付属資料

MINUTES OF MEETING

BETWEEN

THE JAPANESE EVALUATION TEAM

AND

THE AUTHORITIES CONCERNED OF HIS MAJESTY'S GOVERNMENT OF NEPAL

ON

THE JAPANESE TECHNICAL COOPERATION

FOR

THE WATER INDUCED DISASTER PREVENTION TECHNICAL CENTRE PROJECT

The Japanese Evaluation Team, organized by the Japan International Cooperation Agency and headed by Mr. Hidetomi OI (hereinafter referred to as "the Team") , visited Nepal from August 24 to September 9, 1998. During its stay in Nepal, the Team had a series of discussions with the authorities concerned of His Majesty's Government of Nepal (hereinafter referred to as "HMG/N"), and jointly evaluated the present achievement of the Water Induced Disaster Prevention Technical Centre Project and exchanged views on the possible technical cooperation programmes to be further implemented to fulfill the Master Plan of the Record of Discussions signed on 7th of October 1991.

As a result of the discussions, the Team and the authorities concerned of HMG/N agreed to report to their respective Governments the matters referred to in the documents attached hereto.

Kathmandu, September 8, 1998

大井英臣

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THE ATTACHED DOCUMENT

I. Evaluation of the Project

1. Preface

The Water Induced Disaster Prevention Technical Centre Project (hereinafter referred to as "the Project") was initiated in October 1991 and will be completed by March1999. This time, with the remaining project period of approximately 7 months, the Team visited Nepal from August 24 to September 9, 1998, for the purpose of jointly evaluating the achievement of the Project with the Nepalese side.

2. Objectives of the Evaluation

Objectives of the evaluation are as follows:

(1) To execute a comprehensive evaluation of the present achievement in accordance with the original plan described in the Record of Discussions (R/D), the Tentative Schedule of Implementation (TSI), the Project Design Matrix (PDM) and the Plan of Operations (PO).

(2) To make recommendations and suggestions concerned with the measures to be taken for the rest of the project period and after the termination of the project period to the authorities of the respective Governments.

3. Methods of the Evaluation

The evaluation study was conducted in accordance with the JICA Project Cycle Management (JPCM) method, which manages a project via identification, formulation, appraisal, implementation, monitoring and evaluation based on the PDM.

The PDM for the Project was developed in April 1995, when the Japanese Technical Guidance Team visited Nepal. Based on the above mentioned PDM as well as the latest Plan of Operations that was signed in October 1996 when the Project was extended, the PDM for Evaluation has been prepared as a basis of the evaluation, which was agreed on by the Team and the Nepalese side (hereinafter referred to as "the Both sides") prior to the

beginning of the evaluation. During the discussions on the PDM for Evaluation, it was agreed that, for evaluation purpose, one of the Project Purposes ("Implementation of community based projects for water induced disaster prevention will be strengthened with people's participation"), which is mentioned in the PDM (1995), would be treated as a matter for a special consideration for the Project rather than a Project Purpose. Therefore, it was not included in the PDM for Evaluation as a Project Purpose.

The Both sides have reviewed all the activities and achievement, and evaluated the Project based on the following aspects:

(1) Effectiveness
(2) Efficiency
(3) Impact
(4) Relevance
(5) Sustainability

Source of Information for the evaluation included:

(1) Documents agreed by the Both sides prior to and/or in the course of the Project implementation (i.e. R/D, Minutes of the Meetings and the latest PO)
(2) The PDM for evaluation (please refer to Annex I).
(3) Record of Inputs from the Government of Japan and the HMG/N.
(4) Record of Activities of the Project.
(5) Technical and other relevant reports produced by the Project.
(6) Interviews with C/Ps and Japanese experts.

II. Evaluation

1. Achievement of the Plan

Please refer to Annex II.

2. Results of the Evaluation

(1) Effectiveness

The Project Purpose is expected to be fully achieved. Technologies have been developed and training courses have been implemented successfully. As for database, planned activities have been almost completed and the database is expected to be developed by the end of the Project. Public awareness has been enhanced through the project activities. The Project is well managed. As a result, DPTC has already been recognized as a leading centre for disaster prevention in Nepal by the concerned agencies. (For details, please refer to Annex III-1).

(2) Efficiency

By and large, the Project has been implemented effectively in terms of timing and degree of conversion from the Inputs to the Outputs. However, in some cases, the timing of dispatching short -term experts did not match to convenience of the C/Ps. It would have been more efficient if the dispatched periods of some of the short-term experts had been longer. (For details, please refer to Annex III-2).

(3) Impact

The Project has provided a platform for the line ministries to discuss the issues related to water induced disasters, which has filled a gap among their activities and has strengthened their cooperation on the matter. Furthermore, the activities of the Project regarding model construction and training have raised awareness of technical staff of the concerned ministries / departments and local people. In some cases, local people have been motivated enough to take some actions for disaster prevention. (For details, please refer to Annex III-3).

(4) Relevance

The Overall Goal and the Project Purpose are relevant with the national policies of Nepal. (For details, please refer to Annex III-4).

