

HIS MAJESTY'S GOVERNMENT OF NEPAL
MINISTRY OF WORKS AND TRANSPORT
DEPARTMENT OF ROADS

THE FEASIBILITY STUDY
ON
SINDHULI ROAD CONSTRUCTION PROJECT
FINAL REPORT
Vol. II APPENDICES



JUNE, 1988

JAPAN INTERNATIONAL COOPERATION AGENCY

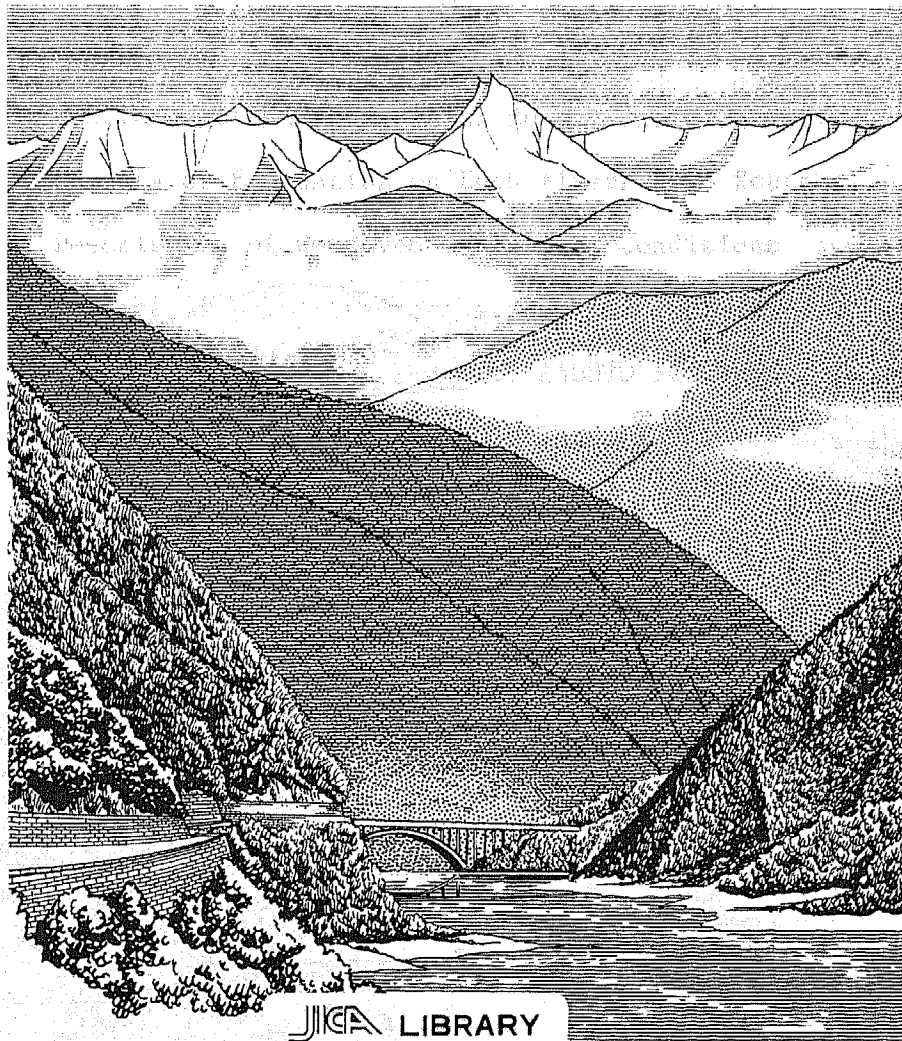
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Appendix 1.1.1 Scope of Work for the Project

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 Director, Office of Management and Enterprise Services
 State of Maryland
 Department of General Services
 100 North E Street
 Annapolis, MD 21401

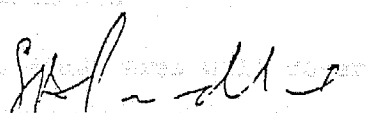
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 Director, Office of Management and Enterprise Services
 State of Maryland
 Department of General Services
 100 North E Street
 Annapolis, MD 21401

