Kyrgyz Republic
Ministry of Transport and Roads

The Kyrgyz Republic

The Project for Capacity Development for Road Disaster Prevention Management

Project Completion Report

May 2019

JAPAN INTERNATIONAL COOPERATION AGENCY(JICA)

CTI ENGINEERING INTERNATIONAL CO., LTD.
EARTH SYSTEM SCIENCE CO., LTD.
KOKUSAI KOGYO CO., LTD
CENTRAL NIPPON EXPRESSWAY CO., LTD

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Map No. 3770 Rev. 8 UNITED NATIONS
June 2011

DEUartment of Field Support
Cartographic Section

Location Map

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ABBREVIATIONS AND ACRONYMS

Government Institutions, Organizations and Others

AMS	Asset Management Section
CAIAG	Central Asian Institute for Applied Geosciences
DAC	Development Assistance Committee
DB	Database
DEU*	Local Level Roads Management Unit
DI	Design Institute
GDAD*-BO	State Directorate of the Bishkek-Osh Road
JAB	Jalal Abad- Balykchy
JCC	Joint Coordination Committee
JICA	Japan International Cooperation Agency
KSUCTA	Kyrgyz State University of Construction, Transport and Architecture
MES	Ministry of Emergency Situations, Kyrgyz
MIA	Ministry of Internal Affairs, Kyrgyz
MOF	Ministry of Finance
MOH	Ministry of Health
MOTR	Ministry of Transport and Roads, Kyrgyz
MT	Master Trainer
OSI	Osh-Sary-Tash-Irkeshtam
PDM	Project Design Matrix
RAA	Road Administration Advisor
RMD	Road Maintenance Department
RO-RMD	Regional Office of Road Maintenance Department
RSDS	Road Sector Development Strategy
SNS	Social Networking Service
UAD*	Main Roads Management Unit
UNDP	United Nations Development Programme

** Abbreviation of the Russian name*

Chapter 1 Outline of the Project

1.1 Country

Kyrgyz Republic

1.2 Title of the Project

The Project for Capacity Development for Road Disaster Prevention Management

1.3 Duration of the Project

12th April 2016 – 28th June 2019

1.4 Background

Kyrgyz Republic is a mountainous country with about 90% of its land area lying 1,000 meters above sea level, and about 40% of area is more than 3,000 meters in elevation. Therefore, road disasters such as rock fall, landslide and snowdrift often occur, causing enormous damage to people and the economy of Kyrgyz.

The Ministry of Transport and Roads (hereinafter referred to as the "MOTR"), that is the implementation agency, has managed the main highway and has carried out the recovery works after the road disaster. But the damages due to aforementioned road disaster has occurred repeatedly at the road disaster prone area since the preventive countermeasures have not been carried out by MOTR.

To improve the situation, the Government of the Kyrgyz Republic had requested the Government of Japan for assistance in implementing the "Project for Capacity Development for Road Disaster Prevention Management" (hereinafter referred to as "the Project") to enhance the management capacity of the Government of the Kyrgyz Republic in road disaster prevention and thereby minimize negative impacts. In response to the request, the Japan International Cooperation Agency (hereinafter referred to as the "JICA") dispatched a survey team for Detailed Planning Survey Mission to discuss the contents of the Project with the MOTR and the other authorities concerned in the Kyrgyz Republic. Based on the agreement between JICA and the authorities concerned, the Minutes of Meetings was signed on April 24, 2015 to conclude the Record of Discussion.

1.5 Implementing Agency

Ministry of Transport and Roads (MOTR)

1.6 Outline of the Project

Outline of the Project is as given hereafter.

Outline	
1. Overall Goal：	Safety of the road traffic at the selected disaster-prone areas is improved.
2. Project Purpose：	The capacity of MOTR's relevant units in the Project (HQ*, RMD*, target UAD* and DEU*) is enhanced for management of road disaster prevention (including road disaster inspection, preparing of road disaster prevention management plan and planning of budget for road disaster prevention). ** HQ (Headquarters of MOTR), RMD (Road Maintenance Department), UAD (Main Roads Management Unit), DEU (Local Level Roads Management Unit)*
3. Output：	1) Responsibilities of MOTR on road disaster prevention, including specific duties to be performed by relevant units (HQ, RMD, target UAD, and DEU) with necessary staffing in each, become clear. 2) Capacity of target UAD and DEU for inspection and analysis of road disaster is enhanced. 3) Capacity of RMD to operationalize Database Management System for road disaster prevention is developed. 4) Capacity of RMD for preparing road disaster prevention management plans of the target areas is enhanced.
4. Project Site：	Road disaster-prone areas along the national/international road managed by DEU (9,23,26,30,50,959), GDAD-BO*, UAD-OSI and UAD-JAB ** GDAD-BO (State Directorate of the Bishkek-Osh Road), OSI (Osh-Sary Tash-Irkeshtam), JAB (Jalal Abad-Balykchy)*
5. Counterpart：	MOTR
6. Project Period：	Period of Contract 12th April 2016 – 28th June 2019 Period of Whole Activities April 2016 ～ May 2019 (38 months) Period of Activities in Kyrgyz April 2016 ～ April 2019

1.7 Project Organization Chart

The Project's implementation structure is as shown in Figure 1-1. Role assignments among the MOTR HQ, RMD, target UAD and DEU have been clarified, and the JICA Project Team supported the structure to promote their respective activities of the Counterpart (hereinafter referred to as the "C/P") at their own initiative.

Since the Ministry of Emergency Situations (hereinafter referred to as the "MES") works mainly on natural disaster prevention in Kyrgyz, the JICA Project Team cooperated with the MES as a member of the Joint Coordination Committee (hereinafter referred to as the "JCC").

JICA dispatched to MOTR a Road Administrator Advisor (hereinafter referred to as the "RAA") who is well versed on basic information on the road sector, MOTR's road policy, road maintenance

management plan and the structure in Kyrgyz. Hence, the JICA Project Team cooperated with the RAA who provided information and advice on the Project.