(5) Sustainability

From an institutional point of view, the positive impacts that the Project has produced are likely to sustain. However, it is essential that a permanent status be given to DPTC as soon as possible. From a technical viewpoint, technologies and techniques transferred through the Project are expected to be fully utilized by the technical people in Nepal. For the technologies to be utilized widely by the local communities, further refinement / improvement would be necessary. (For details, please refer to Annex III-5).

III. Recommendation

1. Short-term Recommendation

(1) It is important that technical reports and guidelines prepared by the Project also delineate the way of utilization as well as the areas of further refinement / improvement.

(2) In view of the advanced level of the skills of DPTC staff, it is advisable that DPTC explore possibilities of organizing joint research and/ or training programmes with other institutions such as Tribhuvan University so that DPTC could play its expected role more effectively.

(3) Regarding the database, it would be useful to classify information in DPTC into the one to be digitized and the one to be kept in the form of document. In this connection, it would be important that an internal rule and procedure for collecting, inputting, and maintaining the data be set up.

(4) Concerning the roving seminars, DPTC has already initiated a process to involve school teachers in the programme. For the remaining roving seminars to be conducted by the end of the Project, it would be useful to include in their programme some

sessions specifically targeting school teachers, rural women, etc. so that DPTC could obtain know-hows and could identify constraints in organizing seminars for such target groups in future.

(5) It is essential that the C/Ps who participated in the technical training in Japan remain with DPTC for some period before they are transferred to other organizations so that the knowledge and experiences acquired from the training could be utilized effectively for implementation of the Project.

(6) In general, technical sustainability of the Project is considered to be high. However, it is important that technical guidelines developed so far be further refined / improved so that technical sustainability of DPTC would not be affected by the transfer of the C/Ps to other organizations.

2. Long-term Recommendation

A. Technology Development

(1) The development of engineering methods for disaster prevention has been smoothly carried out. It is considered important to continue the development of technologies that are appropriate and relevant to the economic condition of Nepal and situation of local communities. Furthermore, it is advisable to design and to test the ways to disseminate such technologies through model works.

(2) Hazard-mapping method developed by the Project should be further refined / improved in order that it could be more effective and could be utilized more extensively.

(3) The Project has received requests for providing technical advice and resource persons for training from various organizations. Provision of technical supports and resource persons by DPTC is highly appreciated by these organizations and should be continued.

(4) The Third Country Experts have provided technical advice to the C/Ps from a viewpoint that is different from the Japanese experts. Since the impact of such technology transfer is considered to be high, it is recommended that DPTC consider using the Third Country Expert System more often.

B. Training

Training courses have been successfully conducted and have been greatly appreciated by the trainees and the relevant agencies. It is desirable that training activities, which are refined / improved based on the needs of technical people in Nepal, be continued

C. Database

(1) Database system for DPTC's data management should be further improved.

(2) For mitigation of disasters in Nepal, it is important to accumulate information related to natural disasters. It is desirable that the DPTC take initiative to promote more effective information exchange.

D. Organization, etc.

(1) For DPTC to continuously contribute to enhancement of HMG/N's capacity in coping with water induced disasters, it is essential that a permanent status be given to DPTC as early as possible.

(2) For the Project, HMG/N has made an effort to provide more C/Ps and supporting staff than delineated in the Minute of the Meeting which was signed during the visit of the Japanese Technical Guidance Team in April 1995. However, further increase of the number of the C/Ps and supporting staff would be necessary in order that DPTC could better meet various type of training needs, manage the database related to disaster and utilize the test facilities.

Annex I: Project Design Matrix (PDM) for Evaluation

(based on the PDM prepared in April 1995 and the latest Plan of Operations signed in October 1996)

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
Super Goal : Water induced disasters will be reduced in Nepal.	Secular change in damages caused by natural disaster		(1)Climate & other natural conditions will not change significantly. (2)Deforestation & other factors that may cause disasters will not progress.
Overall Goal : Capability of HMG/N to deal with disaster will be strengthened.	1. Priority of disaster prevention countermeasures in the National Development Plan 2. Status of institutional strengthening 3. No. & tech. level of Nepalese personnel in the field of disaster prevention 4. Budget allocation to the disaster prevention projects 5. No. of disaster prevention projects		(1)Nepalese national economy will continue to grow. (2)Development projects in disaster prone area will be executed in controlled manner.
Project Purpose : A. DPTC will function as a leading organization in the fields of water induced disaster prevention in Nepal.	A1. No. & technical level of DPTC staff 2. No. of requests for technical advice and how DPTC handles them 3. No. of cases of dispatching DPTC instructors to other organization's training courses 4. Ratio of DPTC's own instructors to all of the instructors of DPTC internal training courses 5. Status of collection of tech. Information & provision to other organization (incl. situation of network with the other organization.) 6. No. & tech level of facilities & equipment	A1-6: Interviews with the Japanese experts and the C/Ps, technical and project reports	(1) HMG/N will provide institutional strengthening in the field of disaster prevention such as laws and regulations, budget and organization.
Outputs : A1 DPTC's capacity to develop appropriate engineering methods will be built. A2 Technicians and professionals will be trained at DPTC. A3 Database for practical application to various fields of water induced disaster prevention, rehabilitation & preparedness will be established by DPTC. A4 Public awareness on disaster prevention and preparedness is enhanced. A5 Management system at DPTC will be established.	A1. a. Progress of development of each engineering method b. Progress of development of guidelines, master plans, reports, etc. c. Utilization and maintenance of facilities and equipment for technology development A2. a. No. of training courses and no. of trainees. b. Technical level of training courses and instructors c. Technical level of ex-participants d. No. & technical level of instructors e. Evaluation on training methods/materials f. Utilization and maintenance of training equipments A3. a. No. of established database system b. Volume of data in the database system c. Provision of data for other organizations A5. a. Implementation of Joint Steering Committee meetings and regular meetings	A1-5: Interviews with the Japanese experts and the C/Ps, technical and project reports	(1) Trainees will continue to work in the field of disaster prevention, rehabilitation, and preparedness after completing DPTC training courses.

