (4) As the progress report will be prepared by the middle of August, a Joint meeting among DoI, Study Team and authority concerned will be scheduled on August 18, 1993 at DoI for explanation and discussion on the Progress Report.

5. Prepared by

and confirmed by

  
 T. Kawakatsu  
 Team Leader of  
 JICA Study Team

  
 Keshav Sharma  
 Project Manager  
 Chief Counterpart

**MINUTES OF STAFF MEETING**

No.10

1. Date : August 13, 1993
2. Place : Central Regional Irrigation Directorate
3. Attendance :

JICA Study Team  
 Takao KAWAKATSU  
 Tatsumi TANABE  
 Kunita OKUWA  
 Masashi SHONO  
 Kazuyuki ITO

Counterpart Personnel  
 Keshav SHARMA  
 Rajeswar YADAV  
 Ramesh PRADHAN  
 S. K. SHRESTHA  
 M. TIWARY

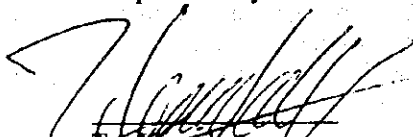
## 4. Summary of Discussion


JICA Study Team explained activities during last week. Major items discussed are summarized below :

- (1) Report : The Progress Report (1) was drafted up by this week end. Each one copy of the draft report was distributed to all counterparts who were requested to give team comments on it, if any, within next Sunday, so that the Report will be finalized on Monday.
- (2) As the Progress Report (1) will be printed on next Monday and be submitted to DoI on Tuesday, counterparts are requested to distribute them to key personnels who will attend on the Joint meeting among DoI, Study Team and authority concerned, which is scheduled on August 18, 1993 at DoI.

5. Prepared by

and confirmed by

  
 Takao Kawakatsu  
 Team Leader of  
 JICA Study Team

  
 Keshav Sharma  
 Project Manager  
 Chief Counterpart

MINUTES OF MEETING  
ON  
INTERIM REPORT  
FOR  
THE MASTER PLAN STUDY  
ON  
THE REHABILITATION FOR GOVERNMENT DEVELOPED IRRIGATION  
SCHEMES  
IN  
THE KATHMANDU VALLEY IN KINGDOM OF NEPAL

1. DATE : October 18-19, 1993  
11:00 a.m. ~ 1:00 p.m.
2. PLACE : Meeting Room at DOI
3. ATTENDING PERSONNEL : As per attached Annex-2
4. SUMMARY OF DISCUSSION

JICA Study Team submitted Interim Report to DOI and Team Leader, Mr. T. Kawakatsu explained it to the attending DOI personnel. Deputy Director General, Mr. C.P. Rauniyar expressed his general acceptance of the Report and discussion were made on almost every aspects of the project between DOI personnel and JICA Study Team, and both sides confirmed the following.

- (1) The Study Team has suggested in the Interim report to carry out feasibility study for seven schemes. Against this, DOI requested that all the sixteen schemes should be studied at feasibility level. The Study Team explained that the criteria for the selection has been based on the EIRR of more than 18% (utilizing the criteria of ADB/N), so that the Nepalese side can implement the project utilizing the loan from ADB/N.

For implementation of the DOI projects the EIRR at DOI is 10% or more, considering availability of project funds from other sources.



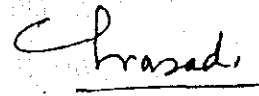
As a result of the discussions, both sides agreed to add another 6 schemes. Accordingly, 13 schemes as listed in Annex - 1 will be studied in the coming feasibility study stage. As for AK-27 (Tokha) in the list, both sides agreed that it shall be dropped off because of the lack of water availability, though it has an EIRR of over 10%.

- (2) Nepalese side suggested that the proposed cropping intensity in the report could be estimated higher. The Study Team explained to Nepalese side that the cropping intensity was proposed considering the prevailing farming condition of the whole study area. The Study Team also added that there might be still a room for in-depth study on the said cropping intensity in the feasibility study stage. And both parties confirmed the above understanding.
- (3) DOI suggested the Study Team that irrigation canal systems should be so designed as to minimize additional land acquisition.
- (4) DOI stated that water rights of projects considered for the feasibility study is already established.

October 19, 1993

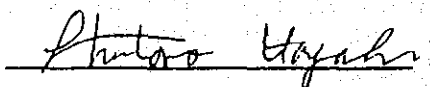


Mr. Takao Kawakatsu  
Team Leader  
Study Team for the Master Plan  
Study on the Rehabilitation for  
Government Developed  
Irrigation Schemes in the  
Kathmandu Valley



Mr. C.P. Rauniyar  
Deputy Director General  
Department of Irrigation  
Ministry of  
Water Resources  
His Majesty's Government  
of Nepal