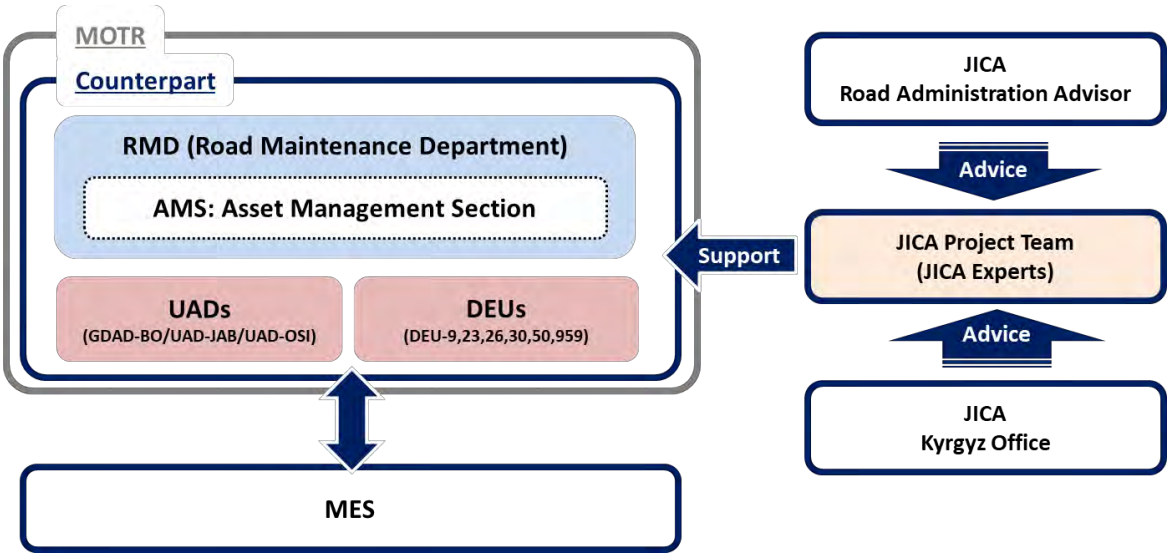


Figure 1-1 Project Organization Chart

1.8 Project Flow Chart

The Project Flow Chart is shown in Figure 1-2.

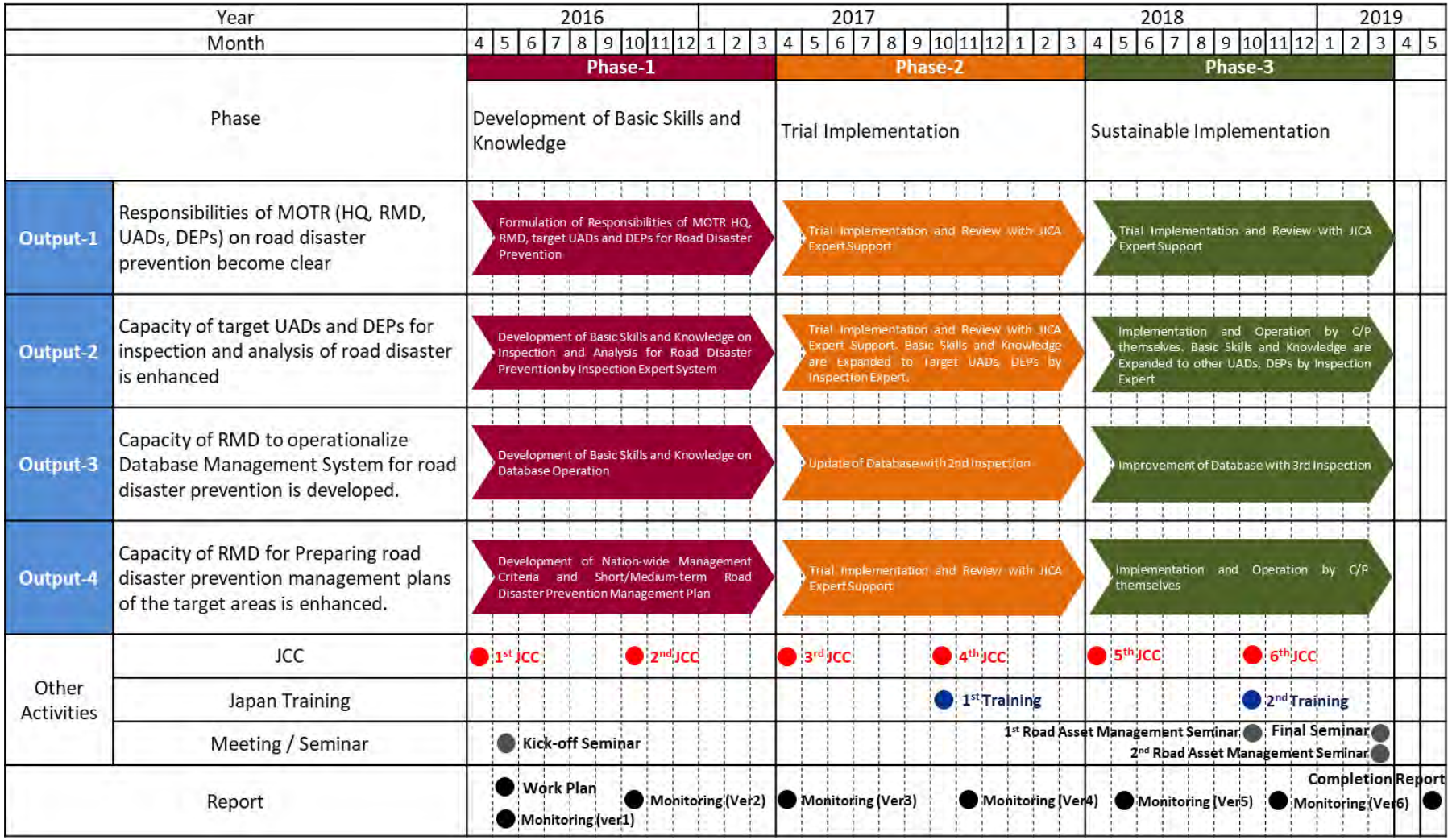


Figure 1-2 Project Flow Chart

Chapter 2 Activities of the Project

2.1 Result of the Project

2.1.1 Input by the Japanese Side (Planned and Actual)

Inputs by the Japanese side are as shown in Table 2-1 to Table 2-6 and Figure 2-1.