Activities :	Input	
A1 <Technology Development> 1.1 Sabo engineering methods (1) Dev. of debris flow countermeasures (2) Dev. of Gully &sheet erosion countermeasures (3) Study on sabo investigation with RS (4) Disaster survey (5) Study on bio-engineering for slope-stabilization (6) Study on low cost checkdam (7) Study on risk mapping 1.2 Landslide engineering methods (1) Dev. of landslide countermeasures(Trishuli rd.19k) (2) Dev. of landslide countermeasures (Trishuli rd.48k) (3) Dev. of landslide countermeasures (Ilam landslide) (4) Study on economical methods (5) Study on risk mapping (6) Provision of technical advice 1.3 River engineering methods (1) River improvement MP/design (Bagmati) (2) River improvement works in plain area(Mahakali) (3) River improvement works in hilly area (Bagmati) (4) Study on low-cost technology for mortar block (5) Study on bio-engineering (6) Study on riverbed instability (Bagmati) (7) Study on roughness-coefficient for design of river engineering(Bagmati) (8) Improvement of technical manuals (9) Preparation of flood hazard maps (Bagmati) (10) Preparation of a proposal for institutional development. A2 <Training> 2.1 Implementation of training courses (general, advanced and intensive) A3 <Database> 3.1 Development of concept of database system 3.2 Collection of relevant data 3.3 Installation of hard/soft ware 3.4 Development of application system 3.5 Input of collected data A4 <Public awareness and preparedness> 4.1 Organization of roving seminars at community level 4.2 Organization of international workshops and conferences 4.3 Publication of reports, newsletters, etc. A5 <Project management> 5.1 Establishment of account system by PC 5.2 Organization of Joint Committee meetings 5.3 Organization of regular meetings (project wise, division wise)	(5 years from 1991-1996) 1. Nepal 1) Land/facilities 2) Operation cost 3) No. of C/P: 22 persons (as agreed in the Minute of the Meeting signed during the visit of the Japanese Technical Guidance Team in April 1995) 4) Operational/clerical staff 2. Japan (1) Technical cooperation 1) Long-term experts:300m/m (5 persons including leader and coordinator) 2) Short-term experts: about 10 experts/year 3) Training in Japan: about 3 persons/year 4) Equipment and facilities: 350 million yen (approximately US$ 4.1million)	(1)Concerned agencies will provide sufficient trainers with appropriate technical level (2)Hydro-meteorological data and disaster records for the technical development will be sufficiently collected. (3) Community people will cooperate in the disaster prevention activities. (4) Most of the Nepalese C/Ps will continue to work for DPTC. Pre-condition (1)HMG/N provide financial support and human resources for DPTC. (2)Centre building will be constructed through Japanese grant aid (842 million yen : approximately US$ 9.9million)

