

Fig.3.9.1 PUBLIC FACILITIES IN THE STUDY AREA (2/2)
 (MONGAR DISTRICT)

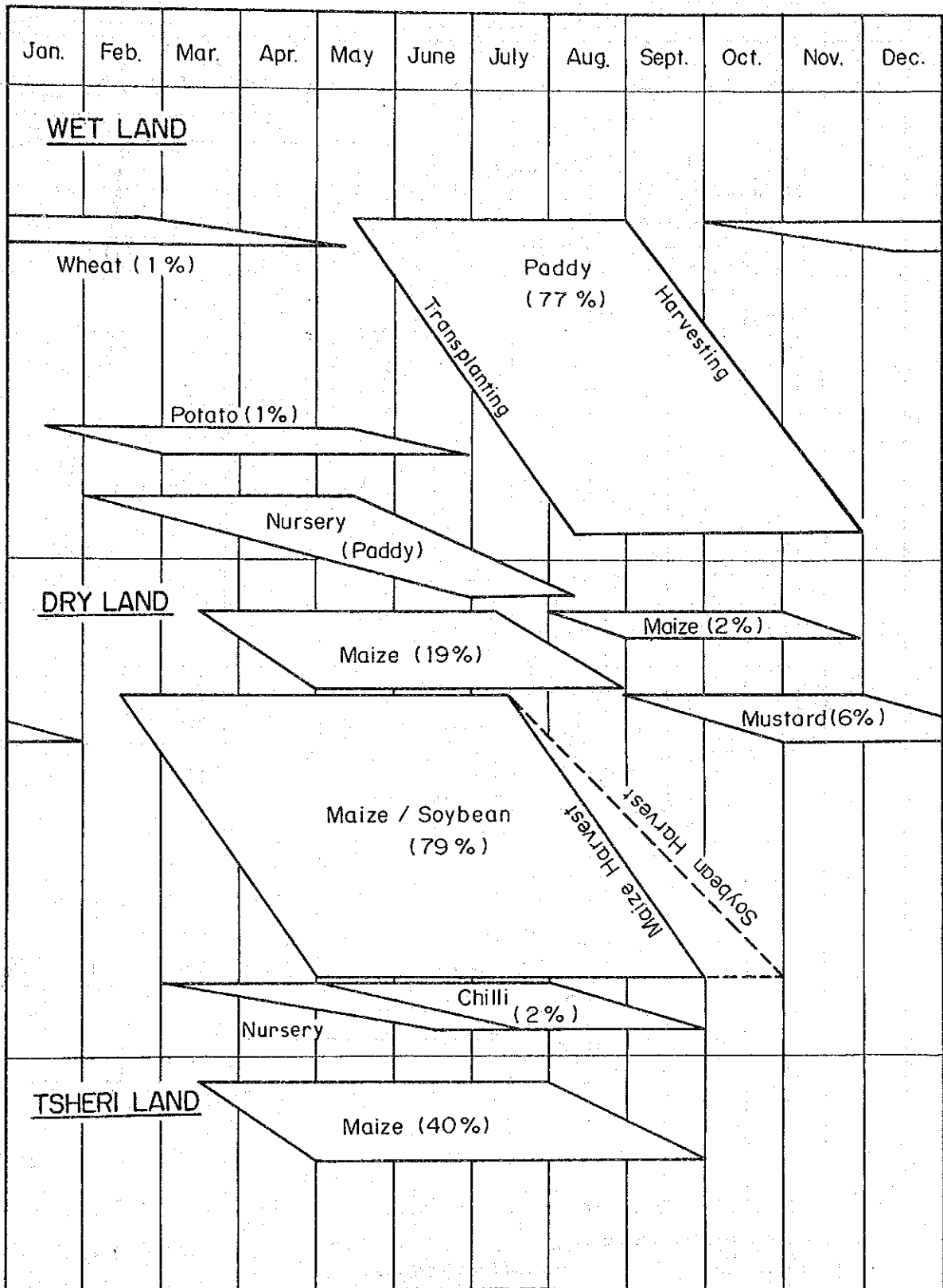


Fig.5.2.1 PRESENT CROPPING PATTERN IN THE MODEL PROJECT AREA (1/2)
(TANGMACHHU)

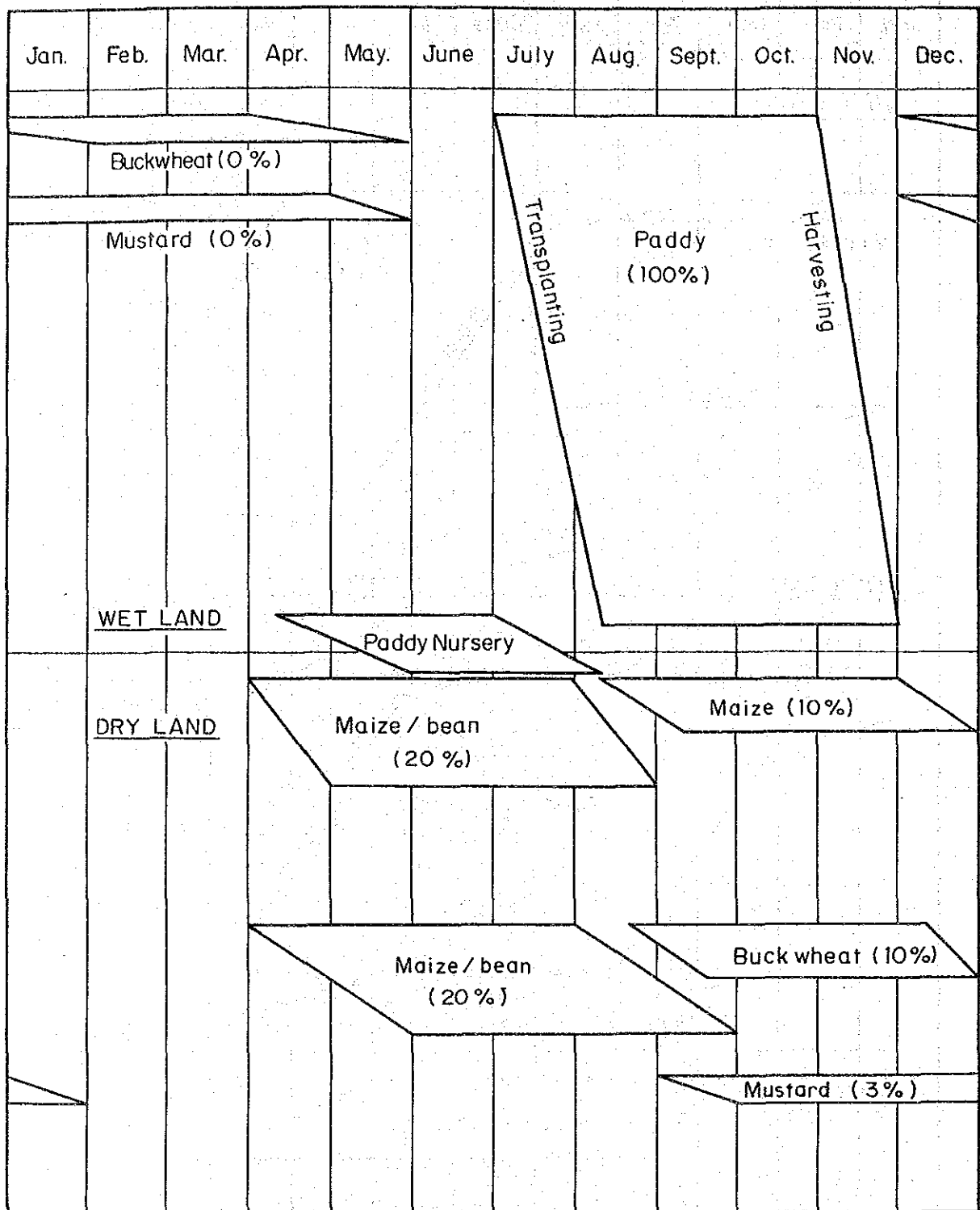


Fig.5.2.1 PRESENT CROPPING PATTERN IN THE MODEL PROJECT AREA (2/2)
(MASANGDAZA)