Witness



Shintaro Hayashi  
Leader of  
Advisory Committee

Summary of EIRR for Selected Schemes

Scheme	Irrigation Area in ha		Initial Cost Total	NRs.1,000 /ha(Net)	Incremental Benefit NRs.1,000/yr	EIRR	Selection		2nd Selection		Total Selected Irrigation Area Over *2 10% (Net Area)	
	Net	Gross					Over *1 18% (Net Area)	Over *2 10% (Net Area)				
<b>Kathmandu</b>												
AK-04: Bishnujimbhara	125	100	17,341	173.41	3,498	16.1%	1	100 ha	1	100 ha	1	100 ha
AK-05: Boshan	210	168	27,083	161.21	7,209	22.1%	1	168 ha	1	168 ha	1	168 ha
AK-08: Dhakshinkar	100	80	19,788	247.35	3,433	13.4%	1	80 ha	1	80 ha	1	80 ha
AK-14: Indrayan	140	112	26,789	239.19	4,806	13.9%	1	112 ha	1	112 ha	1	112 ha
AK-25: Shailajoshi	300	240	43,374	180.73	10,298	18.1%	1	240 ha	1	240 ha	1	240 ha
AK-27: Tokha	90	72	12,477	173.29	1,946	11.6%	1	Excluded due to no water availability.	1	Excluded due to no water availability.	1	Excluded due to no water availability.
Sub-total	965	772	146,852	190.22			2	408 ha	3	292 ha	5	700 ha
<b>Bhaktapur</b>												
AB-02: Bidol	60	48	12,569	261.85	2,060	12.4%	1	48 ha	1	48 ha	1	48 ha
AB-04: Dhunge Dhara	210	168	37,539	223.45	4,480	7.6%	1	168 ha	1	168 ha	1	168 ha
AB-10: Katanje	90	72	14,021	194.74	2,463	13.6%	1	72 ha	1	72 ha	1	72 ha
AB-12: Kudihal	147	118	17,186	146.14	3,781	17.8%	1	118 ha	1	118 ha	1	118 ha
AB-14: Mahadev Khola	450	360	54,243	150.68	12,737	17.9%	1	360 ha	1	360 ha	1	360 ha
Sub-total	957	766	135,558	177.06			2	478 ha	2	120 ha	4	598 ha
<b>Lalitpur</b>												
AL-08: Kokana	250	200	65,154	325.77	8,582	9.0%	1	200 ha	1	200 ha	1	200 ha
AL-10: Khatku	445	356	52,139	146.46	15,276	22.6%	1	356 ha	1	356 ha	1	356 ha
AL-13: Lalju	165	132	24,286	183.98	5,664	19.1%	1	132 ha	1	132 ha	1	132 ha
AL-19: Thakshirav-I	600	480	85,145	177.39	20,597	18.5%	1	480 ha	1	480 ha	1	480 ha
AL-20: Thakshirav-II	400	320	60,421	188.82	13,731	17.3%	1	320 ha	1	320 ha	1	320 ha
Sub-total	1,860	1,488	287,145	192.97			3	968 ha	1	320 ha	4	1,288 ha
Total	3,782	3,026	569,555	188.25			7	1,854 ha	6	732 ha	13	2,586 ha

Note \*1: As interest rate of ADB/N for irrigation development is 18%.

\*2: DoI's selection standard at minimum rate.

selected schemes as model area



LIST OF ATTENDING PERSONNELHMGNGovernment of Japan1. Department of Irrigation1. Advisory Committee

Mr. C.P. Rauniyar DDG  
 Mr. M.N. Aryal RD, CRID  
 Mr. M. S. Paudel SDE, DOI

Mr. S. Hayashi Leader  
 Mr. A. Shimizu JICA, Tokyo

Mr. S.M. Shrestha Engineer, DOI

2. JICA Nepal Office

Mr. K. Sharma SDE, CRID  
 Project Manager

Mr. N. Naito Ass. Resident  
 Representative

Mr. N. Sasano JICA Expert

2. Department of Agricultural  
Development3. JICA Study Team

Mr. P. L. Chitrakar RD, CRADO

Mr. T. Kawakatsu Team Leader

Mr. T. Tanabe Co-Team  
 Leader cum  
 irrigation  
 and Drainage  
 Engineer,  
 O&M Expert

3. National Planning Commission

Mr. R. P. Shrestha Director,  
 Central Regional Office

Mr. M. Shono Agroeconomist  
 cum Farmer's  
 Organization  
 and Project  
 Economist

4. Agricultural Development Bank, Nepal

Mr. N. R. Baidya Controller

MINUTES OF MEETING  
ON  
PROGRESS REPORT (II)  
FOR  
THE MASTER PLAN STUDY  
ON  
THE REHABILITATION FOR GOVERNMENT DEVELOPED IRRIGATION  
SCHEMES IN THE KATHMANDU VALLEY

1. DATE : May 23, 1994; 14:00 - 16:00
2. PLACE : Meeting Room of Department of Irrigation (DoI)
3. ATTENDANCE : As per attached list
4. SUMMARY OF DISCUSSION :

JICA Study Team explained the contents of Progress Report (II) in the meeting. The contents of the Progress Report (II) were basically accepted by DoI with the following suggestions.

- (1) To show the anticipated yield and production after implementation of rehabilitation projects more precisely.
- (2) To clarify the following items used in the report;
  - a. Establishment of Vegetable Growers Group
  - b. Strengthening Agricultural Support System and Extension
  - c. Establishment of Agricultural Support Facilities
  - d. Present Activities of Department of Agriculture Development

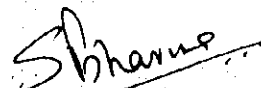
On this, JICA study team stated that the valuable comments made by Nepalese side will be fully taken into consideration and shall be reflected on the draft final report to be submitted to Department of Irrigation in September, 1994.