Table 2-1 Summary of Inputs from the Japanese Side

Original Plan (Ver.0)	Actual	Remark
1. Short term experts 1) Team Leader/Road Maintenance Expert 2) Deputy Team Leader/Debris Flow Disaster Prevention/River Engineering Expert 3) Snow Disaster Prevention Expert(1) 4) Snow Disaster Prevention Expert(2) 5) Slope Disaster Prevention Expert 6) Database Expert 7) Disaster Prevention Countermeasures Expert 8) Geological Expert 9) Disaster Prevention Facilities Expert/Cost Estimator/ Construction Planner 10) Coordinator/Road Disaster Inspection Assistant	**1. Short term experts** 1) Team Leader/Road Maintenance Expert 2) Deputy Team Leader/Debris Flow Disaster Prevention/River Engineering Expert 3) Snow Disaster Prevention Expert(1) 4) Snow Disaster Prevention Expert(2) 5) Snow Disaster Prevention Expert(3) 6) Slope Disaster Prevention Expert 7) Database Expert 8) Database Expert (2) 9) Disaster Prevention Countermeasures Expert 10) Geological Expert 11) Disaster Prevention Facilities Expert/Cost Estimator/ Construction Planner 12) Construction Supervisor 13) Topographic Survey Expert 14) Landslide Observation Expert 15) Coordinator/Road Disaster Inspection Assistant 16) Japan Training Assistant	See details in Figure 2-1 and Table 2-2.
2. Trainees Received Provision of training in Japan	**2. Trainees Received** Provision of training in Japan	See details of equipment in Table 2-4, Table 2-5 and Table 2-6
3. Equipment Equipment for database management system and inspection/observation	**3. Equipment** Equipment for database management system and inspection/observation **4. Pilot Project for Snowdrift** **5. Seminar of Road Asset Management**	See details of equipment in Table 2-3
70.00 MM	**81.03 MM**	Total Man-Month (hereinafter referred to as "MM")

Note: Descriptions in red font show the contents modified during the project from the original plan or planned in Version 0 (ver. 0) of the Project Design Matrix (hereinafter referred to as "PDM").