Appendix 1.1.1
SCOPE OF WORK
FOR
FEASIBILITY STUDY
ON
SINDHULI ROAD CONSTRUCTION PROJECT
IN
KINGDOM OF NEPAL

AGREED UPON BETWEEN
HIS MAJESTY'S GOVERNMENT OF NEPAL
AND
JAPAN INTERNATIONAL COOPERATION AGENCY

Kathmandu : July 15, 1986


Shiva Bahadur Pradhanang
CHIEF ENGINEER
DEPARTMENT OF ROADS
MINISTRY OF WORKS AND TRANSPORT
HIS MAJESTY'S GOVERNMENT OF NEPAL


Naotada Isami
LEADER OF THE MISSION
JAPAN INTERNATIONAL COOPERATION
AGENCY

I INTRODUCTION

In response to the request of His Majesty's Government of Nepal (hereinafter referred to as "HMG/N"), the Government of Japan decided to implement the Feasibility Study on Sindhuli Road Construction Project in the kingdom of Nepal (hereinafter referred to as "the Study"), in accordance with the relevant laws and regulations in force in Japan.

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

The present document sets forth the Scope of Work for the Study.

II OBJECTIVE OF THE STUDY

The objective of the Study is to carry out the feasibility study on the construction of Sindhuli Road. The Study will include the following sections;

Section I : improvement of the existing road and construction of bridges between Mahendra Rajmarg at Bardibas and Sindhuli bazar,

Section II: construction of the road between Sindhuli bazar and the place nearby Banepa on Arniko Rajmarg (Kavre)

III STUDY AREA

The study area will cover the section I and II mentioned above and their environs.

IV SCOPE OF THE STUDY

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

(1) Socio-economic Surveys

- 1) Collection and review of existing data
- 2) Interviews with relevant Government Departments and Agencies

gms

- 3) Review of population, socio-economic conditions and current and future development plans/programmes
- 4) Review of sectoral and regional development plans/programmes
- 5) Review and forecast of sectoral and regional development activities

(2) Traffic Surveys

- 1) Collection of data, survey and analysis of traffic conditions
- 2) Traffic counts on selected roads
- 3) Origin-destination surveys on selected roads
- 4) Determination of existing, diverted, generated and development traffic
- 5) Other traffic studies to determine existing traffic patterns and to establish traffic desire lines
- 6) Future traffic demand forecast

(3) Engineering Studies

- 1) Preparation of topographic map
 - a. Mapping of study area using the existing aerial photographs
 - b. Mapping of study area using aerial photographs (to be taken) if necessary
- 2) Collection and study of basic engineering data
 - a. Soil and geological aspect
 - b. Hydrological aspect
 - c. Meteorological aspect
 - d. Materials aspect
 - e. Construction method
 - f. Construction plant and equipment
 - g. Other studies (safety of road, failure of slope, etc.)
- 3) Study of a preferred route and design
 - a. Alternative routes study
 - b. Preliminary study of a preferred route
 - c. Design standards and criteria (geometry, structure and pavement)
 - d. Preliminary design
 - e. Maintenance and management plan
 - f. Estimation of costs for land acquisition, construction and maintenance

- (4) Economic Analysis
 - 1) Estimation of benefits
 - 2) Net present value for the project
 - 3) Cost/Benefit Ratio
 - 4) Internal Rate of Return
 - 5) Sensitivity analysis
- (5) Project Evaluation and Recommendation
 - 1) Project evaluation
 - 2) Recommendation

V STUDY SCHEDULE

The whole study will be carried out in accordance with the tentative study schedule attached.

VI REPORTS

JICA shall prepare and submit the following reports in English to HMG/N.

1. Inception Report
Thirty (30) copies at the beginning of the field survey.
2. Progress Report I
Thirty (30) copies
Within five (5) months after submission of the Inception Report.
3. Progress Report II
Thirty (30) copies
Within three (3) months after submission of the Progress Report I
4. Interim Report
Thirty (30) copies.
Within seven (7) months after submission of the Progress Report II
5. Draft Final Report
Thirty (30) copies.
Within three (3) months after submission of the Interim Report.

HMG/N will provide JICA with its comments within three (3) weeks after the receipt of the Draft Final Report.

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6. Final Report

Fifty (50) copies

within three (3) months after receipt of the comments of HMG/N on the Draft Final Report.