May 24, 1994



Pakao Kawakatsu

Team Leader  
JICA Study Team  
For the Master Plan Study on  
the Rehabilitation for the  
Government Developed Irrigation Schemes  
In the Kathmandu Valley



Sharada Prasad Sharma

Acting Deputy  
Director General  
Department of Irrigation,  
His Majesty's  
Government of Nepal

**LIST OF ATTENDING PERSONNEL**  
On May 23, 1994

**Department of Irrigation (DoI), HMG/N**

- Mr. Sharada Prasad SHARMA : Acting Deputy Director General, Planning,  
Design & Monitoring Evaluation Division, DoI
- Mr. Purna Bhadra ADIGA : Regional Director,  
Central Regional Irrigation Directorate (CRID)
- Mr. Vishwambhar REGMI : Sr. Divisional Eng., CRID  
Chief Counterpart
- Mr. Ramesh PRADHAN : Engineer, Counterpart, CRID
- Roseleen MAHARAJAN : Agro - Economist, Counterpart, CRID
- Maheshwar TIWARI : Agronomist, Counterpart, CRID
- Mr. Nobuharu SASANO : JICA Expert for DoI

**Department of Agriculture Development, HMG/N**

- Mr. Prem Lal CHITRAKAR : Regional Director,  
Central Regional Agriculture Development Office
- Mr. Man Mohan JHA : Assistant Agricultural Development Officer

**National Planning Commission (NPC), HMG/N**


- Mr. Devi Prasad JOSHI : Director, NPC Central Regional Planning Office

**Agricultural Development Bank of Nepal (ADB/N), HMG/N**

- Mr. Nanda R. Vaidya : Chief Controller, ADB/N, Kathmandu

**JICA Study Team**

- Mr. Takao KAWAKATSU : Team Leader
- Mr. Tatsumi TANABE : Co-Team Leader, Irrigation & Drainage Planning  
Engineer cum O & M Expert
- Mr. Masashi SHONO : Agro - Economist & Project Evaluation
- Mr. Yuki MATSUO : Penologist & Land Use
- Mr. Kazuyuki ITOH : Agronomist
- Mr. Hiroshi NAGATA : Irrigation & Drainage Design

MINUTES OF STAFF MEETING ( NO.1 )

Date : April 21, 1994.  
Place : Office of Central Regional Irrigation Directorate

Attendants :

JICA Study Team

Tatsumi TANABE/Irrigation and Drainage  
Yuki MATSUO/Pedologist  
Hiroshi NAGATA/Facility Designer

Official of CRID and Counterpart Personnel

Purna Bhadra Adiga/Director, CRID  
Vishwambar Regmi/SDE, CRID  
Ramesh Pradhan/Engineer, CRID  
A. Narsingh Rayamajhi/DIE, DIO, Lalitpur  
D.R. Pokharel/DIE, DIO, Bhaktapur  
Pradeep Thapa/Engineer, DIO, Kathmandu

Summary of the Discussions

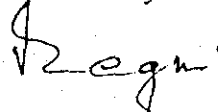
- (1) Co-Team Leader of JICA study team, T.Tanabe briefed 3 weeks' activities of JICA study team after their arrival at Kathmandu on April 1, 1994, and expressed thanks to Messrs. Purna Bhadra Adiga and Vishwambar Regmi for his cooperation to JICA study team.
- (2) Each expert of JICA study team also briefed his activity during past 3 weeks and explained the tentative work schedule for next week.
- (3) It was mutually agreed in the meeting that CRID would take care of the counterpart personnel for Yuki. MATSUO, since Mr. S. N. Mandal/Pedologist, MOA originally assigned to Y. MATSUO as a counterpart personnel, has got another official assignment.
- (4) Hiroshi NAGATA/Facility designer submitted his tentative work schedule for field survey for 13 target irrigation schemes as attached herewith and he requested Mr. Vishwambar Regmi/Chief counterpart to provide personnel who can accompany him during his visit to each irrigation scheme. And this proposal was accepted in the meeting. And, it was also mutually agreed that during field visit, meetings with representative farmers and members of Water Users' Associations should be held wherever possible to obtain more detail information on each irrigation scheme. The field survey will start on April 25, 1994.

Prepared by:



Tatsumi TANABE,  
Co-Team Leader of  
JICA Study Team

Confirmed by:



Vishwambar Regmi/Chief Counterpart,  
SDE, CRID.

Copy to: All attendants in the meeting and Messrs. M. Shono and K. Itoh of JICA study team.

## Schedule for Field Survey with DOI/DIO

Date		Scheme	District		
25 - Apr.	Mon	Biswambhara	Kathmandu		
26 - Apr.	Tue	Shali Nadi	Kathmandu		
27 - Apr.	Wed	Indrayan	Kathmandu		
28 - Apr.	Thu	Boshan	Kathmandu		
29 - Apr.	Fri	Dhakshinkali	Kathmandu		
30 - Apr.	Sat				
1 - May	Sun	Thika Bhairaw(I)	Lalitpur		
2 - May	Mon	Thika Bhairaw(I)	Lalitpur		
3 - May	Tue	Thika Bhairaw(II)	Lalitpur		
4 - May	Wed	Kotkhu	Lalitpur		
5 - May	Thu	Lubhu	Lalitpur		
6 - May	Fri	Katunje, Mahadev Khola	Bhaktapur		
7 - May	Sat				
8 - May	Sun	Mahadev Khola	Bhaktapur		
9 - May	Mon	Kududhal	Bhaktapur		
10 - May	Tue	Bidol	Bhaktapur		

Note: Work schedule subject to modification depending on situation.