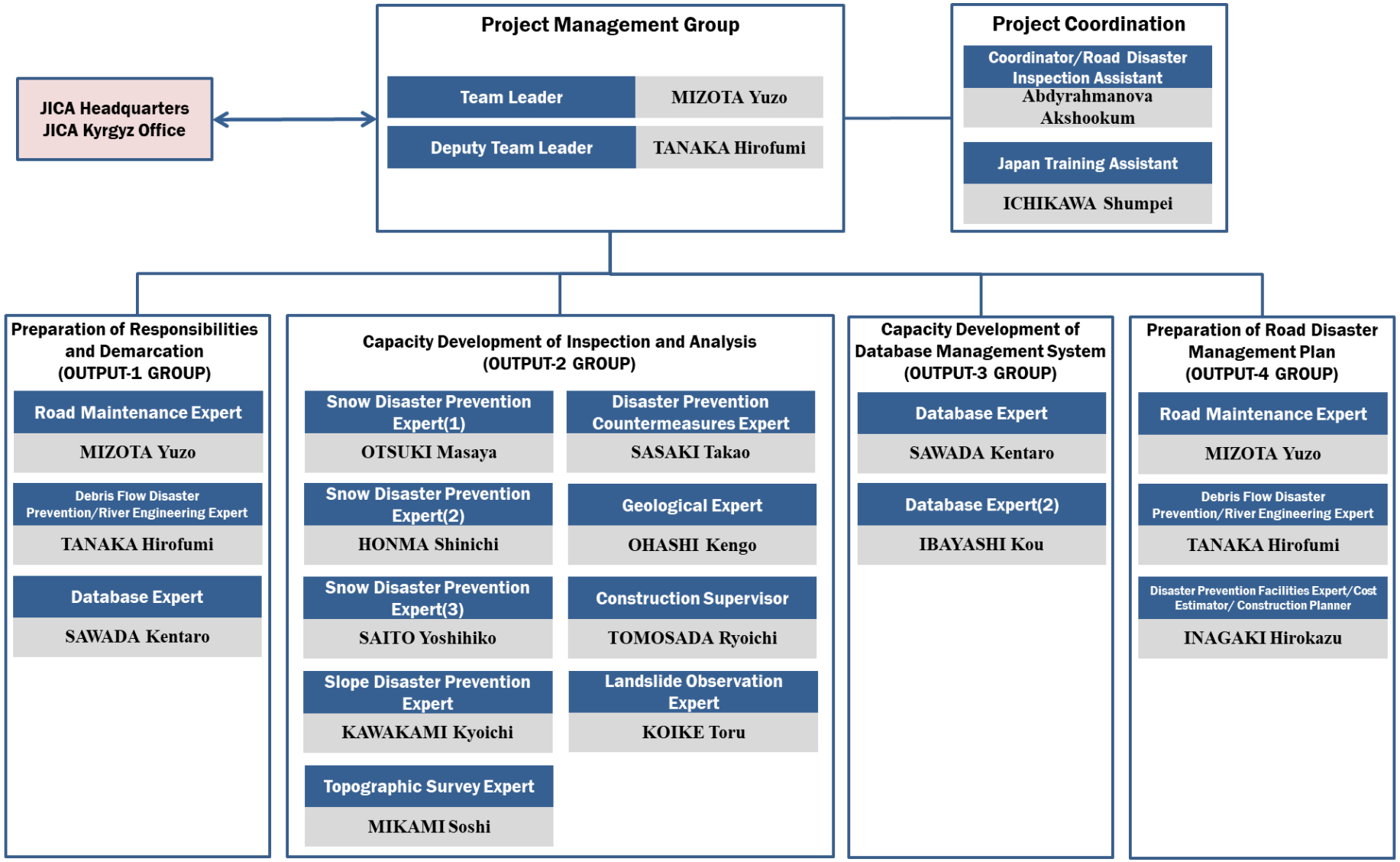


Figure 2-1 Organization of the JICA Project Team

Table 2-2 List of the JICA Project Team

Position	Name	Company	Major Task in Charge	Plan/ Actual	Work in Kyrgyz (days)	Work in Japan (days)	Total MM
Team Leader/Road Maintenance Expert	MIZOTA Yuzo	CTI Engineering International Co., Ltd.	Project Management/JCC/Reporting/Responsibilities and Demarcation of MOTR/Road Disaster Prevention Management Plan	Plan	300	14	10.70
				Actual	300	14	10.70
Deputy Team Leader/Debris Flow Disaster Prevention/River Engineering Expert	TANAKA Hirofumi	CTI Engineering International Co., Ltd.	Project Management/JCC/Reporting/Responsibilities and Demarcation of MOTR/Road Disaster Prevention Management Plan	Plan	261	6	9.00
				Actual	261	6	9.00
Snow Disaster Prevention Expert(1)	OTSUKI Masaya	CTI Engineering International Co., Ltd. (Yukiken Snow Eaters Co.,Ltd.)	Inspection and Evaluation Manual/Countermeasure Manual/Pilot Project/Seminar/Site Training	Plan	133	0	4.43
				Actual	133	0	4.43
Snow Disaster Prevention Expert(2)	HONMA Shinichi	Kokusai Kogyo Co.,Ltd.	Inspection and Evaluation Manual/Countermeasure Manual/Pilot Project/Seminar/Site Training	Plan	120	0	4.00
				Actual	120	0	4.00
Snow Disaster Prevention Expert(3)	SAITO Yoshihiko	Kokusai Kogyo Co.,Ltd. (Yukiken Snow Eaters Co.,Ltd.)	Installation of Observation Equipment/Analysis of Observation Data and Snowdrift	Plan	23	51	3.32
				Actual	23	51	3.32
Slope Disaster Prevention Expert	KAWAKAMI Kyoichi	Earth System Science CO.,LTD	Inspection and Evaluation Manual/Countermeasure Manual/Seminar/Site Training	Plan	330	0	11.00
				Actual	330	0	11.00
Database Expert	SAWADA Kentaro	CTI Engineering International Co., Ltd.	Database Operation Manual/Seminar/Site Training	Plan	357	0	11.90
				Actual	357	0	11.90
Database Expert (2)	IBAYASHI Kou	CTI Engineering International Co., Ltd. (National Institute of Technology, Nagaoka College)	Database Operation Manual/Seminar/Site Training	Plan	10	0	0.33
				Actual	10	0	0.33
Disaster Prevention Countermeasures Expert	SASAKI Takao	CTI Engineering International Co., Ltd. (Chi-ken Sogo Consultants Co., Ltd.)	Inspection and Evaluation Manual/Countermeasure Manual/Seminar/Site Training	Plan	120	0	4.00
				Actual	120	0	4.00
Geological Expert	OHASHI Kengo	Earth System Science CO.,LTD	Inspection and Evaluation Manual/Countermeasure Manual/Seminar/Site Training	Plan	120	0	4.00
				Actual	120	0	4.00
Disaster Prevention Facilities Expert/Cost Estimator/ Construction Planner	INAGAKI Motohiro	Central Nippon Expressway Company Limited	Road Disaster Prevention Management Plan/Cost Estimation/Seminar	Plan	150	0	5.00
				Actual	150	0	5.00
Construction Supervisor	TOMOSADA Ryoichi	CTI Engineering International Co., Ltd.	Construction Supervision of Pilot Project	Plan	21	0	0.70
				Actual	21	0	0.70
Topographic Survey Expert	MIKAMI Soshi	Earth System Science CO.,LTD	Topographic Survey for Landslide/Site Training	Plan	15	0	0.50
				Actual	12	2	0.50
Landslide Observation Expert	KOIKE Toru	Earth System Science CO.,LTD	Countermeasure Plan for Landslide	Plan	15	0	0.50
				Actual	12	2	0.50
Coordinator/Road Disaster Inspection Assistant	Abdyrahmanova Akshkookum	CTI Engineering International Co., Ltd.	Project Coodination/Disaster Inspection Assitant/Data Collection/Meeting Arrange	Plan	0	193	9.65
				Actual	0	193	9.65
Japan Training Assistant	ICHIKAWA Shumpei	CTI Engineering International Co., Ltd.	Trainig in Japan	Plan	0	40	2.00
				Actual	0	40	2.00
Total MM						**Plan**	**81.03**
						Actual	**81.03**

Table 2-3 List of Equipment Procured for the Project

Item		Quantity	Year/Month	Storage Site	Purpose	Procurement Place
Database System	Tablet (iPad mini 4)	16	2017 September	MOTR (AMS)	For database server	Japan
	Laptop for Database (Mac Book Pro)	1	2017 May	MOTR (AMS)	For database server	Kyrgyz
	FileMaker Server (Server Software)	1	2017 May	MOTR (AMS)	For database server	Japan
Weather Observation	Laptop for Observation (ASUS)	2	2016 September	MOTR (DEU9 & DEU23)	For weather observation	Kyrgyz
	Wind Speed and Direction Sensor	6	2016 September	MOTR (DEU9 & DEU23)	For weather observation	Japan
	Snow Depth Meter	6	2016 September	MOTR (DEU9 & DEU23)	For weather observation	Japan
	Solar Panel System 12W	6	2016 September	MOTR (DEU9 & DEU23)	For weather observation	Japan
	Storage BOX	6	2016 September	MOTR (DEU9 & DEU23)	For weather observation	Japan
	KADEC Communication Software	6	2016 September	MOTR (DEU9 & DEU23)	For weather observation	Japan
	Data Logger (KADEC21-Memini-C)	6	2016 September	MOTR (DEU9 & DEU23)	For weather observation	Japan

Table 2-4 Schedule of Training in Japan for the Project

Schedule		Number of Participants	Organization Accepting the Training in Japan
First Training	22 October 2017 to 1 November 2017	7 (2*)	✓ JICA Chubu ✓ HOKKAIDO UNIVERSITY ✓ Civil Engineering Research Institute for Cold Region ✓ RIKEN KOGYO Inc. ✓ Central Nippon Expressway Company Limited
Second Training	21 October 2018 to 1 November 2018	5	✓ JICA Tokyo Center ✓ Central Nippon Expressway Company Limited ✓ PROTEC ENGINEERING ✓ Niigata Prefectural Government ✓ National Institute of Technology, Nagaoka College ✓ Nagaoka University of Technology ✓ National Research Institute for Earth Science and Disaster Resilience

* Person from the Ministry of Finance

Table 2-5 List of Participating Trainees in the First Training in Japan

Organization	Name	Position
MOTR	Mr. DZHUMAGAZIEV Nurlan	Head, Economics and Audit
	Mr. KULUEV Nurbek	Chief Specialist, Department of Production Quality Control, GDAD-BO
	Mr. TOKTOMUSHEV Bolotbek	Chief Specialist, Department of Production Quality Control, GDAD-BO
	Mr. SADAKBAEV Talant	Chairman, Technical Committee-55
	Mr. KALYGULOV Belek	Head, DEU30, PLANNING DEP-T
MOF (Ministry of Finance)	Mr. NARBEKOV Bakytbek	Head, Capital Investment Planning
	Mr. MUKASHOV Kyialvek	Head, Economics Sectors Expenditures Planning