VII UNDERTAKINGS OF HMG/N

1. To facilitate smooth implementation of the Study, HMG/N takes 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 alien registration requirements and consular fees,
 - (3) to exempt the members of the Japanese study team from taxes, duties 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 taxes and other charges of any kind imposed on or in connection with any emolument or allowance paid to the members of the Japanese study team for their services in connection with the conduct of the Study,
 - (5) to 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 wilful misconduct on the part of the members of the Japanese study team,
 - (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 positive films and prints of 1/50,000 scale aerial photographs and original one inch one mile maps) related to the Study out of the kingdom of Nepal to Japan,
 - (8) to provide the medical services as needed (Its expenses will be chargeable on the members of the Japanese study team),

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(9) to provide, at its own expense, the Japanese study team with the followings;

- 1) available data and information related to the Study,
- 2) Counterpart personnel,
- 3) suitable office space with necessary telephone and furniture in HDQ at Kathmandu and project sites,
- 4) A helicopter with pilots and vehicles with drivers,
- 5) Credentials or identification cards,
- 6) Permission for use of radio communication (Walkie-Talkie)

2. The Department of Roads will 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.

VIII UNDERTAKINGS OF JICA

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

- 1) to dispatch, at its own expense, study teams to the kingdom of Nepal,
- 2) to pursue technology transfer to HMG/N's counterpart personnel in the course of the Study,
- 3) to provide the equipment and machinery for the conduct of the Study, which will remain the property of JICA unless otherwise agreed upon.

IX MUTUAL CONSULTATION

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

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Tentative Schedule

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Work in Nepal																						
Work in Japan																						
Report Presentation																						

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LIST OF PARTICIPANTS

Japanese Team

1. Mr. Naotada Isami
(Team Leader)
Deputy Director, Road Division,
Chubu Regional Construction Bureau,
Ministry of Construction
2. Mr. Yasuyuki Koga
(Road Planning)
Head, Soil Dynamics Division,
Construction Method and Equipment Department
Public Works Research Institute,
Ministry of Construction
3. Mr. Toshihiro Meta
(Bridge Planning)
Senior Civil Engineer,
Concrete Engineering Division, Laboratory,
Japan Highway Public Corporation
4. Mr. Nobuo Nagai
(Survey Planning)
Head, Geographical Research Division,
Geographical Department, Geographical
Survey Institute,
Ministry of Construction
5. Mr. Takeshi Nakano
(Coordinator)
Deputy Head, First Development Survey Div.
Social Development Cooperation Department
Japan International Cooperation Agency

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Nepalese Team

1. Mr. Shiva Bahadur Pradhanang Chief Engineer,
Department of Roads,
Ministry of Works and Transport

2. Mr. Angur Man Tuladhar Superintendent Engineer,
Department of Roads,
Ministry of Works and Transport

3. Mr. Basanta Narshing Pradhan Project in charge,
Department of Roads,
Ministry of Works and Transport

JICA Nepal Office

1. Mr. Mitsukuni Sugimoto Assistant Resident Representative
JICA Nepal Office

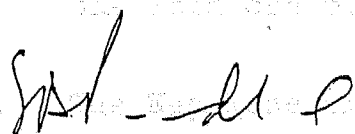
Shiva Bahadur Pradhanang
Chief Engineer
Department of Roads
Ministry of Works and Transport
The Ministry & Department of Works

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MINUTES OF MEETING

FEASIBILITY STUDY ON SINDHULI ROAD CONSTRUCTION

Kathmandu : July 15, 1986



Shiva Bahadur Pradhanang
Chief Engineer
Department of Roads
Ministry of Works and Transport
His Majesty's Government of Nepal.



Naotada Isami
Leader of the Mission
Japan International
Cooperation Agency.

MINUTES OF MEETING

The Japanese Preliminary Survey Team (hereinafter referred to as "Japanese Side") and the Nepalese counterpart of the Department of Roads (hereinafter referred to as "Nepalese Side") held a series of discussions during 8 July to 14 July, 1986 concerning the Implementation Arrangement for the study of Sindhuli Road Construction Project.

The following minutes were prepared to confirm the main issues discussed and matters agreed upon by both sides in connection with the Scope of Work of the Study.