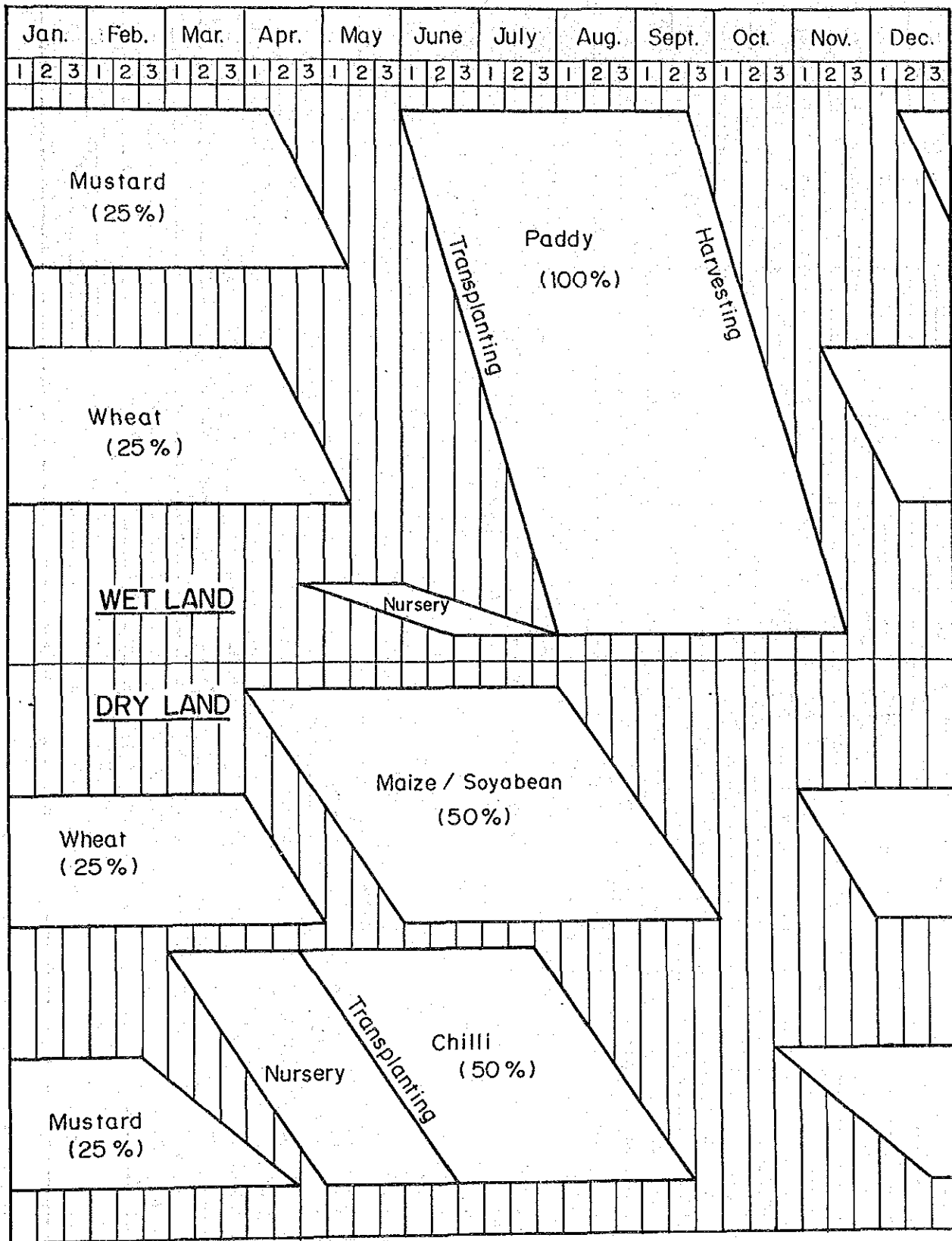


Fig.5.3.1 PROPOSED CROPPING PATTERN IN THE MODEL PROJECT AREA (1/2)
(TANGMACHHU)