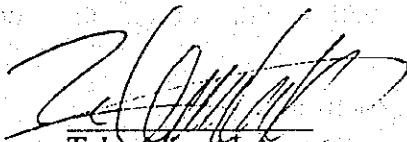
**MINUTES OF STAFF MEETING**

No. 2 in Phase-II

1. Date : April 29, 1994
2. Place : Central Regional Irrigation Directorate
3. Attendance :
 

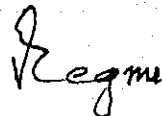
<u>JICA Study Team</u> Takao Kawakatsu/Team Leader Tatemi Tanabe/Irrigation & Drainage	<u>Counterpart Personnel</u> Purna Bhadra Adiga/Director, CRID Vishwambhar Regmi/SDE, CRID M. L. Shresta/SDE, DIE, Kathmandu A. N. Rayamajhi/DIE, Lalitpur D. R. Pokharel/DIE, Bhaktapur Ramesh Pradhan/Eng., CRID
--	--
4. Summary of Discussion
  - (1) 4 experts could not attend this meeting because field survey could not completed by the time. The progress to be explained by each expert of the JICA Study Team are postpone until next chance.
  - (2) The following counterpart personnel assigned from MoA who were not authorised till last week end, will be settled by next week.  
 Mr. M. Tiwari, Agronomist : Authorised after issuing letter by Director, CRID  
 Mr. Manmohan Jha, Pedologist : In stead of Mr. S. N. Mandal who was assigned for Phase-I Study, assigned from beginning of next week.
  - (3) Team Leader, T. Kawakatsu explain request the following items:
    - a. Collect data and information on the Kodkhu Water Supply Project  
 Appointment to P/M of the Water Supply Project, NWSC, was arranged by Mr. R. Pradhan, on next Sunday.
    - b. Water Right Assessment on Kodkhu scheme  
 Mr. A. N. Rayamajhi, DIE Lalitpur will discuss with P/M of the Water Supply Project of NWSC.
    - c. Environmental impact Assessment  
 As Team Leader will prepare a form for screening and scorpig, each DIE shall check on all schemes to be studied in Phase-II (13 schemes)
    - b. Data on Cost estimate  
 Each DIE will sent a copy of list of unit rates which are used at present in respective districts.

Prepared by



Takao Kawakatsu  
 Team Leader of  
 JICA Study Team

and confirmed by.



Vishwambhar Regmi  
 Chief Counterpart  
 SDE, CRID

Copy to :

Director, CRID  
 All counterpart personnel  
 All experts of JICA Study Team

**MINUTES OF STAFF MEETING**

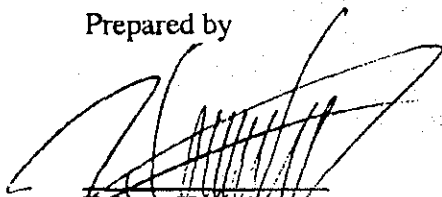
No. 3 in Phase-II

1. Date : May 13, 1994
2. Place : Central Regional Irrigation Directorate
3. Attendance :
 

<u>JICA Study Team</u>	<u>Counterpart Personnel</u>
Takao Kawakatsu/Team Leader	Vishwambhar Regmi/SDE, CRID
Tatemi Tanabe/Irrigation & Drainage	M. L. Shresta/SDE, DIE, Kathmandu
Masashi Shono/Agro-Economist	A. N. Rayamajhi/DIE, Lalitpur
Hiroshi Nagata/Irrigation & Drainage	Deo Raj Pokharel/DIE, Bhaktapur
Yuki Matsuo/Soil & Land Use	Ramesh Pradhan/Eng., CRID
Kazuyuki Itoh/Agronomy	Roseleen Maharjan/Agri. Economist
4. Summary of Discussion
  - (1) Each expert of the JICA Study Team explained past activities and progress. The progress is on schedule except a few farm survey, especially compilation of the survey results.
  - (2) Co-team Leader, T. Tanabe explained progress of the preparation of Progress Report (2) which will be submitted to HMGN before JICA Study Team will leave for Tokyo. Regarding this, Team Leader, Mr. Kawakatsu, requested to Mr. Vishwambhar Regmi, Chief Counterpart to arrange Joint Meeting for explanation on Progress Report (2) to all personnel concerned of DoI, MoA, NPC, ADB/N, and so on, on Monday, 23rd May 1994, as the team intended to complete the Progress Report (2) by the end of next week and leave for Japan in the following schedule:
 