1. The Study is expected to start as early as possible. The both sides shall make the best effort on whatever possible in the preparation of the Study before the commencement of the Study.
2.
 - a. The Nepalese side shall take the necessary action in time to make available the positive films and prints of 1/50,000 scale aerial photographs and original one inch one mile maps of the study area.
 - b. The Nepalese side shall take the necessary action in time to obtain the approval to take the new aerial photographs of the study area.
3. The Japanese side shall inform of the specification of the radio communication facilities which will be used as the branch stations of the Department of Roads. (Frequency 3580 or 6785 MH) The Nepalese side shall take the necessary action in time to obtain the approval for their use.

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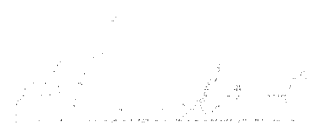
4. The Nepalese side stated that for the 1986/87 fiscal year, provision of the helicopter and vehicles might be difficult due to the fact that the budget for the year has been already set aside and that, however, for the 1987/88 fiscal year, the Nepalese side shall make the best efforts to provide these facilities at their own expenses.


5. The Nepalese side requested that the following items be brought into Nepal in addition to the survey equipment. The Japanese side noted the request.
 - a. Four-wheel driving vehicles for Field Survey.
 - b. Micro-Computers for Traffic Analysis and others.
 - c. Photo-Copy Machines
 - d. Words Processors
 - e. Electric Typewriters..

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Appendix 1.1.2 Minutes of Discussion for the Project


Kazuo Yamada
Chief Engineer,
Department of Roads,
Ministry of Public Works,
Tokyo, Japan


Hiroshi Nishida
For Vice Director of
Research Institute,
Tokyo, Japan

Appendix 1.1.2 (I)

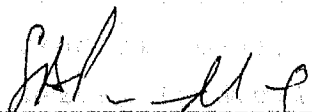
MINUTES OF MEETING

THE FEASIBILITY STUDY

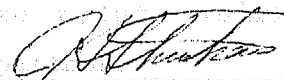
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SINDHULI ROAD CONSTRUCTION PROJECT

Kathmandu : November 11th, 1986

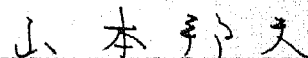


Shiva Bahadur Pradhanang
Chief Engineer,
Department of Roads,
Ministry of Works & Transport
His Majesty's Government of Nepal



Hiroki Shinkai
For Team Leader of
Feasibility Study Team,
Japan International Cooperation
Agency

Witnessed by;



Kunio Yamamoto
Chairman,
Advisory Committee
Japan International Cooperation
Agency

In pursuance of the Preliminary Study conducted in July, 1986, the Feasibility Study Team organized by Japan International Cooperation Agency (JICA) and Nepalese authorities concerned of the Department of Roads held a series of discussions during 6th November to 11th November, 1986 concerning the Inception Report for the feasibility study on Sindhuli Road Construction Project.

The following minutes were prepared and agreed on by both the Feasibility Study Team and the Department of Roads:

1. Inception Report:

30 (thirty) copies of the Inception Report were submitted by the Study Team in accordance with the Agreement, and generally agreed on by the Department of Roads, Ministry of Works and Transport.

It was confirmed by both Feasibility Study Team and Department of Roads that the Sindhuli Road Construction Project is to connect Bardibas on the Mahendra Rajmarg (E/W Highway) with Banepa (or the place nearby Banepa) on the Arniko Rajmarg (Kodari Road), through the intermediate points nearby, Sindhu Bazar, Sindhuli Garhi, Nabughat and Nepalthok.

2. Data collection:

As for data collection required in connection with the feasibility study, the Department of Roads expressed deep understanding & promised to assist the Study Team obtaining the required data.

ANNEX Members Present:

Department of Roads, Min. of Works & Transport.

Mr. S.B. Pradhanang Chief Engineer, Chairman
of the Meeting.

Mr. A.M. Tuladhar Superintending Engineer

Mr. B.N. Pradhan Project in-charge

JICA Staff

Mr. H. Ono (Representative of JICA,
Kathmandu office).