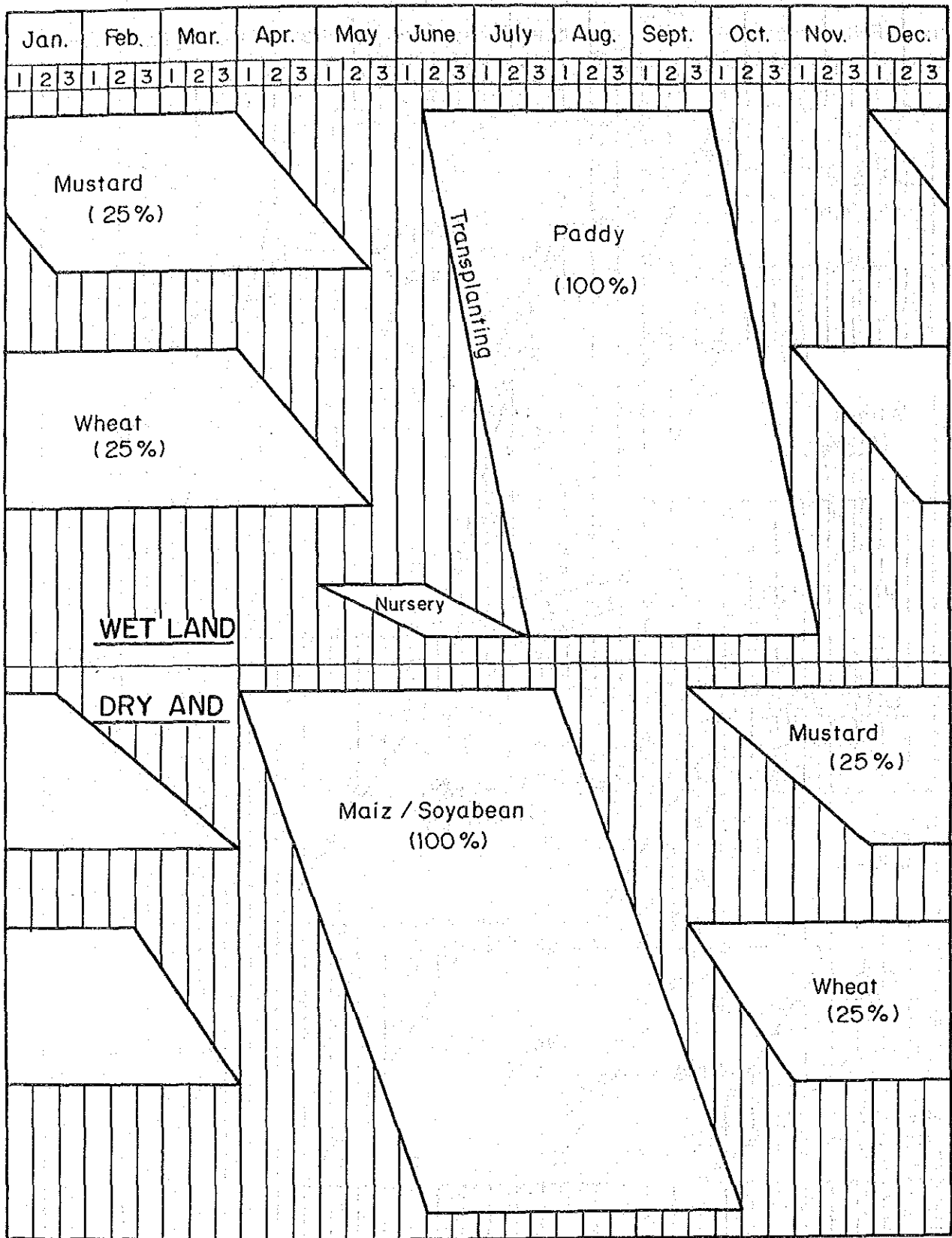


Fig.5.3.1 PROPOSED CROPPING PATTERN IN THE MODEL PROJECT AREA (2/2)
(MASANGDAZA)

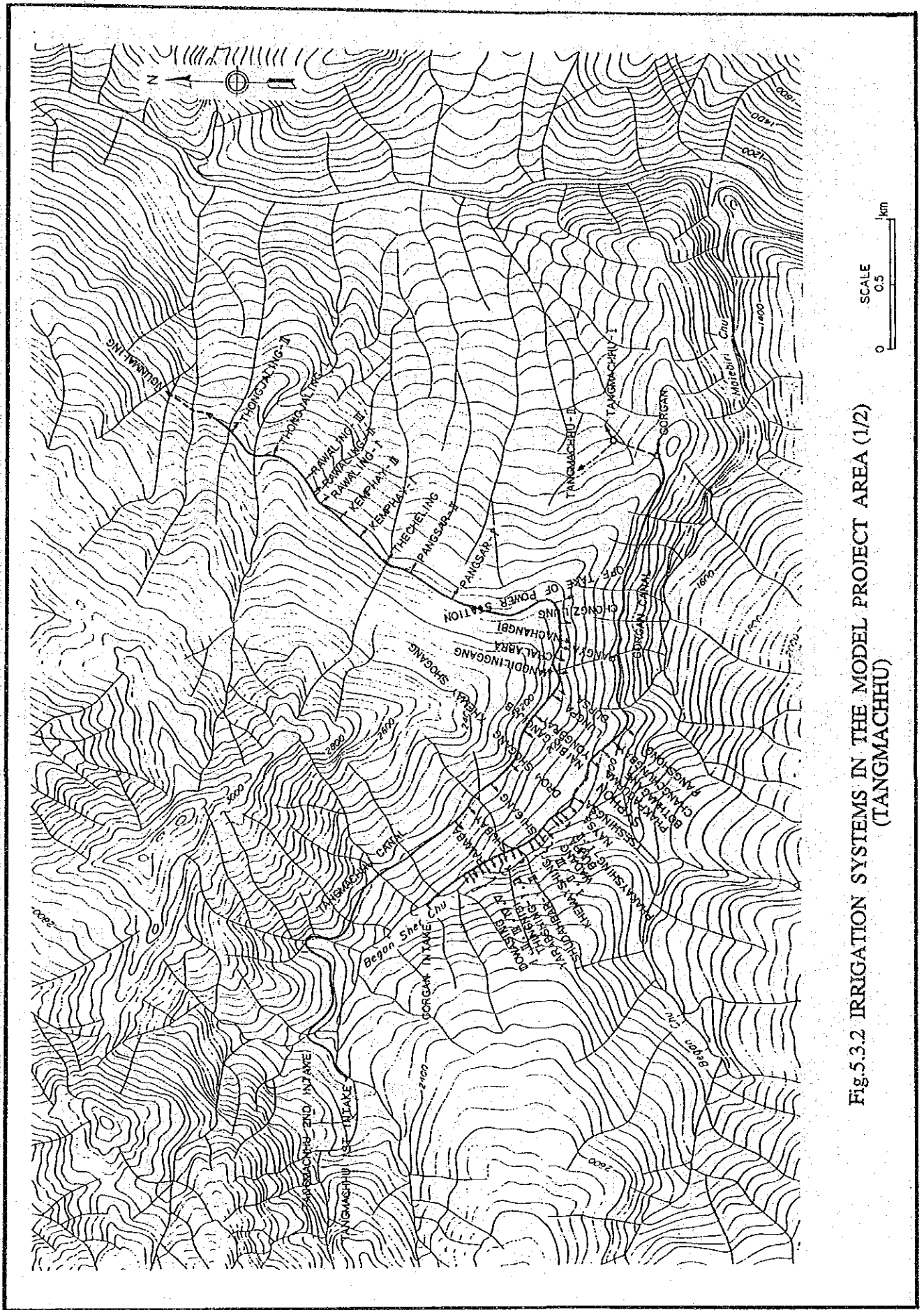


Fig.5.3.2 IRRIGATION SYSTEMS IN THE MODEL PROJECT AREA (1/2)
(TANGMACHHU)