Table 2-6 List of Participating Trainees in Second Training in Japan

Organization	Name	Position
MOTR	Mr. SHADBANBEK Imankulov	RMD, Deputy Director
	Mr. USONBEKOV Aitbek	Leading Specialist, Asset Management Section, RMD
	Ms. ABDYRASHYM kyzy Aigerim	Head, Asset Management Section, RMD
	Mr. LSAKOV Erlan	Chief Specialist, GDAD-BO
	Mr. KASYMBAEV Taalai	Head, DEU50

2.1.2 Input by the Kyrgyz Side (Planned and Actual)

Input from the Kyrgyz side is as follows:

Table 2-7 Input by the Kyrgyz Side

Original Plan (Ver.0)	Actual	Remark
1. C/P for the Project 1) Project Director: 2) Project Manager: 3) C/P: 2. Preparation Works for the installation of the equipment 3. Office for the Project with office furniture and utilities such as internet connectivity, telephone line, electricity, etc. 4. Running expenses necessary for the implementation of the Project	1. C/P for the Project 1) Project Director: 2) Project Manager: 3) C/P: 2. Preparation Works for the installation of the equipment 3. Office for the Project with office furniture and utilities such as internet connectivity, telephone line, electricity, etc. 4. Running expenses necessary for the implementation of the Project	No change

2.1.3 Joint Coordination Committee Meeting

Schedule and members of the JCC Meetings for the Project were held as follows:

Table 2-8 Schedule of Joint Coordination Committee Meetings

No	Date
1st JCC	27 April 2016
2nd JCC	13 October 2016
3rd JCC	6 April 2017
4th JCC	17 October 2017
5th JCC	25 April 2018
6th JCC	18 October 2018

Table 2-9 List of Joint Coordination Committee Members

Position	Member
Project Director	Director of RMD
Project Manager	Chief Engineer of RMD
Member	Head of Preparation Division
Member	Head of Asset Management Section of RMD
Member	Head of GDAD-BO
Member	Head of UAD-OSI
Member	Head of UAD-JAB
Member	Representative of Planning and Economic Division of RMD
Member	Representative of JICA Kyrgyz Office
Member	JICA Expert for the Project (JICA Project Team)

2.1.4 Activities (Planned and Actual)

The summary of Project Activities is as shown in Table 2-10.

Table 2-10 Comparison of Activities (Plan and Actual)

Planned (PDM ver.0)	Planned (PDM ver.5)	Actual	Completed	To be Completed	Not Completed	Remark
1-1. To review the present work sharing among relevant organizations.	1-1. To review the present work sharing among relevant organizations.	Roles and activities of relevant organizations of MOTR have been reviewed and finalized by MOTR.	☑			No change
1-2. To identify the most suitable MOTR sections to take charge of collection, input and analysis of data in the road disaster prevention Database Management System.	1-2. To identify the most suitable MOTR sections to take charge of collection, input and analysis of data in the road disaster prevention Database Management System.	Roles and activities for collection, input and analysis of the database management system for road disaster prevention have been prepared and issued by the RMD Director.	☑			
1-3. To identify the most suitable MOTR sections to take charge of inspection, evaluation, plan preparation, and implementation of road disaster prevention.	1-3. To identify the most suitable MOTR sections to take charge of inspection, evaluation, plan preparation, and implementation of road disaster prevention.	Roles and activities for inspection, evaluation, plan preparation and implementation of road disaster prevention have been prepared and issued by the RMD Director.	☑			
1-4. To draft the Decree on assigning responsibilities to relevant organizations.	1-4. To draft the Decree on assigning responsibilities to relevant organizations.	Roles and activities for routine inspections, routine maintenance work, emergency inspections and disaster countermeasures have been issued by the RMD Director.	☑			
2-1. To analyze existing conditions, including compilation of data inventory on slope and snow hazards causing road disasters compiled by RMD, UADs and DEUs.	2-1. To analyze existing condition (including compilation of data inventory) on the slope and snow hazards causing road disaster compiled by RMD, UADs and DEUs.	The long list summarizing the road disaster hazard sections in the project area has been prepared by the RMD, UADs and DEUs based on the existing condition at the sites.	☑			The results of initial inspection of target roads in this project, it is difficult to prepare inspection manual and countermeasure manual covering various disaster types since the type of road disaster occurring on the target road were limited. Therefore, the site observation in local roads should be implemented to prepare the manuals covering various disaster types. (Amendment of Activities for Output-2)
2-2. To draft, review and finalize the Inspection Manual, indicating the check points for road	2-2. To draft, review and finalize the Inspection Manual, indicating the check points for road	The inspection and evaluation manual for road disaster prevention was drafted, reviewed and finalized by RMD.	☑			

Planned (PDM ver.0)	Planned (PDM ver.5)	Actual	Completed	To be Completed	Not Completed	Remark
disaster prevention by RMD.	disaster prevention by RMD, in consideration of disaster types not only on target roads but also on local roads.					
2-3. To practice routine, periodic and emergency inspections and to conduct condition rating based on the inspection manual prepared by RMD, UADs and DEUs.	2-3. To practice routine, periodic and emergency inspections and to conduct condition rating based on the inspection manual prepared by RMD, UADs and DEUs.	The following training and workshop on inspection/evaluation and countermeasures were implemented by RMD, UADs and DEUs based on the manual. 51 Workshop/Training 250 participants	☑			
2-4. To discuss countermeasures for road disaster prevention with RMD, UADs and DEUs.	2-4. To discuss countermeasures for road disaster prevention with RMD, UADs and DEUs.	Countermeasures for road disaster prevention were discussed by RMD, UADs and DEUs through the workshop and training of the project.	☑			
2-5. To draft, review and finalize the Countermeasures Manual for road disaster prevention including cost estimation for the budget plan prepared by RMD, UADs and DEUs.	2-5. To draft, review and finalize the Countermeasures Manual for road disaster prevention including cost estimation for the budget plan prepared in consideration of disaster types not only on target roads but also on local roads by RMD, UADs and DEUs.	The countermeasures manual for road disaster prevention was drafted, reviewed and finalized by RMD.	☑			
2-6. To practice selecting countermeasures for road disaster prevention including cost estimation based on the Countermeasures Manual with RMD, UADs and DEUs.	2-6. To practice selecting countermeasures of road disaster prevention including cost estimation based on the Countermeasures Manual with RMD, UADs and DEUs.	The following training and workshop on selecting countermeasures of road disaster prevention were implemented by RMD, UADs and DEUs based on the manual. 51 Workshop/Training 250 participants	☑			
3-1. To create a Database Management System of slope and snow hazards along the international and national roads for RMD.	3-1. To create a Database Management System of slope and snow hazards along the international and national roads which for RMD.	Database management system for road disaster prevention, which can input the inspection data and browse the disaster hazard data, has been developed for RMD.	☑			Since the Tunnel/Bridge database system developed in the previous project had applied a different input method from the input method of the road disaster database system, the reliability of the data input into the Tunnel/Bridge database system is lower than those of the road disaster database system. Therefore,