Mr. S. Shimbo (JICA, Tokyo)

Mr. Y. Fukuda (JICA, Tokyo, Co-ordinator)

Advisory Committee

Mr. K. Yamamoto (Chairman)

Mr. N. Nagai (Mapping Specialist)

Feasibility Study Team of JICA

Mr. T. Tamura (Team Leader)

Mr. H. Shinkai, Mr. T. Nakagawa, Mr. M. Tatebayashi &

Mr. A. Morikawa (Nippon Koei)

Mr. Y. Hayashi, Mr. K. Toyoda (Kokusai Kogyo)

THE MINUTES OF DISCUSSION
FOR
PROGRESS REPORT (I) OF THE FEASIBILITY STUDY
ON
SINDHULI ROAD CONSTRUCTION PROJECT

The meeting was held on March 25, 1987 at the JICA Head Office, Tokyo. The members of the Study Team and the JICA staff participated in the meeting. The minutes of the meeting are as follows:

1. The members of the Study Team presented the contents of the Progress Report (I) on the Sindhuli Road Construction Project to the JICA staff.

2. The JICA staff made comments on the contents of the Progress Report (I).

3. The Study Team responded to the comments of the JICA staff.

- 1) JICA authorized the release of 30 copies of the Progress Report (I).
- 2) The contents of the Progress Report (I) are to be printed by JICA.
- 3) The Japanese copies selected by the Study Team are to be sent to JICA, subject to approval of JICA. The Japanese copies of the Progress Report (I) are to be sent to JICA by the end of April, 1987.

4) JICA confirmed the date of the meeting on March 25, 1987 at the JICA Head Office, Tokyo.

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

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G.K.

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THE MINUTES OF DISCUSSION
FOR
PROGRESS REPORT (I) OF THE FEASIBILITY STUDY
ON
SINDHULI ROAD CONSTRUCTION PROJECT

Date : March 25, 1987
Place : DOR Conference Room
Attendance : List of attendance is shown
in the attached paper

The Study Team for the above-mentioned study, organized by the Japan International Cooperation Agency (JICA), submitted thirty (30) copies of Progress Report (I) to the Department of Roads, (DOR), Ministry of Works and Transport, His Majesty's Government of Nepal (HMG), on March 23, 1987.

Prior to the discussion, Mr. M. Koshiha, Team Leader of the Study Team, made briefing of the Progress Report (I). Through the discussion, both DOR and the Study Team confirmed the following:

- 1) DOR acknowledged the receipt of 30 copies of Progress Report (I).
- 2) The content of the Progress Report (I) was agreed in principle by DOR.
- 3) The optimum route selected by the Study Team was accepted by DOR, subject to approval of HMG. DOR shall inform JICA Tokyo of the approval of HMG through JICA Nepal Office by middle of April, 1987.
- 4) DOR confirmed that the Feasibility Study of Sindhuli Road Construction Project need not consider the Sun Kosi No. 2 Dam scheme, planned in the "Master Plan study on the Kosi River Water Resources Development", in its alignment design.

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- 5) The alternative route connecting with Dhulikhel of which feasibility was studied in the initial route study on 1:50,000 scale map will be incorporated in Progress Report (II).

M. Koshiha

Masaru Koshiha
Team Leader of the Study
Team, JICA

A.M. Tuladhar

A.M. Tuladhar
Acting Chief Engineer
Department of Roads
Ministry of Works and Transport
His Majesty's Government of
Nepal

Witnessed by:

Yasuyuki Koga

Yasuyuki Koga
Co-Chairman of Advisory Committee
Japan International Cooperation Agency

LIST OF ATTENDANTS

1. Department of Roads (DOR)

Mr. A.M. Tuladhar	Acting Chief Engineer
Mr. G.P. Ranjitkar	Joint Secretary
	Ministry of Works and Transport of H.M.G.
Mr. K.B. Subba	Senior Divisional Engineer (DOR)
Mr. B.N. Pradhan	Chief Counterpart of the Project