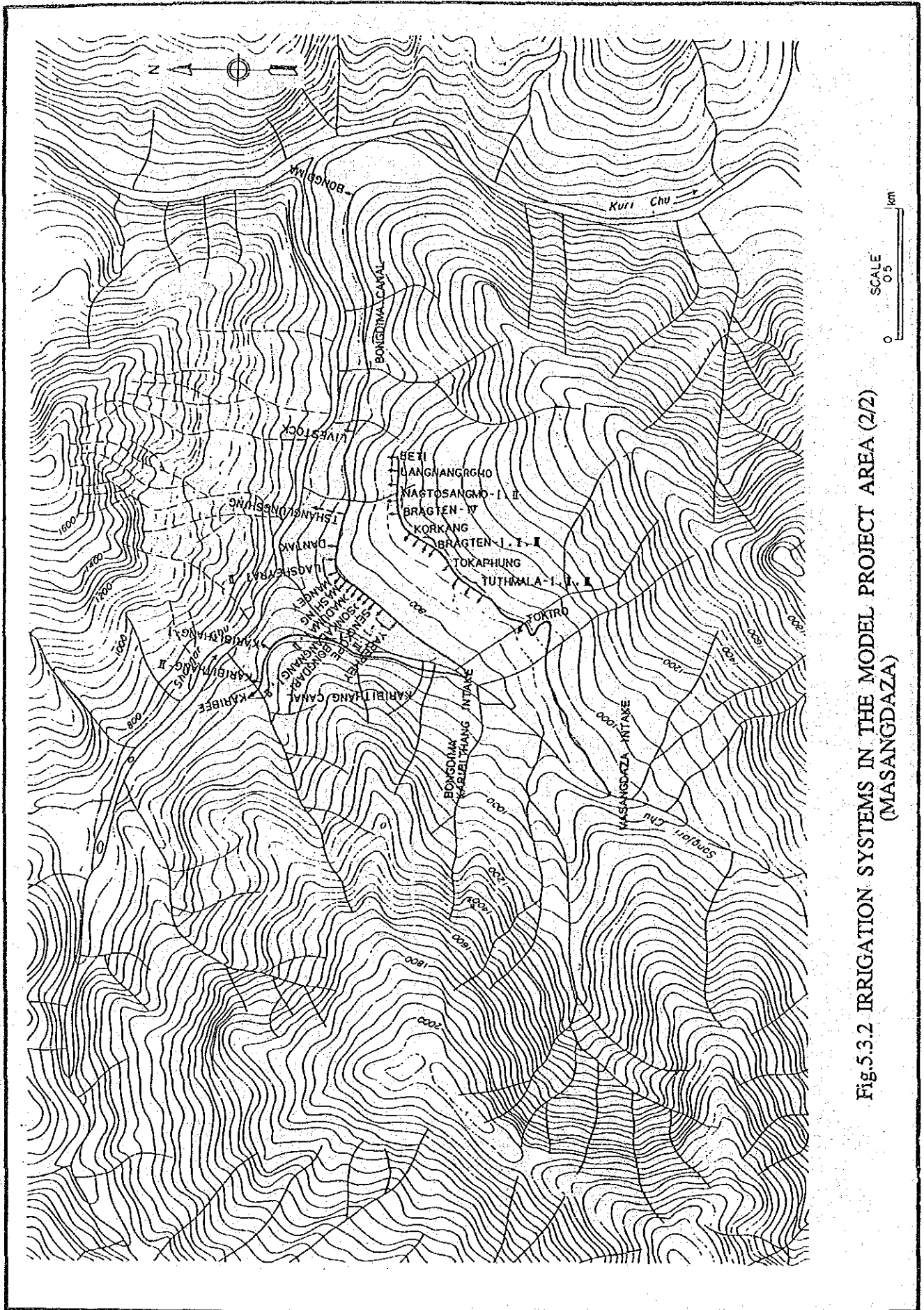


Fig.5.3.2 IRRIGATION SYSTEMS IN THE MODEL PROJECT AREA (2/2)
(MASANGDZA)