Planned (PDM ver.0)	Planned (PDM ver.5)	Actual	Completed	To be Completed	Not Completed	Remark
3-2. To establish the procedure for data input and reporting for RMD.	3-2. To establish the procedure for data input and reporting, while enhancing cooperativeness of RMD on the existing databases.	The procedure for data input and reporting has established for RMD while enhancing cooperativeness between the road disaster database system and the bridge & tunnel database system.	☑			the Tunnel/Bridge database system should be improved to the same system as the road disaster database system to formulate the appropriate short-term road disaster prevention management plan which will ensure the consistency of the entire road sector plan. (Amendment of Activities for Output-3 and Output-4)
3-3. To draft, review and finalize the manual for data input and database operation for RMD.	3-3. To draft, review and finalize the manual for data input and database operation for RMD.	Database System Manual for Road Disaster and Database System Manual for Bridge & Tunnel have been prepared for RMD.	☑			
3-4. To implement trainings for staff members of RMD, UADs and DEUs for data collection and input, and database operation.	3-4. To implement trainings for staff members of RMD, UADs and DEUs for data collection and input, and database operation.	The following training and workshops on data collection, input and database operation have been implemented for RMD, UADs and DEUs based on the manual. 19 Workshop/Training 66 participants	☑			
4-1. To establish priority criteria for road disaster prevention for RMD.	4-1. To establish priority criteria for road disaster prevention in consideration of the balance of the overall budget plan for the road sector for RMD.	Priority criteria for road disaster prevention have been established for RMD in consideration of the balance of the overall budget plan.	☑			
4-2. To implement training for staff members of RMD for preparing the Short-Term plan for road disaster prevention as a basic document for annual budget request.	4-2. To implement training for staff members of RMD for preparing the Short-Term plan for road disaster prevention as a basic document for annual budget request.	The training for staff members of RMD on the preparation of a Short-term plan has been held.	☑			
4-3. To prepare the Short-Term Road Disaster Prevention Management Plan.	4-3. To prepare the Short-Term Road Disaster Prevention Management Plan in consideration of the balance of the overall budget plan for the road sector.	The Short-term Road Disaster Prevention Management Plan has been prepared for RMD.	☑			
4-4. To implement training for staff members of RMD on the preparation of a Medium-Term Road Disaster Prevention Management Plan.	4-4. To implement training for staff members of RMD on the preparation of a Medium-Term Road Disaster Prevention Management Plan.	The training for staff of RMD for preparing a Medium-term plan has been held.	☑			

Planned (PDM ver.0)	Planned (PDM ver.5)	Actual	Completed	To be Completed	Not Completed	Remark
4-5. To prepare Preparation Manual for Short-Term and Medium-Term Road Disaster Prevention Management Plans for staff members of RMD.	4-5. To prepare Preparation Manual for Short-Term and Medium-Term Road Disaster Prevention Management Plans for staff members of RMD.	Manual for Short-term and Medium-term Road Disaster Prevention Management Plan has been prepared for RMD.	☑			
4-6. By referring to the Preparation Manual, to conduct trial preparation of Short-Term & Medium-Term Road Disaster Prevention Management Plans	4-6. By referring to the Preparation Manual, to conduct trial preparation of Short-Term & Medium-Term Road Disaster Prevention Management Plans	Short-term and Medium-term Road Disaster Prevention Management Plan have been prepared by RMD based on the manual.	☑			

2.2 Achievement of the Project

2.2.1 Outputs and Indicators

2.2.1.1 Achievement of Output-1

Indicators and achievements of Output-1 are as shown in Table 2-11.

Table 2-11 Indicators and Achievements of Output-1

Output-1: Responsibilities of MOTR on road disaster prevention, including specific duties to be performed by relevant units (HQ, RMD, UADs, DEUs) with necessary staffing in each, become clear.			
Indicators	**Before Project, April 2016**	**Achievements of March 2019**	**Achievement (%)**
1) Roles of MOTR HQ, RMD, target UADs and DEUs for road disaster prevention management are specified by MOTR.	✓ Responsibilities and roles of relevant units of MOTR on road disaster prevention have not been determined. ✓ Road maintenance works such as the removal of rocks and snow cleaning on the road are implemented. ✓ Road disaster inspection is implemented by MES, MOTR and traffic police once in spring and winter season.	✓ Roles and activities of relevant units of MOTR on road disaster prevention management were finalized as shown in Table 2-12 to Table 2-16. ✓ The RMD Director's Order on roles of MOTR HQ, RMD, target UADs and DEUs for road disaster prevention management was issued on Novembver 2018 ✓ The indicator 1) is acheved.	100

（1）Responsibilities and Activities for Road Disaster Prevention

Responsibilities and activities on road disaster prevention of relevant units of MOTR (HQ, RMD, UADs and DEUs), including road disaster inspection/evaluation, data input/collection, database operation/management, and preparation/update of road disaster management plan, have been determined in the Project by MOTR on the basis of the Road Disaster Prevention Cycle shown in Figure 2-2.

The Asset Management Section (hereinafter referred to as "AMS") was established in RMD by the previous JICA Project, the Project for Capacity Development for Maintenance Management of Bridge and Tunnels in the Kyrgyz Republic, to collect and manage information on bridges and tunnels and it has responsibilities for bridge and tunnel database operation and management. Even in the responsibilities and activities on road disaster prevention, AMS is positioned as the core organization for data management, database operation and training management.