Annex II-1: Achievement of the Plan

Narrative Summary	Objectively Verifiable Indicators	Results (as of August 1998)
Super Goal : Water induced disaster will be reduced in Nepal.	Secular change in damages caused by natural disaster	It is premature to evaluate.
Overall Goal : Capability of HMG/N to deal with disaster will be strengthened.	1. Priority of disaster prevention countermeasures in the National Development Plan 2. Status of institutional strengthening 3. No. & tech. level of Nepalese personnel in the field of disaster prevention 4. Budget allocation to the disaster prevention projects 5. No. of disaster prevention projects	It is premature to evaluate.
Project Purpose : A. DPTC will function as a leading organization in the fields of water induced disaster prevention in Nepal.	A1. No. & technical level of DPTC staff 2. No. of requests for technical advice and how DPTC handles them 3. No. of cases of dispatching DPTC instructors to other organization's training courses 4. Ratio of DPTC's own instructors to all of the instructors of DPTC internal training courses 5. Status of collection of tech. information & provision to other organization (incl. situation of network with the other organization.) 6. No. & tech level of facilities & equipment	A1. There are 22 technical staff members. Technical levels of most of the staff are sufficient enough for a leading centre in the fields of water induced disaster prevention in Nepal. A2. More than 50 requests from various agencies have been received. Technical supports/advice DPTC provided have been highly appreciated by them. A3. DPTC staff have been sent to other training courses organized by NGOs, municipalities, Nepal Administrative Staff College, Tribhuvan University, etc. A4. About 30-40%. A5. Basic technical information and data have been collected and kept in the library, which is open to the public. A6. DPTC has facilities that can be used for field investigations, model works, hydraulic experiments and training. Technical level of the facilities is almost sufficient to conduct necessary model studies and training of engineers in Nepal.
Outputs : A1 DPTC's capacity to develop appropriate engineering methods will be built. A2 Technicians and professionals will be trained at DPTC. A3 Database for practical application to various fields of water induced disaster prevention, rehabilitation & preparedness will be established by DPTC. A4 Public awareness on disaster prevention and preparedness is enhanced. A5 Management system of the Project will be established.	A1. a. Progress of development of each engineering method b. Progress of development of guidelines, master plans, reports, etc. c. Utilization and maintenance of facilities and equipment for technology development A2. a. No. of training courses and no. of trainees b. Technical level of training courses and instructors c. Technical level of ex-participants d. No. & technical level of instructors e. Evaluation on training methods/materials f. Utilization and maintenance of training equipments A3. a. No. of established database system b. Volume of data in the database system c. Provision of data for other organizations A5. Implementation of Joint Committee meetings and regular meetings	A1. (Please refer to Annex II-2 and II-3). A2. In total, 20 training courses have been conducted (General-8, Advanced-6, Intensive-6) and 201 people participated (General-118, Advanced-68, Intensive-15). The training courses implemented were highly appreciated by the trainees. Subjects of General / Advanced courses are multi-disciplinary so that new knowledge / skills have been introduced to the trainees from various organizations. Ratio of the number of JICA experts (long-term as well as short-term) to the total number of the trainers has decreased over the project period, whereas, the proportion of Nepalese C/Ps has increased, especially for the General course. After the training, technical level of the trainees has increased. The ex-participants have shared with their colleagues the knowledge gained through the training by showing and explaining the textbooks. A3. Data and records of the investigations and model works in the model sites have been collected and compiled in the database. In addition, the Project has started to collect other disaster-related data from outside DPTC (i.e. HMG/N, International NGOs, etc.). A4. Roving seminars have been conducted 5 times a year and have covered all the 75 districts in Nepal. DPTC has organized 2 international seminars, 2 other seminars and has cooperated with IDNDR seminars 5 times. It has published Annual Disaster Review and Newsletters regularly, etc. A5. Joint Committee meeting has been held once a year and the decisions of the Committee have been put into practice. DPTC staff and JICA long-term experts have held the regular meetings for discussions regarding practical matters twice a month as well as the ad-hoc meetings when necessary.

Activities :	Inputs	
A1 <Technology Development> 1.1 Sabo engineering methods (1) Development of debris flow countermeasures (2) Development of gully and sheet erosion countermeasures (3) Study on sabo investigation with RS (4) Disaster survey (5) Study on bio-engineering for slope-stabilization (6) Study on low cost checkdam (7) Study on risk mapping 1.2 Landslide engineering methods (1) Development of landslide countermeasures (Trishuli rd.19k) (2) Development of landslide countermeasures (Trishuli rd.48k) (3) Development of landslide countermeasures (Ilam landslide) (4) Study on economical methods (5) Study on risk mapping (6) Provision of technical advice 1.3 River engineering methods (1) River improvement MP/design (Bagmati) (2) River improvement works in plain area (Mahakali) (3) River improvement works in hilly area (Bagmati) (4) Study on low-cost technology for mortar block (5) Study on bio-engineering (6) Study on riverbed instability (Bagmati) (7) Study on roughness-coefficient for design of river engineering (Bagmati) (8) Improvement of technical manuals (9) Preparation of flood hazard maps (Bagmati) (10) Preparation of a proposal for institutional development. A2 <Training> 2.1 Implementation of training courses (general, advanced and intensive) A3 <Database> 3.1 Development of concept of database system 3.2 Collection of relevant data 3.3 Installation of hard/soft ware 3.4 Development of application system 3.5 Input of collected data A4 <Public awareness and preparedness> 4.1 Organization of roving seminars at community level 4.2 Organization of international and national seminars and conferences 4.3 Publication of reports, newsletters, etc. A5 <Project management> 5.1 Establishment of account system by PC 5.2 Organization of Joint Committee meetings 5.3 Organization of regular meetings (project wise, division wise)	R/D : 1. Nepal 1) Land/facilities 2) Operation cost 3) No. of C/P: 22 persons (as agreed in the Minute of the Meeting signed during the visit of the Japanese Technical Guidance Team in April 1995) 4) Operational/clerical staff 2. Japan (1) Technical cooperation 1) Long-term experts: (5 persons including leader and coordinator) 2) Short-term experts: (about 10 experts per year) 3) Training in Japan: (about 3 persons per year) 4) Equipment and facilities	Results : 1. Nepal 1) As planned 2) Rs.22,394,400 (by the end of Nepalese fiscal year 1997-July 1998) 3) 26 persons 4) 24 persons (including drivers and peons) 2. Japan (1) Technical cooperation 1) As planned 2) 65 persons 3) 34 persons trained in Japan. 4) 395 million yen (by the end of Japanese fiscal year 1997-March 1998) 5) Local costs, including the construction cost of a building for the hydraulic laboratory, etc. : 247 million yen (by the end of Japanese fiscal year 1997-March 1998)