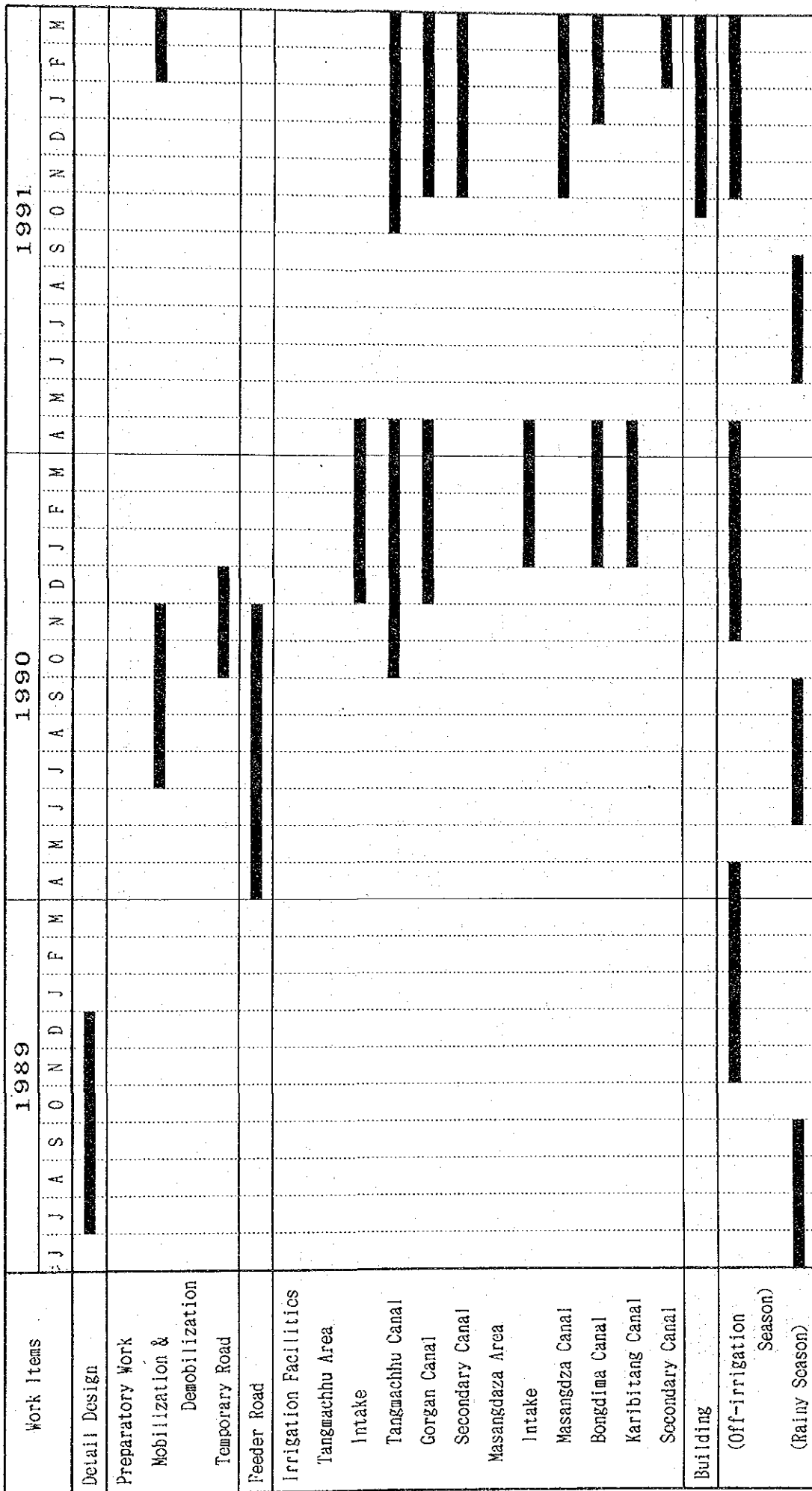


FIG. 5.5.1 TIME SCHEDULE OF PROJECT IMPLEMENTATION

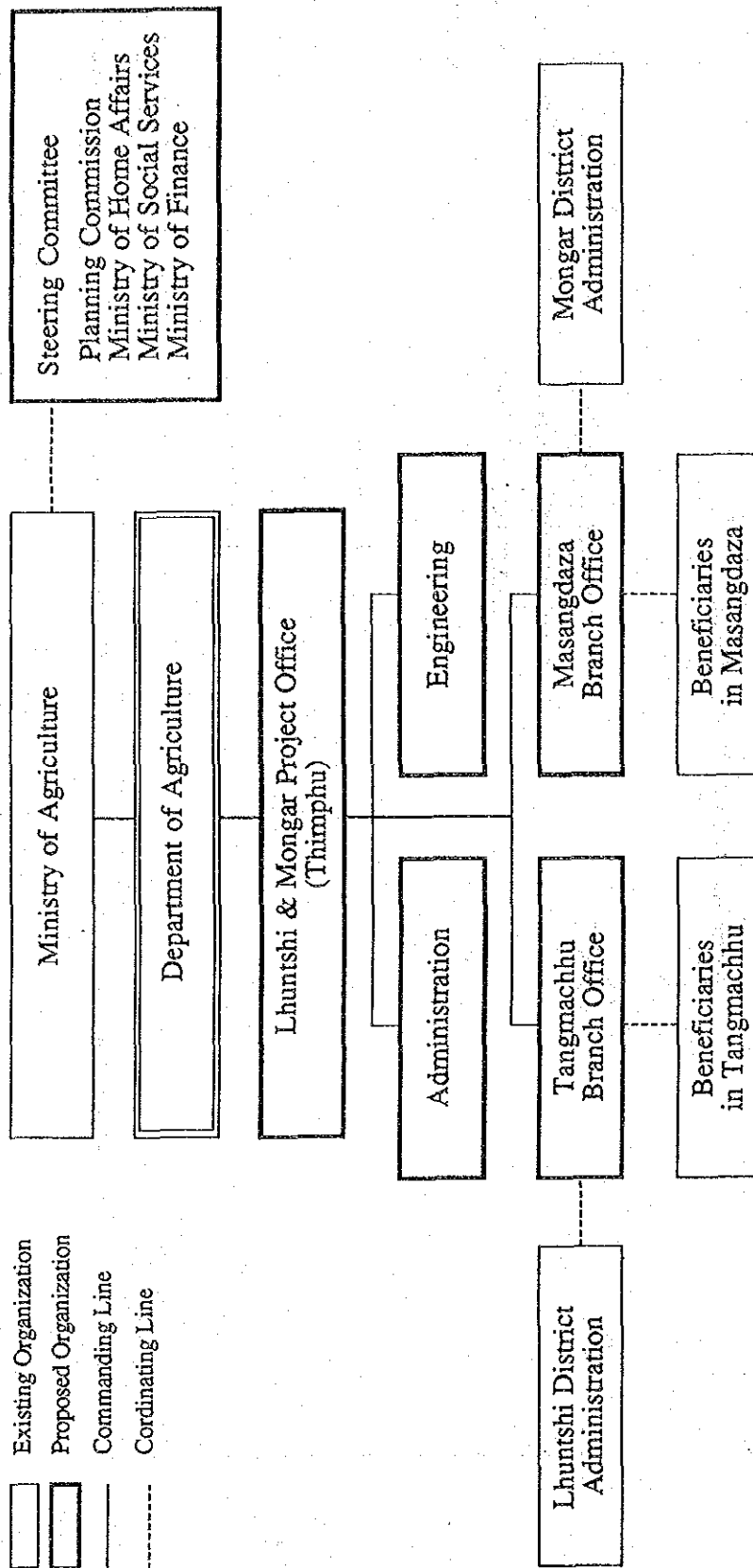


Fig. 5.6.1 PROPOSED ORGANIZATION FOR PROJECT EXECUTION

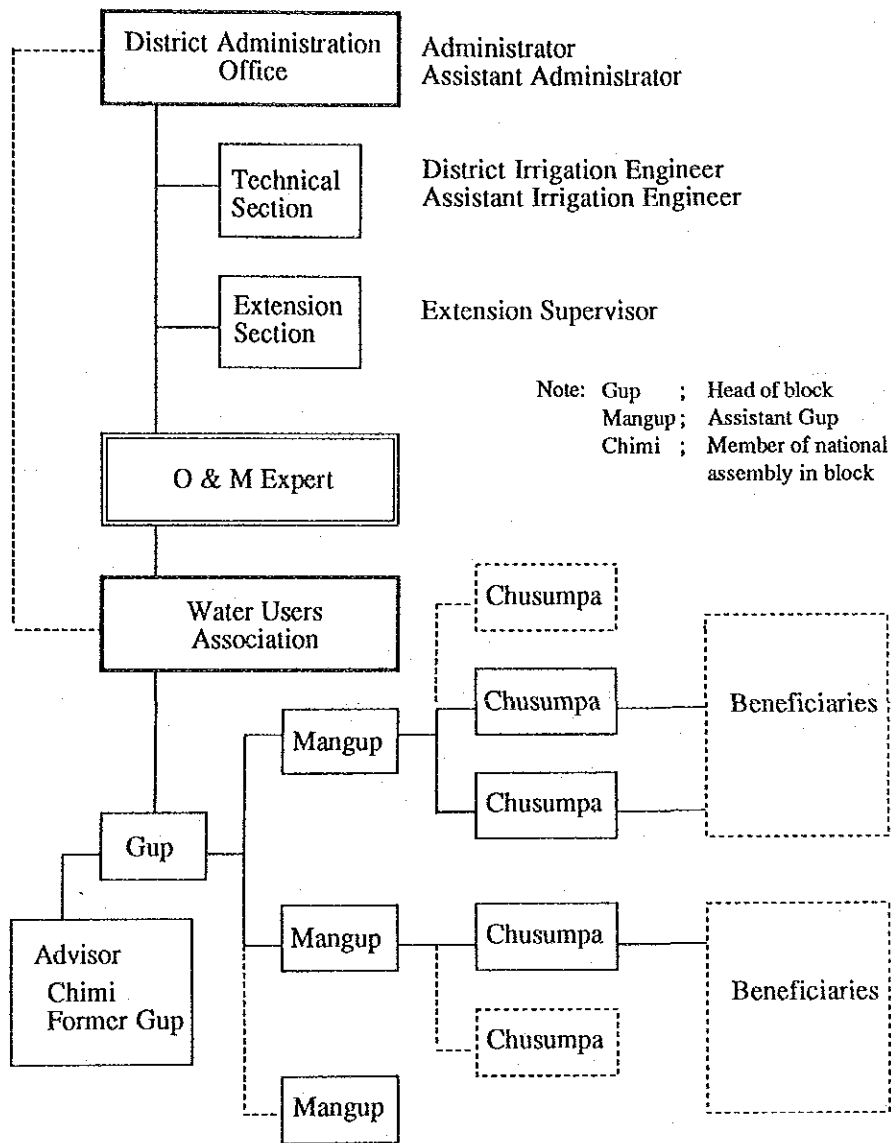



Fig. 5.6.2 PROPOSED ORGANIZATION FOR OPERATION AND MAINTENANCE OF IRRIGATION FACILITIES

ATTACHMENTS

SCOPE OF WORK
FOR
THE FEASIBILITY STUDY
ON
THE LHUNTSHI AND MONGAR
INTEGRATED AGRICULTURAL DEVELOPMENT PROJECT



Mr. Hikaru Itou

Leader of the Preliminary

Survey Team,

Japan International Cooperation Agency

JICA



MINISTRY OF AGRICULTURE
AND FORESTRY

I. INTRODUCTION

In response to the request of the Royal Government of BHUTAN, the Government of Japan decided to conduct the Feasibility Study on the Lhuntch and Mongar Integrated Agricultural Development Project (hereinafter referred to as "the Study"). Accordingly the Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of technical programme of the Government of Japan, will undertake the Study in close cooperation with the authorities of the Royal Government of BHUTAN. The present document sets forth the Scope of Work for the Study.