In addition, responsibilities and activities of DEU on road disaster prevention are determined as implementation of the inspection, evaluation, countermeasure plan and sharing information on road disaster prone area to RO-RMD/UAD, and these of RO-RMD/UAD are determined as management of DUE activities and sharing information on DEU activities and road disaster prone area to RMD.

And also, the responsibilities and activities has been clarified including cooperation with relevant ministries and universities such as participation of MIA (hereinafter referred to as "MIA") and MES in periodic inspection and emergency inspection, meteorological data sharing with MES and technical lecture in university.

The framework of inspection/maintenance and the responsibility/activities for road disaster prevention works are as shown in Figure 2-3 and Table 2-12 to Table 2-16.

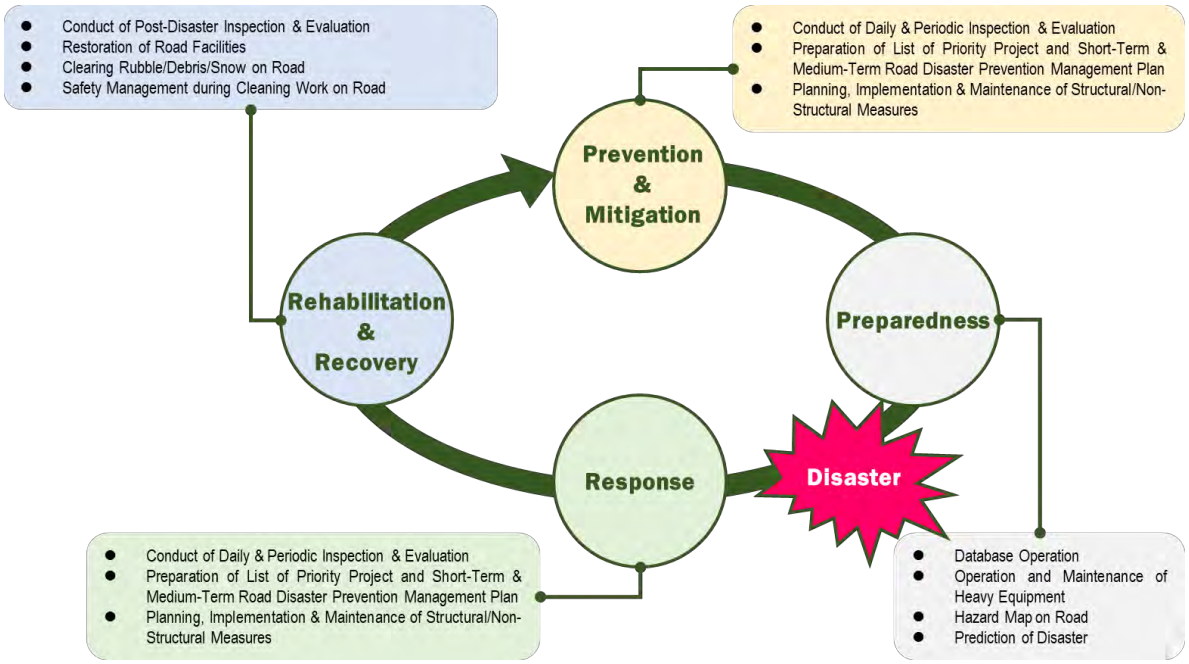


Figure 2-2 Road Disaster Management Cycle and Activities

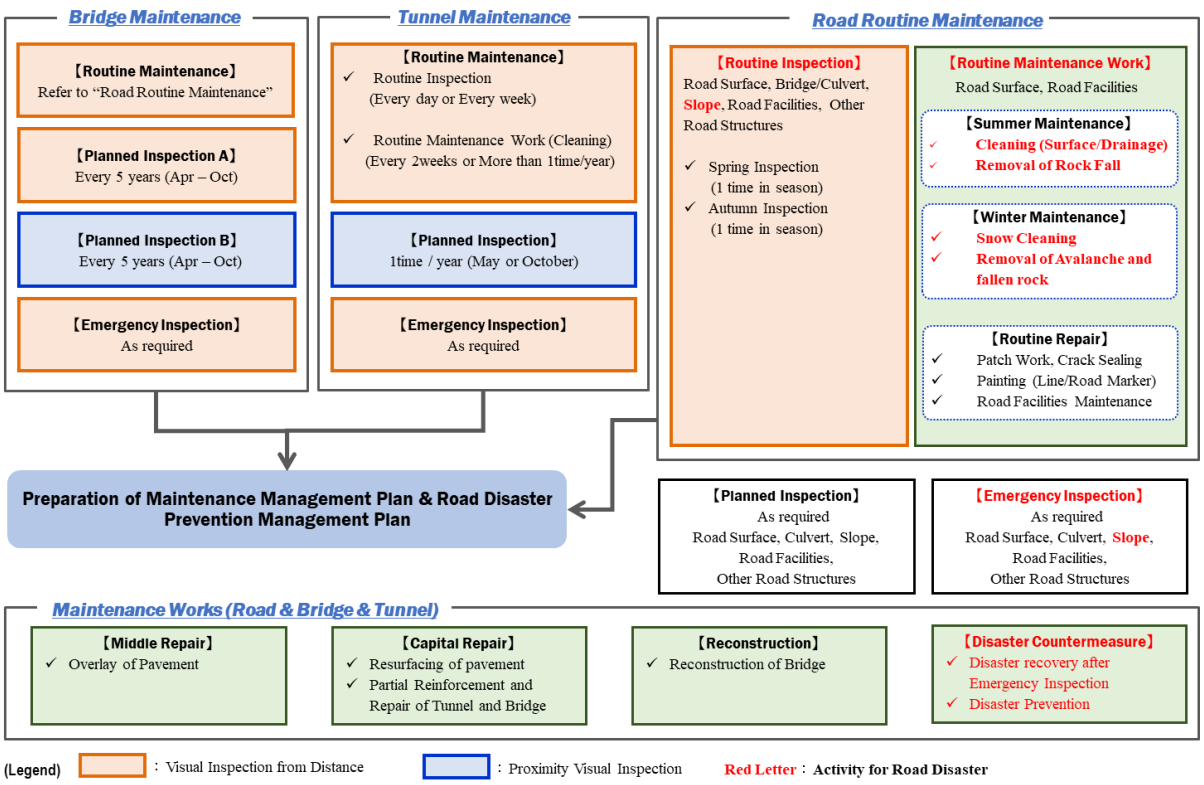


Figure 2-3 Framework of Inspection and Maintenance for Road Disaster

Table 2-12 Responsibilities and Activities for Daily/Periodic Inspection and Evaluation