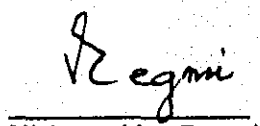
20 May 1994 (Fri.)	Printing of Progress Report (2) and Last Joint Meeting, Submission and distribution of Progress Report (2)
21 - 22 May 1994	Preparation of executive summary
23 May 1994 (Mon.)	Explanation and Discussion on the Progress Report (2)
24 May 1994 (Tu.)	Prepare and signing minute of meeting and explanation to EoJ and JICA Nepal Office the results of field study
25 May 1994 (Wed)	Leave for Japan
26 May 1994 (Th.)	Arriving Tokyo
  - (3) Team Leader, T. Kawakatsu confirmed the following items which are requested in previous meeting:
    - a. Questionnaire regarding environmental impact assessment  
Team Leader prepared and distributed a form for screening and scoping to each DIE, and requested them to check on all schemes to be studied in Phase-II (13 schemes).
    - b. Data on cost estimate  
Each DIE will sent a copy of list of unit rates which are used at present in respective districts. Regarding cost estimate, Co-team Leader, Mr. T. Tanabe, confirmed that standard unit rate will be applied for cost estimate for the project (13 schemes) and area factor will be considered depending on the whaling distance for respective schemes.
  - (4) Next meeting will be held on Friday, 20th May 1994. On that meeting, summary of the Progress Report (2) will be explained prior to official meeting with DoI and other authority concerned.

Prepared by



Takao Kawakatsu  
Team Leader of  
JICA Study Team

and confirmed by.



Vishwambhar Regmi  
Chief Counterpart  
SDE, CRID

Copy to :

Director, CRID  
All counterpart personnel  
All experts of JICA Study Team

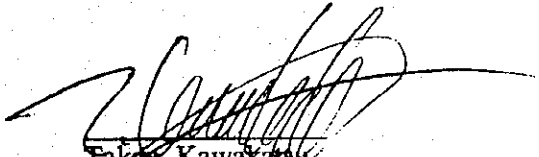
**MINUTES OF STAFF MEETING**  
No. 4 in Phase-II

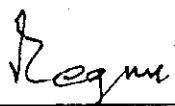
1. Date : May 20, 1994
2. Place : Central Regional Irrigation Directorate
3. Attendance :

<u>JICA Study Team</u> Takao Kawakatsu/Team Leader Tatsumi Tanabe/Irrigation & Drainage Masashi Shono/Agro-Economist Hiroshi Nagata/Irrigation & Drainage Yuki Matsuo/Soil & Land Use Kazuyuki Itoh/Agronomy	<u>Counterpart Personnel</u> Purna Bhadra Adiga/Director, CRID Vishwambhar Regmi/SDE, CRID M. L. Shresta/SDE, DIE, Kathmandu Deo Raj Pokharel/DIE, Bhaktapur A. N. Rayamajhi/DIE, Lalitpur Roseleen Maharjan/Agri. Economist Ramesh Pradhan/Eng., CRID M. Tiwari/Agronomist
--	---
4. Summary of Discussion
  - (1) After distributing Progress Report (II) to each counterpart personal, Team Leader briefed on its summary.
  - (2) The following questions were given by the counterpart, and each expert answered to them;
    - a.- Method of estimation of expected runoff from un-gauged basin.
    - b.- Crop intensity and water requirement.
    - c.- Irrigation area of respective schemes.
    - d.- Socio-economic data on respective schemes.

Prepared by

and confirmed by.

  
Takao Kawakatsu  
Team Leader of  
JICA Study Team

  
Vishwambhar Regmi  
Chief Counterpart  
SDE, CRID

Copy to :

Director, CRID  
All counterpart personnel  
All experts of JICA Study Team





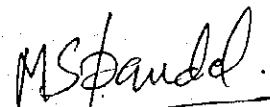
MINUTES OF THE MEETING  
ON  
THE DRAFT FINAL REPORT  
FOR  
THE MASTER PLAN STUDY  
ON  
THE REHABILITATION FOR GOVERNMENT DEVELOPED IRRIGATION SCHEMES  
IN  
THE KATHMANDU VALLEY IN THE KINGDOM OF NEPAL

AGREED UPON  
BETWEEN  
OFFICIALS OF THE DEPARTMENT OF IRRIGATION  
AND  
THE STUDY TEAM OF JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

KATHMANDU, SEPTEMBER 30, 1994



Mr. Takao KAWAKATSU  
Team Leader of the Study Team



Mr. Madhu Sudan PAUDEL  
Sr. Divisional Engineer  
for Mr. Yadav Lal VAIDYA  
Director General  
Department of Irrigation  
His Majesty's Government of Nepal



Mr. Shiro NABEYA  
Deputy Director  
Agricultural Development Study Division  
Agricultural, Forestry and Fisheries  
Development Study Department  
JICA Headquarters, Tokyo

In accordance with the Scope of Work for the Master Plan Study on the Rehabilitation for Government Developed Irrigation Schemes in the Kathmandu Valley in the Kingdom of Nepal (hereinafter referred to as "the Study"), the Study Team headed by Mr. T. Kawakatsu submitted officially twenty (20) copies of the Draft Final Report to the Department of Irrigation (DoI) at the completion of the Phase-II Home Office Work in Japan. The Draft Final Report consists of the following six (6) volumes:

Executive Summary  
Main Text Part-A: Master Plan Study  
Main Text Part-B: Feasibility Study  
Annex Volume-I (Annexes 1 to 4)  
Annex Volume-II (Annexes 5 to 8), and  
Drawings