II. OBJECTIVE OF THE STUDY

The objective of the Study is to examine the technical, economic and financial feasibility of the Lhuntch and Mongar Integrated Agricultural Development Project.

III. OUTLINE OF THE STUDY

In order to achieve the objective mentioned above, the Study shall cover the following items:

1. Project area

The project covers total study area of about 2,000ha in Lhuntch and Mongar district including 17 sites already cultivated

2. Scope of the Study

The activities to be undertaken by the Japanese Study Team will be divided into two stages as follows.

1) Phase I (Pre-Feasibility) Study:

To conduct the preliminary study on the integrated agricultural development project.

2) Phase II (Feasibility) Study:

To conduct the feasibility study of the Lhuntch and Mongar Integrated Agricultural Development Project based on the results of the phase I Study.

2-1. Work Plan for the Phase I Study

(1) To carry out data collection and field survey on the following items.

- a. Topography
- b. Meteorology
- c. Hydrology
- d. Geology
- e. Soil
- f. Irrigation and Drainage
- g. Land use
- h. Farming Practice
- i. Rural infrastructure
- j. Agro/regional economy and institutions
- k. Others.

(2) To formulate a basic development concept.

2-2. Work plan for the Phase II Study

1) To Study the following items

- a. Soil and land classification survey
- b. Geological survey
- c. Land conservation survey,
- d. Socio-economic survey
- e. Regional economic and agro-institutional survey
- f. Others

2) To determine the following basic items for the development plan:

- a. Project area
- b. Land use
- c. Cropping pattern
- d. Water requirements
- e. Irrigation systems
- f. Estimation of yields
- g. Agro-institutional plan
- h. Rural infrastructure
- i. Others.

- 3) Formulation of the integrated development plan.
- 4) Preliminary design of the major structures
- 5) Operation and maintenance.
- 6) Preparation of the implementation schedule.
- 7) Estimation of the project cost and benefit.
- 8) Evaluation of the project
- 9) Recommendation

IV. WORK SCHEDULE

The whole work will be carried out in accordance with the attached tentative schedule (See Appendix I)

V. REPORTS

JICA will prepare and submit the following reports in English to The Royal Government of BHUTAN

1. Inception Report:

Twenty(20)copies at the commencement of the Field Study (PHASE I)

2. Progress Report:

Twenty(20)copies at the end of the Field Study (PHASE I)

3. Interim Report:

Twenty(20)copies at the commencement of the Field Study (PHASE II)

4. Draft Final Report

Twenty(20)copies at the completion of the home-office work (PHASE II),
Within a month after the presentation of the Draft Final Report, the Royal Government of BHUTAN shall forward the final comments on the Draft Final Report to JICA through the Embassy of Japan in India.

5. Final Report:

Fifty(50)copies within two(2)months after receiving the comments on the Draft Final Report from the Royal Government of BHUTAN.

VI. UNDERTAKING OF THE ROYAL GOVERNMENT OF BHUTAN

1. To facilitate smooth conduct of the Study, the Royal Government of BHUTAN shall take necessary measures.
 - 1) To secure the safety of the Study Team.
 - 2) To permit the members of the Study Team to enter, leave and sojourn in the Royal Government of BHUTAN for the duration of their assignment therein, and exempt them from alien registration and consular fees.
 - 3) To exempt the members of the Study Team from taxes, duties and other charges on equipments, machinery and other materials brought into the Royal Government of BHUTAN for the conduct of the Study.
 - 4) To exempt the members of the Study Team from income tax and other charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Study Team for their services in connection with the implementation of the Study.
 - 5) To provide necessary facilities to the Study Team for remittances as well as utilization of the funds introduced into the Royal Government of BHUTAN from Japan in connection with the implementation of the Study.
 - 6) To secure permission for entry into private properties or restricted areas for the conduct of the Study.
 - 7) To secure permission for the Study Team to take all data and documents (including photographs) related to the Study out of the Royal Government of BHUTAN to Japan.
 - 8) To provide medical services as needed.
2. BHUTAN shall bear claims, if any arises against the members of the 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 wilful misconduct on the part of the members of the Study Team.

3. Ministry of Agriculture and Forestry (hereinafter referred to as " MAF ") shall act as the counterpart agency to the Study Team and also as coordinating body in relation with other governmental and non-governmental organizations concerned for the smooth implementation of the Study.
4. MAF shall, at its own expense, provide the Study Team with followings, in cooperation with other relevant organizations:
 - 1) Available data and information related to the Study.
 - 2) Counterpart personnel
 - 3) Suitable office space with necessary equipments in Timpu, Lhunch and Mongar
 - 4) Appropriate number of vehicles with drivers in the project area
 - 5) Credentials or identification cards

VII. UNDERTAKING OF JICA

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

1. To dispatch, at its own expenses, Study Team to the Royal Government of BHUTAN,
2. To pursue technology transfer to counter personnel in the course of the Study,
3. To provide equipments necessary for the Study.

VIII. JICA and MAF shall consult with each other in respect of any matter that may arise from or in connection with the Study.

APPENDIX I

TENTATIVE SCHEDULE

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Field and Office Work in BHUTAN																
Office Work in Japan																
Submission of Report	△ Inc.R			△ P.R					△ I.R				△ D.R			△ F.R
Remarks	┌──Phase I Study──┐								┌──Phase II Study──┐							

Inc.R. Inception Report

P.R. Progress Report


I.R. Interim Report

D.R. Draft Final Feasibility Study Report

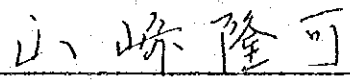
F.R. Final Feasibility Study Report

MINUTES OF MEETING
ON
THE INCEPTION REPORT
OF
THE LHUNTSHI AND MONGAR
INTEGRATED AGRICULTURAL DEVELOPMENT PROJECT
IN
THE KINGDOM OF BHUTAN

Thimphu
23 December 1987.



Dasho Khandu Wangchuk
Director, Department of
Agriculture, Ministry of
Agriculture, Royal
Government of Bhutan.



Mr. Takayoshi Yamazaki
Team Leader
JICA Study Team

1. A meeting was held on 22nd December 1987 at the Department of Agriculture between representatives of the Royal Government of Bhutan (hereinafter referred to as the Bhutan Government) and the Japanese Team to discuss the Inception Report which were submitted to the Bhutan Government as stipulated in the scope of work. The list of those in attendance are shown in Appendix (I).

2. Several clarifications and issues were brought to the meeting and salient results of the meeting are as follows :-
 - 2.1 Bhutan Government requested that the JICA Study Team (hereinafter referred to as the Team) take into consideration the following items in the course of the study;
 - : Local transportation system such as rope-ways and mono-rails for agricultural inputs and products,
 - : Low maintenance cost of facilities,
 - : Cash Crops including oil crops and horticulture,
 - : Post harvest facilities such as handring, processing, packing, etc.,
 - : Land conservation.

 - 2.2 Both sides agreed that the Yangbari site be excluded from the study as presently it is inaccessible & far away from the other sites in the study.