2. JICA Staff

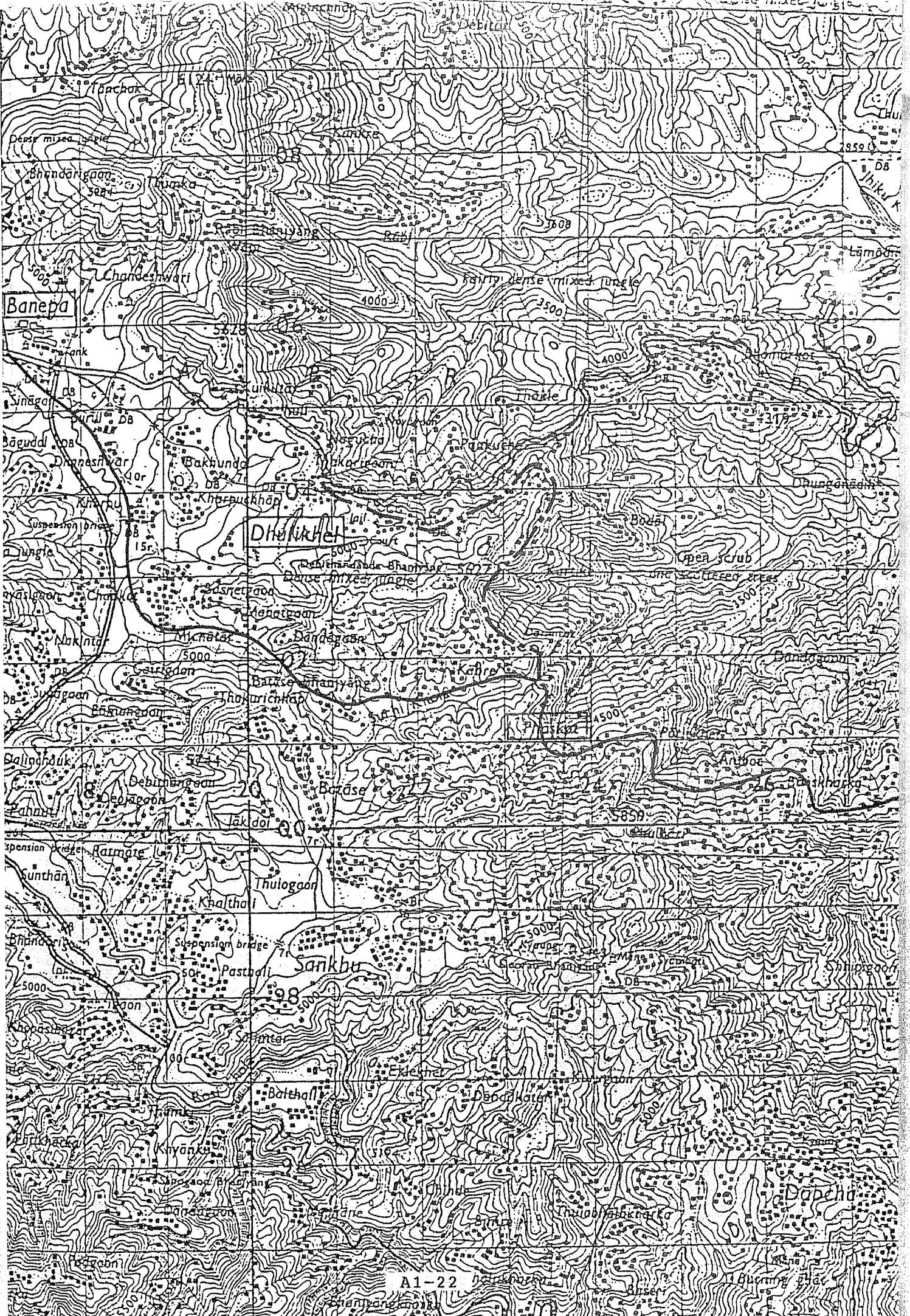
Mr. H. Ono	Representative of JICA, Kathmandu Office
Mr. Y. Fukuda	JICA Tokyo, Co-ordinator

3. Advisory Committee

Mr. Y. Koga	Co-Chairman of Advisory Committee (Ministry of Construction, Japan)
Mr. N. Nagai	Mapping Specialist (Ministry of Construction, Japan)

4. JICA Study Team

Mr. M. Koshiha	Team Leader
Mr. H. Shinkai	Highway Planner
Mr. T. Nakagawa	Bridge Planner
Mr. K. Matsuda	Transport Planner/Economist



Banepa

Dhankhe

Sankhu

Dapcha

A1-22