Annex II-2: Check list for Achievement of the Plan for Output A1 (as of August 1998)

○: completed △: work in progress ×: not conducted

Sub-components	Activity 1		Activity 2		Activity 3		Activity 4		Activity 5		Activity 6		Remarks
1.1 Sabo engineering methods													
(1) Dev. of debris flow countermeasures	review of 1981disaster	○	survey	○	model work	△	guideline	○					
(2) Dev. of Gully &sheet erosion countermeasures	survey	○	model work	○	comparison	○	guideline	△					
(3) Study on sabo investigation with RS	selection of area	○	data collection	○	field survey	○	analysis	○	guideline	△			
(4) Disaster survey	survey on selected 1993 area	○	M/P	○									M/P has been prepared jointly by JICA Development Study Team and DPTC.
(5) Study on bio-engineering for slope-stabilization	collecting example	○	fence structure	○	foundation method	○	guideline	×					In stead of the guideline, photo album has been prepared. Please see II-3 for details.
(6) Study on low cost checkdam	study on gabion dam	○	study on boulder dam	×	guideline	△							
(7) Study on risk mapping	field survey	○	analysis	○	case study	○	utilization	○					
1.2 Landslide engineering methods													
(1) Dev. of landslide countermeasures(Trishuli rd.19k)	survey & monitoring	○	analysis & design	○	M/P	○	evaluation	○	report	○			
(2) Dev. of landslide countermeasures (Trishuli rd.48k)	survey & monitoring	○	analysis & design	○	model work	○	evaluation	○	report	△			
(3) Dev. of landslide countermeasures (Ilam landslide)	survey & monitoring	○	analysis and design	○	model work	△	evaluation	△					
(4) Study on economical methods for investigation and construction	review of references	○	review of works at model	○	guideline	○							
(5) Study on risk mapping	data collection	○	case study	○	guideline	△							
(6) Provision of technical advice	field survey	○	suggestion	○									
1.3 River engineering methods													
(1) River improvement MP/design (Bagmati)	survey	○	M/P design	○	environmental investigation	○							
(2) River improvement works in plain area(Mahakali)	survey	○	design	○	model work	○	evaluation	○	report	○			
(3) River improvement works in hilly area (Bagmati)	survey	○	design	○	model work	○	evaluation	○	report	○			
(4) Study on low-cost technology for mortar block	labo. test	○	analysis	○	evaluation	○	report	○					
(5) Study on bio-engineering	review of materials	○	field survey	○	model work	○	follow-up survey	○	evaluation	○	report	○	
(6) Study on riverbed instability (Bagmati)	field survey	○	bed level survey	○	suspension load survey	○	bed-load survey	○	analysis	○	report	○	
(7) Study on roughness-coefficient for design of river engineering(Bagmati)	case study	○	field survey	○	analysis	○	report	○					
(8)Improvement of technical manuals	review of manuals	○	hydraulic experiment	○	evaluation of model works	○	improvement of manuals	△					
(9) Preparation of flood hazard maps (Bagmati)	survey of 1993 area	○	flood hazard mapping	○	flood risk mapping	○	application field	○					
(10)Preparation of a proposal for institutional development related to river management	survey on exsiting laws in Nepal	○	survey on exsiting laws in other countries	○	review and comparison	○	report	○					

Annex II-3: Comments on the Activities for Output A1 <Technology Development>

1.1. Sabo engineering methods

(1) Development of debris flow countermeasures: Technical guidelines which will be completed by the end of the Project should be improved through discussions with the concerned agencies, application to different places and continuation of monitoring of model works.

(2) Study on Sabo investigation with remote sensing: To prepare a guideline of remote sensing technique for Sabo investigation, more case studies may be necessary.

(3) Disaster survey: A survey was conducted on some of the 1993 disaster affected areas by DPTC. Further, it collaborated with JICA Development Study Team in preparation of M/P for rehabilitation in the most severely affected areas.

(4) Study on bio-engineering for slope-stabilization: It was found out that a guideline on bio-engineering for slope-stabilization had been already prepared by DOR. So, the Project has changed its activity from the preparation of guideline to the preparation of photo album (collection of bio-engineering slope-stabilization works), which can be used as basic data for further development of the technology.

(5) Study on low cost check dam: Besides gabion dam covered by concrete, other materials and methods should be examined to study low-cost check dam. It was found that as part of study for low cost method, step works for soil erosion control and half-gabion retaining wall has been implemented.

1.2. Landslide engineering methods

(1) Monitoring: Each model site should be continuously monitored.

(2) Core drilling skills: Transfer of core boring skills has been successfully done. In order to maintain the level of the acquired skills, it is important to carry out the core drilling works as many as possible.

(3) Model work in Butwal: A model work in Butwal was originally included in the R/D. A study on landslide was carried out and an investigation report with suggestions was sent to Butwal municipality. However, it was decided that the model work would not be conducted and, therefore, the related activities were excluded from the Plan of Operations for the extended period.