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2.3 Both sides confirmed that the Bhutan Government would at its own expense, provide one out of three vehicles, drivers and necessary fuel for the Team throughout the Phase I study. However, because of its budgetary constraints, Bhutan Government requested that JICA prepare budget for the rent of three vehicles from the start of Phase (II).

2.4 Both sides confirmed that the Bhutan Government would provide full-time counterpart personnel as shown in Appendix (I) while a flexible arrangement would be made for the other occasional ones so that relevant engineers would benefit from specific areas of technology transfer undertaken by the Team.

As regards the counter-part training in Japan, Bhutan Government informed the Japanese Team that one in charge of agricultural development would be assigned for the training.

3. This minutes takes effect upon signing by representative of the Team and the Department of Agriculture designated as the authority to act as the counterpart agency to the Team and also as a co-ordinating body in Bhutan Government by Ministry of Agriculture stipulated in the Scope of Work.

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Appendix (I)

List of Counter-part Staff.

1. Dasho Khandu Wangchuk : Director of Agriculture
2. Mr. D.B. Rai : Assistant Director of Agriculture
3. Mr. L.B. Rai : Assistant Engineer, Irrigation.
4. Mr. Chado Tenzin : Planning Officer, Agriculture Dept.

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Appendix (II)

MEMBERS OF MEETING

Place : Conference room in DOA

Time : 22, December 1987.

Government of Bhutan

Dasho Khandu Wangchuk : Director, DOA

Mr. Tshering Dorji : Joint Director, DOA

Mr. Pema Tenzin : Director, Ministry of Finance

Mr. Sherub Tenzin : Deputy Secretary, Ministry of Home Affairs

Mr. Kinlay Dorji : Planning Officer, Ministry of Agriculture.

Mr. D.B. Rai, Asst. Director (soil), Department of Agriculture.

Ms. Neelam Lama : Asst. Planning Officer, Planning Commission.

Mr. L.B. Rai : Asst. Engineer, Department of Agriculture.

Mr. Chado Tenzin : Planning Officer, DOA

Mr. S. Karchung : Asst. Engineer, Survey of Bhutan.

Mr. Mani Thapa : Asst. Planning Officer, Ministry of Agriculture.

The Japanese Team

Advisor :

Mr. Tsutomu Nakano, Coordinator, JICA

JICA Study Team :

Mr. Takayoshi Yamazaki, JICA Study Team (Team Leader)

Mr. Chikaichi Takahashi : JICA Study Team member.

Mr. Naoto Morioka : - do -

Mr. Yuichi Fukasaka : - do -

Kaf
23/12/87

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes the need for transparency and accountability in financial reporting.

2. The second part of the document outlines the various methods and techniques used to collect and analyze data. It includes a detailed description of the experimental procedures and the tools used for data collection.

3. The third part of the document presents the results of the study, including a comparison of the different methods and techniques used. It discusses the strengths and weaknesses of each method and provides a summary of the findings.

4. The fourth part of the document discusses the implications of the study and provides recommendations for future research. It highlights the need for further investigation into the effectiveness of the different methods and techniques used.

5. The fifth part of the document provides a conclusion and a summary of the key findings. It reiterates the importance of maintaining accurate records and the need for transparency and accountability in financial reporting.

6. The sixth part of the document includes a list of references and a list of figures. The references list the sources used in the study, and the figures provide a visual representation of the data collected.

MINUTES OF THE MEETING
FOR
THE FEASIBILITY STUDY
ON
THE LHUNTSHI AND MONGAR
INTEGRATED AGRICULTURE DEVELOPMENT PROJECT

Date: March 22, 1988

Place: Conference Hall of the Planning Commission

Attendance : Refer to List of Participants.

The meeting on the Progress Report for the feasibility study on the Lhuntshi and Mongar Integrated Agricultural Development Project was held on March 22, 1988. The team leader of the JICA Study Team, Mr. Yamazaki explained the content of the Progress Report. Discussion was made between authorities concerned and the JICA Study Team.

Both sides agreed with the content of the Progress Report in general, however, the Bhutan side will send comments on the Progress Report and on selection of the model project areas by the end of April 1988 after discussing with the concerned.

Dasho Khandu Wangchuk 22/3/88
Dasho Khandu Wangchuk
Director General
Department of Agriculture
Ministry of Agriculture
Thimphu : Bhutan

山崎隆平
Takayoshi Yamazaki
Team Leader
JICA Study Team

LIST OF PARTICIPANTS

<u>Name</u>	<u>Position</u>	<u>Agency</u>
Dasho C. Dorji	Secretary	Planning Commission
Dasho Leki Dorji	Secretary	Ministry of Agriculture
Dasho Khandu Wangchuk	Director General	Dept. of Agriculture
Mr. Sherap Tenzin	Deputy Secretary	Home Ministry
Mr. Dawa Tenzin	Planning Officer	Planning Commission
Mr. Mani Thapa	Asst. Planning Officer	Ministry of Agriculture
Mr. Chado Tenzin	Planning Officer	Dept. of Agriculture
Mr. T. Yamazaki	Team Leader	JICA Study Team
C. Takahashi	Irrigation Engineer	- do -
Mr. T. Kajimoto	Hydrologist	- do -
Mr. N. Morioka	Pedrogist	- do -
Mr. Y. Fukasaka	Agro-economist	- do -

MINUTES OF MEETING
ON
THE INTERIM REPORT
FOR
THE FEASIBILITY STUDY
ON
THE LHUNTSHI AND MONGAR
INTEGRATED AGRICULTURAL DEVELOPMENT PROJECT


- 1.Date : July 11,1988
- 2.Place : Meeting Hall, Planning Commission
- 3.Attendants : see attached list

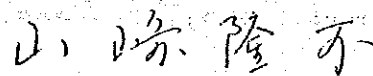
4.Summary of Discussion

The Team Leader, Mr.T.Yamazaki explained the Interim Report to the attendants from authorities concerned. Various discussions were then made between attendants and the JICA Study team, and both sides confirmed the followings through discussion:

- (1) The Interim Report submitted to DOA on July 7,1988 was basically accepted by DOA.
- (2) DOA agreed that Tangmachhu area in Lhuntshi and Masangdaza Integrated area in Mongar are selected as the model project areas.
- (3) DOA requested the JICA Study Team to include the survey and design of irrigation canals in other areas in the study of model project. The JICA Study Team explained it is difficult to include survey and design of irrigation canal in other areas because of the short survey period in the Second Phase.
- (4) Numbers and kinds of agricultural machineries and tools for the model projects should be determined and justified based on their requirements. These machineries and tools includes manual threshers, improved plow, manual weeders, manual transplanters, etc.
- (5) Agro-processing facilities should be selected based on their requirements not only in the model project areas but also relevant areas of the project areas. These agro-processing facilities are chilli milling facilities, oil extraction facilities, maize dry facilities, and maize grinder.