After opening the meeting by Mr. Y. L. Vaidya, Director General of DoI, at conference room of DoI, the Study Team explained the contents of the Draft Final Report to the attending personnel, on September 29, 1994. The main points of the discussion are summarized below:

#### GENERAL ASPECT

1. DoI received twenty (20) copies of the Draft Final Report on September 25, 1994.
2. Nepalese side confirmed that the Draft Final Report has been prepared in compliance with the scope of the Study, methodology and schedule set forth in the Scope of Work agreed upon between DoI and JICA on December 16, 1992, and generally satisfies requirements of technical quality.
3. The Japanese Study Team informed that the formulated rehabilitation plan and irrigated agricultural development plan are based on both the development potential and the development constraints of the Study Area.
4. In response to the pertaining comments, the Japanese side manifested that they would duly take them into account in preparing the Final Report in Japan.
5. The Draft Final Report was received only on September 25, 1994, and DoI agreed to provide further comments through JICA Nepal Office, by the end of third week (21st day) of October, 1994, and the Study Team agreed to incorporate them in Final Report as far as possible.



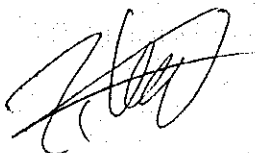
## SPECIFIC ASPECT

## 1. Agricultural Development

- a) Anticipated yield of paddy seems to be conservative compared to present yield in the Kathmandu Valley.
- b) In order to mitigate decreased irrigation area and increased value of land, more intensive cropping pattern should be introduced.
- c) Cropping intensity might be possible to increase up to 300% as far as irrigation water would be available.
- d) Organization chart of DoAD, and name and number of institutes/sub-centres should be corrected.

## 2. Organization and O&amp;M

- a) Procedure of establishing Water User Association (WUA) should be provided in the main text too. The WUA should be established before commencement of implementation.
- b) Proposed training institution in the Master Plan should be revised in accordance with the proposal in the Feasibility Study.
- c) Discrepancies in figures and facts between the Master Plan Study Report and Feasibility Study Report should be properly checked and adjusted accordingly.
- d) In final O&M Manual, JICA Study Team will provide monitoring methods for performance of O&M by the WUA.
- e) Farmers' participation requirement and implementation procedures should be in accordance with the Irrigation Policy 1992.



**LIST OF ATTENDING PERSONNEL**  
On September 29, 1994

**NEPALESE SIDE****Ministry of Water Resources (MoWR)**

Mr. Gopal Prasad MANANDHAR : Sr. Divisional Engineer

**Department of Irrigation (DoI)**

Mr. Yadav Lal VAIDYA : Director General of DoI

Mr. Madhu Sudan PAUDEL : Sr. Divisional Engineer, Planning, Design & Monitoring & Evaluation Div., DoI

Mr. Vishwambhar REGMI : Sr. Divisional Engineer, Central Regional Irrigation Directorate (CRID), DoI, Chief Counterpart

Mr. Ram Prasad SATYAL : Sr. Divisional Engineer, System Management and Training Programme/Irrigation Management Div., DoI

Mr. Shyam Prasad RAJBHANDARI : Sr. Irrigation Management Officer System Management Branch, DoI

Mr. Yuva Raj ADHIKARY : Sr. Divisional Engineer, DoI

Mr. Arjun N. RAYAMAJHI : Office-In-Charge, DIO Lalitpur

Mr. Manik Lal SHRESTHA : Acting Office-In-Charge, DIO Kathmandu

Mr. Ramesh PRADHAN : Engineer, Counterpart, CRID, DoI

Mr. Deo Raj POKHAREL : Office-In-Charge, DIO Bhaktapur

**Ministry of Agriculture (MoA)**

Mr. Shigeru SABURI : JICA Expert on Planning and Management, MoA

**Department of Agriculture Development (DoAD)**

Mr. Prem Lal CHITRAKAR : Regional Director, Central Regional Agriculture Development Directorate, DoAD

**National Planning Commission (NPC)**

Mr. Devi Prasad JOSHI : Regional Director, Regional Planning Office Central Region, NPC

**Agricultural Development Bank of Nepal (ADB/N)**

Mr. Nanda R. VAIDYA : Chief Controller, ADB/N, Kathmandu

**Ministry of Finance (MoF)**

Mr. Bhuban KARKI : Section Officer, MoF


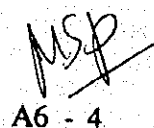
**JAPANESE SIDE**

Mr. Shiro NABEYA : Deputy Director, Agricultural Development Study Division, Agricultural, Forestry and Fisheries Development Study Department, JICA Headquarters, Tokyo

Mr. Takao KAWAKATSU : Team Leader of the Study Team

Mr. Tatsumi TANABE : Co-Team Leader, Irrigation & Drainage Planning Engineer cum O & M Expert

Mr. Masashi SHONO : Agro - Economist & Project Evaluation



HIS MAJESTY'S GOVERNMENT  
MINISTRY OF WATER RESOURCES  
DEPARTMENT OF IRRIGATION

Phone No. 413733  
412374  
413477  
411686

Panipokhari, Maharajgunj  
Kathmandu, Nepal

Ref No. P/13 051/052 - 154

Date:.....  
October 21, 1994

To,

The JICA Office  
Tripureswor, Kathmandu  
Nepal.