1.3. River engineering methods

(1) River improvement model works in plain area: River training works have successfully protected the farmlands and the settlement areas. The works were carried out in cooperation with DOI, which has promoted a good rapport.

(2) Study on bio-engineering: This type of low-cost method is expected to be further developed and widely applied.

(3) Study on riverbed instability (Bagmati): A study on sediment discharge supplied to plain area is recommended.

(4) Study on roughness-coefficient for design of river engineering (Bagmati): The results will be actually applied in river planning.

(5) Improvement of technical manuals: Suggestions / comments on the proposed manual from the related departments will be solicited.

(6) Preparation of flood hazard maps (Bagmati): The hazard maps have been already distributed to the local people. It is recommended that this type of non-structural measure be further developed and widely applied.

1.4 General

Project activities have been carried out in collaboration with the line ministries and departments.

1.5 Others (additional activities)

(1) Sabo forest in Udaipur district: A sabo forest model work is under construction. The results obtained are expected to be used in other rivers originating from Siwalik hills.

(2) Landslide model work in Bhotang: A study and model works have been carried out with active people's participation.

Annex III: Results of the Evaluation

III-1. Effectiveness

1.1 Outputs level	Expected level of achievement by the end of the Project and obstacles
	A1: <Technology development> Fully. It is expected that development of technologies and guidelines will be completed by the end of the Project. The technologies and guidelines developed are appropriate in light of the Nepalese needs, but further improvement would be necessary to be more appreciable and sustainable. A2: <Training> Fully. The training courses have been greatly appreciated by the trainees as well as the related agencies. Skills of the trained people have increased sufficiently. A3: <Database> By and large. To make the database more useful, further refinement / improvement would be necessary. A4: <Public awareness> Fully. Awareness raising activities for government agencies as well as general public on disaster prevention would need to be further enhanced and expanded. A5: <Project management> By and large. The Joint Committee and regular meetings have been held as planned, and the agreements have well been put into practice. The Project can be considered well coordinated owing to the Joint Committee when it is taken into consideration that the Project is dealing with the inter-ministerial matters. However, continuous effort to ensure the provision of the necessary C/P budget should be made.
1.2 Project Purpose level	Expected level of achievement by the end of the Project and obstacles
	A: Fully. DPTC has already been recognized as a leading centre for disaster prevention by the concerned agencies.
1.3 Factors related to Outputs affecting achievement of Project Purpose	A1-A2: DPTC activities on technology development and training have contributed to enhancement of disaster mitigation activities in Nepal. They have been greatly appreciated by the concerned organizations and have contributed to the achievement of the Project Purpose. A3: The progress of establishment of database system has been delayed due to the extensive works for other components (i.e. technology development and training) as well as limited number of computers available for the necessary work. It has slightly affected the achievement of the Project Purpose. A4: DPTC has raised the issue of disaster prevention in the Nepalese society significantly, despite the limited scale of the activities and manpower. It has contributed a lot to the achievement of the Project Purpose. A5: The fact that the management system has been well established and maintained has contributed very much to the achievement of the Project Purpose.

III-2. Efficiency

2.1 Timing of Inputs	<Japanese side> (1) Dispatch of experts: - Long-term experts: Adequate. - Short-term experts: Many short-term experts were dispatched towards the end of the Japanese fiscal year (i.e. February-April), which coincided with the period when C/Ps were busy with heavy routine works related to the construction activities in the model sites, etc.. This made it difficult for many C/Ps to learn from the experts. Dispatching of the short-term experts in earlier time of the year could have resulted in more effective technology transfer. (2) Equipment & materials - Technology development: Adequate. - Database: Mostly no problem. Earlier introduction of personal computers into each division for database purpose could have led to larger outputs regarding the database. (3) Training in Japan -Technology development: Adequate. <Nepalese side> 1) Land & buildings: Adequate. 2) Office spaces for experts: Adequate. 3) Appointment of C/Ps - When DPTC staff got transferred to other organizations, in some cases, it took several months to fill in their position by new staff. This might affect achievement of the outputs a little. 4) Appropriation of budget: Adequate.
2.2 Quality and quantity of Inputs	<Japanese side> 1) Dispatch of experts: - Long-term experts: Adequate. - Short-term experts: In some cases, the periods of short-term experts could have been longer for more effective technology transfer. 2) Equipment & materials: - Technology development: Mostly adequate. Some of the equipment for material tests were useful for training and are expected to be further applied for technological development. - Database: Some more computers could have contributed to achievement of outputs. 3) Training in Japan - It would have been easier for the C/Ps in management positions to participate in the training in Japan, if the courses with shorter term (i.e. about one month) had been offered. <Nepalese side> 1) Land & buildings: Adequate. 2) Office spaces for experts: Adequate. 3) Appointment of C/Ps: - Mostly no problem. But if some more C/Ps were assigned to Technology development division for conducting the hydraulic model test and material test, Information division for establishing database, and Training division for managing the training course, larger outputs would have been achieved. Some more supporting staff could have been appointed. 4) Appropriation of budget: - Mostly no problem. But continuous effort should be made for allocating enough budget for field allowances, seminar expenses, spare parts of the equipment and so on.