- (6) Reclamation of the paddy field from dry land is the one of the components in the Masangdaza Integrated area, but reclamation will be carried out by farmers themselves.
- (7) DOA requested the JICA Study Team to add the sub-title, along with the line of model project in Tangmachhu and Masanddaza, under the main title of the project, because DOA requires the sub-title for presentation to the Parliament as well as the Royal Government of Bhutan.
- (8) DOA has requested the JICA Study Team to consider supplying a few tractors(along with the trucks) for facilitating transportation from the village to the highway.
- (9) In response to the DOA request for more machines and equipments, the JICA Study Team pointed out that it would be easier to avail such equipments under KR-II rather than through this project.
- (10) In view of the large scale of activities which will take place in the project, the Planning Commission has asked the JICA Study Team to keep in mind, the environment aspect of the project i.e. to try and incorporate soil, forest,etc. conservation activities.


Dasho Khandu Wangchuk
Director General
Department of Agriculture
Ministry of Agriculture
Royal Government of Bhutan


Takayoshi Yamazaki
Team Leader
JICA Study Team

LIST OF PARTICIPANTS
ON
THE MEETING
FOR
THE INTERIM REPORT
FOR
THE FEASIBILITY STUDY
ON
THE LHUNTSHI AND MONGAR
INTEGRATED AGRICULTURAL DEVELOPMENT PROJECT

Dasho C. Dorji : Deputy Minister, Planning Commission
Dasho Khandu Wangchuk : Director General, DOA
Mr. Sherub Tenzin : Deputy Secretary, Home Ministry
Mr. Keylzang Tshering : Irrigation Engineer, DOA
Mr. Chado Tenzin : Planning Officer, DOA
Miss Neelam Lama : Planning Officer, Planning Commission

Mr. T. Yamazaki : Team Leader, JICA Study Team
Mr. C. Takahashi : JICA Study Team
Mr. T. Kajimoto : JICA Study Team
Mr. N. Morioka : JICA Study Team
Mr. Y. Fukasaka : JICA Study Team
Mr. M. Iwaki : JICA Study Team

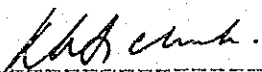
MINUTES OF MEETING
ON
THE DRAFT FINAL REPORT
ON
THE LHUNTSHI AND MONGAR INTEGRATED
AGRICULTURAL DEVELOPMENT PROJECT

1. Date : November 18, 1988
2. Place : Department of Agriculture
3. Present : See attached list
4. Summary of Discussion:


The Director General of Agriculture welcomed Mr. T. Tujimoto of JICA, the members of the JICA Study Team and the representatives of the various departments of the Royal Government to the meeting. After briefly explaining the purpose of the meeting the Director General requested Mr. Yamazaki, Team Leader of the JICA Study Team to present the Report.

The presentation by the Team Leader was followed by discussions out of which the following salient points emerged:

1. The Draft Final Report submitted to the Royal Government on 16th November 1988 was in principle accepted by the members of the meeting as it was in keeping with the agreements reached during earlier meetings.
2. It was agreed that the Royal Government would send its comments, if any, on the Draft Final Report to JICA through diplomatic channels within one month after receipt of the report to facilitate finalisation.



Dasho Khandu Wangchuk
Director General
Department of Agriculture
Ministry of Agriculture
Royal Government of Bhutan



Takayoshi Yamazaki
Team Leader
Jica Study Team

LIST OF PARTICIPANTS

SUBJECT : DRAFT FINAL REPORT OF LHUNTSHI/MONGAR PROJECT.

DATE AND TIME : 88.11.18 1000 HOURS

PLACE: DIRECTOR GENERAL'S CHAMBER

NO.	NAME	POSITION
1.	DASHO KHANDU WANGCHUK	: DIRECTOR GENERAL, DEPARTMENT OF AGRICULTURE
2.	MR M.P SHERMA	: JOINT DIRECTOR BUDGET & ACCOUNTS
3.	MR.PEM L. DORJI	: CHIEF PLANNING OFFICER, DEPARTMENT OF AGRICULTURE
4.	MISS N.LAMA	: ASSISTANT PLANNING OFFICER, PLANNING COMMISSION
5.	MR SANGYE DORJI	: ASSISTANT PLANNING OFFICER, HOME MINISTRY
6.	MR. MANI THAPA	: ASSISTANT PLANNING OFFICER, MINISTRY OF AGRICULTURE
7.	MR. CHADO TNEZING	: PLANNING OFFICER, DEPARTMENT OF AGRICULTURE
8.	MR. KAYLZANG TSHERING	: ASSISTANT ENGINEER, DEPARTMENT OF AGRICULTURE

JICA TEAM

1.	MR. T. TUJIMOTO	: COORDINATOR, JICA
2.	MR. T. YAMAZAKI	: TEAM LEADER, JICA STUDY TEAM
3.	MR. C. TAKAHASHI	: JICA STUDY TEAM

**MEMBER LIST OF COUNTERPARTS CONCERNED
AND
JICA STUDY TEAM**

Counterpart Personnel

Dasho Khandu Wangchuk	Director General, DOA
Mr. Tshering Dorji	Joint Director (Irrigation), DOA
Mr. D.B.Rai	Assistant Director of Agriculture, DOA
Mr. L.B.Rai	Engineer, Irrigation, DOA
Mr. Chado Tenzin	Planning Officer, DOA
Mr. Kaylzang Tshering	Assistant Irrigation Engineer, DOA

Personnel Concerned

Dasho C. Dorji	Deputy Minister, Planning Commission
Dasho Dago Tshering	Deputy Minister, Home affair
Mr. Sherub Tenzin	Deputy secretary, Home affair
Mr. Pem Dorji	Joint Director(Planning), DOA
Mr. Thubten Norbu	Joint Director (Administration/Account), DOA
Mr. Kinley Tshering	Deputy Managing Director, FCB

Mongar Dzongkhag

Dasho Gsay Lhendup	Dzongdag(District Administrator)
Mr. Karchung Tshering	Dzongrab(Assistant Dzongdag)
Mr. Dhanapati Dhungyell	District Agricultural
Mr. Sangay Dorji	District Engineer
Mr. Rinching Tshering	Agri. Supervisor(Salling)
Mr. Nima Wezer	Agri. Supervisor(Mongar)
Mr. Purnanda Dhital	Agri. Supervisor(Mushroom)
Mr. Dambar Rai	Agri. Supervisor(Yangbari)
Mr. L. N. Sharma	Agri. Supervisor(Chakaling)
Mr. Nidu Prasad Sharma	Agri. Supervisor(Chaskhar)

Lhuntshi Dzongkhag

Dasho Pemba Gyeltshen	Dzongdag(District Administrator)
Mr. Pradhun	District Agricultural Officer
Mr. Sonam Tshering	District Engineer
Mr. Sonam Gyeltshen	Agri. Inspector
Mr. D. P. Sharma	Agri. Inspector (Gangzoor)
Mr. Sangye Khandu	Agri. Extension Worker(Tangmachhu)
Mr. Tenzin Wondi	Agri. Extension Worker(Menji)
Mr. Kezang Phutso	Gup, Tangmachhu

JICA Study Team

Takayosi YAMAZAKI	Team Leader
Chikaichi TAKAHASHI	Irrigation and Drainage Engineer
Teruo KAJIMOTO	Hydrologist
Tatsuhiko SHINODA	Agronomist (Home work only)
Naoto MORIOKA	Pedologist
Yuichi FUKASAKA	Agricultural Economist
Masahiro IWAKI	Design Engineer

JICA