Sub : Comments on Draft Final Report on the  
Rehabilitation on Government Developed Irrigation  
Schemes in Kathmandu Valley.

As agreed on the Minutes of Meeting dated September 30, 1994, I am pleased to enclose here some comments and suggestions on the Draft Final Report on the Rehabilitation of Government Developed Irrigation Schemes in Kathmandu Valley, prepared by JICA Study Team. I hope you will forward this comment to Study Team for the preparation of the Final Report.

Thanking you.

( Madhu Sudan Paudel )  
Senior Divisional Engineer

Comments on  
Draft Final Report on the  
Rehabilitation of Government Developed Irrigation Schemes in  
Kathmandu Valley

1. To assure reliability in terms of quantity, duration and frequency of irrigation water supply, the process of water management deserves serious attention. To avoid conflicts in future between the farmers arising due to non-equitable distribution of water, hydraulic structures need to be designed in such a way that every outlet gets its due share. To have proper water management, offtake and ongoing discharges must be measured.
2. The design philosophy of water distribution be included in the design criteria to account for the aspects mentioned in 1.
3. The rehabilitation work has been concentrated mainly on the construction of concrete structures. Therefore the cost per hectare of the selected projects is higher in comparison to other similar projects. The structures should be provided in such a way that it is easily maintainable by the farmers during operation and maintenance phase.
4. For sustainable performance of the system the institutional development should always get priority. Then only the capability of WUA is strengthened and the farmers will take over the system and perform effective O&M activities. So the process of institutional development is to be clearly mentioned on the report.
5. Formation of main executive committee from the representative of each turnout will make the WUA complex and it will be difficult to gather all the WUA members in the meeting. One representative from about 10 turn outs should represent in the main committee to make it simple and effective.

6. Before actual implementation of the project, capability development of WUA's should be done. So some provisions for the institutional development should be made on the project cost. The implementation period should be adjusted accordingly. Similarly Training provisions should be included for the DIO Personnels also.
7. The formulation of the rehabilitation plan should be based on the HMG's Irrigation Policy, 1992. The farmers must feel their real involvement from the very beginning of the project Otherwise it may contradict the Irrigation Policy.
8. The pressure of urbanization within Kathmandu valley must be considered duly in the selection as well as in the planning of the project.
9. In the design of the projects, some over ambitious provisions have been made. Such as continued reinforced concrete lining in the main canal and gravel metalled road along the main canal which have directly affected the cost of the projects. As most of the projects lie in the plain terraced land of Kathmandu valley, continuous lining may not be necessary.
10. Draft Final Report Drawings prepared do not tally as per the actual site condition e.g. down stream of Mahadeva khola intake and Kutudhal (Bhaktapur).
11. As mentioned in the report, most of the diversion structure will either be rehabilitated or rebuilt. The effect of their cost in the total cost of the project can not be overlooked. At the same time, the typical design and drawings of headwork will not suit for all headwork sites. So, design and planning of headwork/diversion structures have to be done at least for similar site conditions. In the report, there is no any layout plan and drawing of headwork/diversion structures in Kathmandu district.

msp



12. In consideration to all the proposed provisions are considered, the direct construction costs of the project seem very high. So, the cost estimate has to be checked and design should be reviewed.
13. Breakdown cost is not shown as mentioned in the clause 6.2 of Annex Vol. II.
14. Cost estimates for the targeted irrigation schemes have not been shown in Annex-5 as mentioned in clause 5.4 of Main Text Part-B.
15. Contingencies Cost shown in the summary of Project Cost (Table 5-1) are much more than the value (3%) mentioned in clause 5.4 of Main Text Part-B.
16. Similarly O & M equipment cost as shown in Table 5-1 also seem very high.
17. To minimize the water sharing disputes, it is preferable to provide the proportionate distribution structures (Turnout structures) which will reduce the O & M cost too.
18. As mentioned in the report, one of the two objectives of the study was to carry out technology-Transfer to the Nepalese counterpart. So more consideration should be given in the future study work.

MSP

**Answers to the HMGN's Comments**  
on  
**the Draft Final Report on the Rehabilitation**  
of  
**Government-Developed Irrigation Schemes in the Kathmandu Valley**

**Answer to Comment No.1**

The JICA Study Team considers that this comment has been fully taken into account in the Draft Final Report.

**Answer to Comment No.2**

The JICA Study Team considers that this comment has been taken into account in Clauses 4.2 and 4.3, Chapter 4 of the Draft Final Report (Part-B). The irrigation canal systems under the rehabilitated irrigation schemes have been designed paying attention to an equitable water distribution among the farmers as much as possible.