2.3 Linkage with other projects	<Japan> (1) Grant aids 1) Main facilities of the Centre (main building and Technology Development Building) were constructed through Japanese Grant Aid Project for Construction of Institutional Facilities of Water Induced Disaster Prevention Technical Centre. 2) Technical support to the Grant Aid for the Construction of the Shinduli Road. (2) Technical cooperation 1) Technical support to the Development Study on the Disaster Prevention Plan for Severely Affected Areas by 1993 Disaster in the Central Development Region of Nepal. 2) Technical support to the Project on Community Development, Forest / Watershed Conservation that includes: - Organization of the information exchange seminar once a year in each project site. - Technical advice regarding the landslide risk area in the project site. 3) Technical support to the Primary Health Care Project, including a field survey for the level of the damage caused by the landslides on the planned construction site of the health centre of the project, technical advice for the countermeasures and apreliminary study in the planned construction site of health post. 4) Technical support to the Study on Flood Mitigation Plan for Selected Rivers in the Terai Plain that includes: - Provision of the existing materials (i.e. analyzed data of GIS-RS, some reports regarding the similar model sites, etc.). - Technical advice to the field mission. <Other donors> (1) UNDP In 1997, UNDP established a database that includes basic information on natural disasters as well as a list of the concerned agencies in Nepal. The Project has had consultations with UNDP in developing its database. (2) ICIMOD Disaster mitigation activities are one of their focus areas, which are included in its new 4-year programme. The Project has closely worked with ICIMOD, especially in the area of training. For example, DPTC and ICIMOD jointly organized a regional training on landslide hazard management in Hindukush Himalayan region in 1996. (3) Others DPTC has provided technical supports to various international organizations. Some of the examples from the extended project period are mentioned below: - In 1996-98, DPTC gave a technical support to the Third Road Improvement Project funded by Asian Development Bank regarding planning, design, maintenance and evaluation of the landslide countermeasure work at Kathmandu-Trishuli Road. - In 1997, DPTC gave a technical advice to WFP/GTZ on planning and design of revetment works for their agricultural land conservation project in Western Nepal. - In 1997, DPTC gave a technical advice to UNHCR on planning and design of revetment work, gully erosion control work, etc. for its refugee camps located along the rivers in Eastern Nepal.

III-3. Impacts

3.1 Direct impacts	(1) Institutional: 1) The Project has filled a gap among the activities of the various ministries related to disaster prevention / mitigation and has brought about inter-ministerial cooperation on the matter. 2) Joint Committee of the Project has provided a platform for the line ministries to discuss the issues related to water induced disasters, which has also strengthened their cooperation on the matter. 3) Roving seminars conducted at district level has also provided a local platform for disaster management and has enhanced interaction among line ministries. (2) Technical: 1) Engineers and technicians, who strengthened their technical skills and knowledge through DPTC training courses, have become more effective. 2) Developed technologies have been applied to the works of local offices by the trained people. Participants of the training courses organized by DPTC have shared the training materials with their colleagues, etc. 3) A number of technical staff at the concerned ministries / departments have become interested in disaster studies and training courses organized by DPTC. 4) For a study on river laws, DPTC staff members have had discussions with the relevant agencies, through which many of them have become aware of the importance of river management. (3) Social: 1) Some of the model work sites have served as demonstration sites for disaster prevention with local resources. Farmers in the neighborhood have become aware that they themselves could control small landslides, erosion, etc, with some guidance from the technical agencies. 2) Through a project on rehabilitation of degraded land and forest with people's participation, which was carried out by Department of Soil Conservation and DPTC in Pipaltar, the concerned community has gained some income from the sale of Napier sets and local grasses. (4) Environmental: 1) At model work sites, impacts of disasters have been mitigated. Some of the examples are mentioned below: - Ilam area used to be affected by the big landslides and DOR had to shift even the road alignment. Since the area was taken up as a model construction site, where prevention mitigation measures were taken, total movement of the landslides has become less. For the last couple of years, there has been no disturbance in the traffic due to the landslides. - River training work at Mahakali has successfully protected the farmlands and settlement areas. Local people now feel safe and have even requested more training work to be done in the area.
3.2 Indirect impacts	- Disaster prevention / mitigation is now listed as one of the priority areas of the Ninth 5-Year National Development Plan. - Capacity in the area of disaster prevention built through the Project has decreased hazard potential, which could contribute to economic stability of Nepalese society.

III-4. Relevance

4.1 Project Purpose	(1) Relevance with Overall Goal - Institutional building of DPTC is important in enhancing HMG/N's capacity to deal with water induced disasters. DPTC's contribution to disaster prevention is widely recognized in Nepal. For example, UN agencies such as UNDP, WFP and UNHCR have contacted DPTC for technical cooperation and support. ICIMOD has urged DPTC to become a national focal point of disaster management.
4.2 Overall Goal	(1) Relevance with national policies - Disaster management is one of the priority areas of the Ninth 5-Year Development Plan.