**Answer to Comment No.3**

Since the Master Plan stage of the Project, the JICA Study Team has repeatedly explained the Team's design concepts for rehabilitation of the irrigation schemes under this Project to the officials concerned. Based on the Team's observation of the irrigation schemes which have been rehabilitated in accordance with the design concepts applied so far for medium to small scale irrigation schemes, the Team proposed to adopt new concepts which are different from existing ones. Namely, the new concepts aim to establish irrigation canal systems (1) with less water losses; (2) which can be maintained and operated by the farmers easily; and (3) which are resistant to natural hazards, etc. Accordingly, intake facilities including weirs shall be improved with concrete and necessary related protection works, most of the canals shall be concrete lined up to the tertiary level, steel gates and water measuring devices shall be provided at turnouts, additional hydraulic structures shall be provided as required in order to maintain canal systems, and gravel-metalled roads shall be provided where necessary, etc. As a result, the Project cost becomes high compared to that of ISPs or other projects which have been rehabilitated according to the prevailing rehabilitation standards in Nepal.

#### Answer to Comments No.4

This comment was made at the time of explanation of the Draft Final Report when the preparation of the O&M Manual was not completed. The Team considers that the finally prepared O&M Manual which contains clear additional descriptions will meet the comment.

#### Answer to Comment No.5

The Team agreed with this comment and modified the description as is seen in the final O&M Manual.

#### Answer to Comment No.6

A concrete plan for reinforcement of DIOs and WUAs has been provided in the final O&M Manual and in Clause 2.3, Chapter 2 of Annex-5. A cost estimate for the same is given in the same Annex-5 (see Table 6-6 in Annex-5).

Regarding the training of staff of DIOs, the Team considers that it should be made during the periods in which the staff of DIOs engage themselves in different stages of ISP.

#### Answer to Comment No.7

Active farmers' participation in different stages of the Project has been proposed in Clause 3.7 of Chapter 3 of the final O&M Manual as well as in Clause 2.8, Chapter 2 and Clauses 6.4 and 6.5, Chapter 6 of the Main Text Part-B of the Final Report.

#### Answer to Comment No.8

In the course of preparation of reports at the master planning stage as well as at the feasibility study stage of the Project, the Team has paid full attention to urbanization under each irrigation scheme to be rehabilitated.

#### Answer to Comment No.9

Continuous concrete lining of the canals up to the tertiary canals is necessary to materialize the proposed Project concepts, which the Team does not consider as over ambitious. As to the

comment on the cost increase due to the provision of O&M roads, the Team considers that since the provision of such roads will be very limited under the proposed Project, it does not significantly affect the Project cost.

#### Answer to Comment No.10

The attached drawings have been prepared on the basis of topographic maps with a scale of 1/5,000, an additional plane table survey at the intake sites, and a levelling survey along the existing main canals of each irrigation scheme to be rehabilitated. Accordingly, as commented, some drawings may not conform to the real topographic conditions in each irrigation scheme to be rehabilitated. However, since the main purpose of the drawings is to estimate the Project cost, the Team considers that the accuracy level of the drawings is sufficient for the F/S of the Project. Detailed drawings for each irrigation scheme should be prepared at the next stage, i.e. the detailed design stage of the Project.

#### Answer to Comment No.11

In the cost estimate, the costs for rehabilitation/construction of the diversion structures (intake facilities) have been calculated independently so that their effect on the total Project cost can be seen easily. As to the remaining part of this comment, the answer is the same as that to Comment No.10 above. The drawings for rehabilitation of the intake structures under the irrigation schemes in the Kathmandu district have been prepared additionally in Annex-8 of the Final Report.

#### Answer to Comment No.12

Following the comment, the Team has reviewed the cost estimate and necessary corrections have been made. However, there have been no remarkable changes from the previous cost estimate, because the said cost estimate was prepared based on the Project concepts which had been repeatedly explained by the Team to the officials concerned during the Study. Moreover, the initial cost estimate was also prepared based on the minimum provision of additional structures which will be needed to materialize the Project concepts proposed by the Team.

#### Answer to Comment No.13

A breakdown of the Project cost has been given in Tables 6-4 and 6-5 in Annex-5.

#### Answer to Comment No.14

In the Draft Final Report, the cost estimate for the target irrigation schemes was misplaced. It has been corrected according to the comment.

#### Answer to Comment No.15

The contingencies given in the Draft Final Report included both physical contingency and price escalation contingency. Accordingly, the figures have been corrected in the Final Report, however no changes in the Project cost will occur due to this correction. In addition, the incorrect figures in the foreign currency portion and, accordingly, in the total amount of the Lubhu (AL-13) scheme in Table 5-1 of the Draft Final Report have been corrected. However, no changes in the economic evaluation will occur due to this correction, because the economic evaluation was carried out with the correct figures.

#### Answer to Comment No.16

The figures given in Table 5-1 of the Draft Final Report have been checked according to the comment and mistakes in the figures for the Shali Nadi (AK-25) scheme have been corrected. Accordingly, the economic cost, EIRR, B/C, and NPV have been corrected in the Final Report.

In general, the comment says that the cost for O&M equipment is high. The Team, however, considers that the said cost has been estimated based on the minimum requirement to help the farmers conduct O&M activities as highlighted in the Irrigation Policy.

#### Answer to Comment No.17

The turnout structures required for proportional distribution of irrigation water have been fully taken into consideration in the rehabilitation plan.

#### Answer to Comment No.18

As for the technology transfer in the future study work, the Study Team considers that since the S/W agreed upon between DoI and JICA covers only the Master Plan Study including the Feasibility Study for the Model Schemes, the future technology transfer should be considered under appropriate aid programs, together with further arrangement for technical and financial assistance for this Project.