III-5. Sustainability

5.1 Institutional aspects	(1) Policy support - The Project activities are supported by "the Approach to the Ninth Plan" that was produced by National Planning Commission in 1998. (2) Status of DPTC - DPTC is not a permanent institution, which has only a project status. In February 1998, recognizing the contribution of DPTC to disaster management, the Cabinet gave an in-principle approval to a proposal for giving a permanent status to DPTC. The matter should be cleared by the Ministry of General Administrations and the Ministry of Finance before it is placed before the Cabinet again for the final approval (i.e. executive decision). At present, the matter is being discussed with the Ministry of General Administrations. DPTC and the Ministry of Water Resources have been working hard to obtain the final approval as soon as possible. (3) Posting of C/Ps - DPTC staff members are currently deputed from the concerned departments (i.e. Department of Roads, Department of Irrigation, Department of Hydrology and Meteorology, Department of Soil Conservation). Once they go back to their departments, they are expected to utilize the technologies and knowledge that they have acquired through their assignments with DPTC. (4) Management capacity of DPTC - It seems that there will be no problem
5.2 Financial aspects	(1) Sources of necessary expenses - HMG/N is ready to finance DPTC's activities. DPTC is also planning to have its own source. (2) Accounting system - No problem
5.3 Technical aspects	(1) Utilization of transferred technologies and techniques - DPTC staff members are able to fully utilize the transferred technologies. Technologies and guidelines developed by the Project are appropriate and local engineers have already started to utilize them. Further refinement / improvement and field application might be necessary for the technologies to be utilized widely by the local communities as readily available disaster prevention measures. (2) Relevance with technical needs - Developed technologies and techniques are relevant with the needs of DPTC as well as the natural disaster management sector in Nepal. (3) Operation & maintenance of facilities, machines, equipments, procurement of necessary experiment materials - DPTC staff members are able to operate the related facilities, machines and equipments. However, with regards to maintenance, some spare parts are to be procured more smoothly.

ATTENDANT LIST OF JOINT COMMITTEE MEETING 4th September 1998

S.N.	NAME	DESIGNATION	ORGANIZATION
CHAIRMAN			
1	Mr. Bishwa Raj Regmi	Secretary	Ministry of Water Resources
NEPALESE SIDE			
2	Mr. Som Nath Paudel	Exe. Secretary	Ministry of Water Resources, Water and Energy Commission
3	Mr. Mahesh Man Shrestha	Joint Secretary	Ministry of Water Resources
4	Mr. Ratneswor Lal Kayastha	Joint Secretary	Ministry of Water Resources
5	Mr. Mahendra Nath Aryal	Director General	Ministry of Water Resources, Department of Irrigation
6	Mr. Devi Prasad Bastola	Managing Director	Ministry of Water Resources, Nepal Electricity Authority
7	Mr. Mohan Prasad Wagley	Director General	Ministry of Forest & Soil Conservation, Dept. of Soil Conservation & Watershed Mgmt.
8	Mr. Niranjan Prasad Chalise	Director General	Ministry of Works and Transport, Department of Roads
9	Mr. Adarsha Pokharel	Deputy Director General	Ministry of Science & Technology, Department of Hydrology & Meteorology
10	Mr. Shiva Chandra Shrestha	Joint Secretary	National Planning Commission
11	Mr. Lekh Nath Pokharel	Section Officer	Ministry of Home
PROJECT TEAM			
12	Mr. Madhu Sudan Paudel	Project Director	DPTC
13	Mr. Ashok Kumar Sarraf	Division Chief, Information Division	DPTC
14	Mr. Damodar Bhattarai	Division Chief, Technology Dev. Division	DPTC
15	Mr. Ram Charitra Mahato	Division Chief, Training Division	DPTC
16	Mr. Amar Kumar Pradhan	Division Chief, Administration Division	DPTC
17	Mr. Masao Okamoto	Chief Advisor	DPTC
18	Mr. Tsuyoshi Murakami	Coordinator	DPTC
19	Dr. Daisuke Higaki	JICA Expert	DPTC
20	Mr. Yoshiaki Asai	JICA Expert	DPTC
21	Mr. Nobuya Kawashima	JICA Expert	DPTC
22	Mr. Masaki Hiruma	JICA Expert	DPTC

S.N.	NAME	DESIGNATION	ORGANIZATION
JAPANESE SIDE			
23	Mr. Ken Hasegawa	Resident Representative	JICA
24	Mr. Kazuhisa Arai	JICA Officer	JICA
25	Mr. Tadanori Ishizuka	Second Secretary	Embassy of Japan
STUDY TEAM			
26	Mr. Hidetomi Oi	Team Leader	Team of Final Evaluation & Preliminary Study of DMSP
27	Mr. Shigekiyo Tabata	Disaster Prevention	Team of Final Evaluation & Preliminary Study of DMSP
28	Mr. Atushi Omata	River Planning	Team of Final Evaluation & Preliminary Study of DMSP
29	Mr. Atushi Okamoto	Sabo Landslide	Team of Final Evaluation & Preliminary Study of DMSP
30	Mr. Tohru Uemachi	Evaluation Planning/ Cooperation Planning	Team of Final Evaluation & Preliminary Study of DMSP
31	Ms. Yasuyo Hirouchi	Project Evaluation/ Participatory Planning	Team of Final Evaluation & Preliminary Study of DMSP