Activities	DEU	ROs-RMD*/UADs	RMD	Remarks
Daily Inspection and Evaluation (I&E)	● Conduct of daily I&E ● Report on daily I&E result to ROs-RMD/UADs by phone or FAX	● Receipt of daily I&E results from DEUs by phone or FAX ● Provision of information to RMD through phone or FAX, if there is noteworthy matter. ● Storage of I&E records	● Receipt of daily I&E result from ROs-RMD/UADs by phone or FAX, if there is noteworthy matter. **AMS** ● Receipt of daily I&E result from RMD, if there is noteworthy matter.	
Periodic Inspection & Evaluation (I&E)	● Conduct of periodic I&E with MES and MIA	● Conduct of periodic I&E	● Analysis of periodic I&E result ● Revision of Inspection and Evaluation Manual for Road Disaster Prevention (situational)	

**RO-RMD (Regional Office of RMD)*

Table 2-13 Responsibilities and Activities for Routine Maintenance Work

Activities	DEU	ROs-RMD/UADs	RMD	Remarks
Clearing of Rubble/Debris/Snow on Road	● Clearing of rubble/debris/snow on roads and reporting on the clearing work to ROs-RMD/UADs	● Reporting on the clearing work by DEUs to RMD	● Receiving report on clearing work ● Provision of further instructions, if necessary. **AMS** ● Management/record on Database Server for clearing work	● MIA conducts traffic control/management ● MES approves the opening of the road in consideration of road safety conditions.
Safety Management during Cleaning Work on Road	● Conduct of safety inspection during cleaning work against secondary disasters (especially during avalanche and debris flow)	● Development of specific safety inspection method during cleaning work against secondary disaster to fit the local condition	● Development of safety management plan during cleaning work against secondary disaster	● In response to avalanche disaster at 255km on Bishkek-Osh Road (hereinaftere referred to as "BO Road") on March 2017. ● Safety management should be enforced in cooperation with MES and MIA.
Restoration of Road Facilities	● Proposal on restoration work including cost estimation ● Construction of restoration works depending on the scale of works ● Construction supervision of restoration works	● Receiving and evaluation of proposed restoration works by DEUs	● Budgeting restoration work ● Management of design commission for restoration work depending on the scale of works ● Management of implementation (like bidding and construction) of restoration work depending on the scale of works	● Designed by DEUs, Consultant or Design Institute (hereinafter referred to as DI), depending on the scale of restoration works ● Constructed by DEUs or Contractor, depending on the scale of restoration works
Operation and Maintenance of Heavy Equipment	● Maintenance of heavy equipment	● Assessment of the number and condition of heavy equipment in their jurisdiction	● Analysis of the condition of heavy equipment ● Preparation of procurement plan of heavy equipment	

Table 2-14 Responsibilities and Activities for Emergency Inspection and Evaluation

Activities	DEU	ROs-RMD/UADs	RMD	Remarks
Post-Disaster Inspection and Evaluation (I&E)	● Conduct of post-disaster I&E with MES and MIA ● Input & submission of post-disaster I&E result (Inspection Sheet) to AMS (Database Server) by Tablet ● Report on post-disaster I&E result to MES	● Conduct of post-disaster I&E ● Signature as approval of post-disaster I&E on Database Server through Tablet	● Analysis of post-disaster I&E result ● Revision of Inspection and Evaluation Manual for Road Disaster Prevention (ituational) **AMS** ● Management/record on Database Server for post-disaster I&E	

Table 2-15 Responsibilities and Activities for Disaster Response (After Disaster)

Activities	DEU	ROs-RMD/UADs	RMD	Remarks
Search & Rescue	● Support to MIA and MES ● Report on the activity to ROs-RMD/UADs	● Receipt of activity reports from DEUs	● Receipt of the DEU's activity reports from ROs-RMD/UADs if there is noteworthy matter.	● MIA conducts search activities ● MES coordinate activities for disaster response with related agencies.
SNS Disaster Information System	● Provision of disaster information to ROs-RMD/UADs	● Receipt of disaster information from DEUs ● Transmission of message to public and related agencies through their own Facebook page	● Development of the procedure of SNS disaster information system	

Table 2-16 Responsibilities and Activities for Disaster Countermeasures (Disaster Prevention)

Activities	DEU	ROs-RMD/UADs	RMD	Remarks
Planning, Implementation and Maintenance of Structural/ Non-Structural Measures	● Proposal on structural/ non-structural measures to ROs-RMD/ UADs ● Construction supervision for structural measures ● Maintenance of facilities for structural/ non-structural measures	● Planning of structural/ non-structural measures ● Management of design commission for structural/ non-structural measures ● Management of implementation (e.g. bidding and construction) of structural/ non-structural measures ● Supervision of DEU's maintenance work	● Budgeting of structural/ non-structural measures based on ROs-RMD/UADs planning ● Revision of Countermeasures Manual for Road Disaster Prevention (situational) **AMS** ● Management of Database Server for planning, implementation and maintenance of structural/ non-structural measures	● Designed by Consultant or Design Institute ● Constructed by Contractor ● Army conducts artificially-generated avalanche

Activities	DEU	ROs-RMD/UADs	RMD	Remarks
Preparation of List of Short-Term & Medium-Term Road Disaster Prevention Management Plan	● Provision of information on the road disaster hazardous area (location of new hazardous area/proposed countermeasure/cost estimation for countermeasures, sisuation change of existing hazadous area) to ROs-RMD/UADs	● Receiving and evaluation of the information on road disaster hazadous area from DEUs ● Selection of the site where the countermeasure shold be taken and report the information to RMD	● Preparation of short-term &medium-term road disaster prevention management plan on the basis of hazard list, periodic/post-disaster I&E and the information on road disaster hazarous area from ROs-RMD/UADs ● Revision of Preparation Manual for Short-Term and Medium-Term Road Disaster Prevention Management Plans, situational **AMS** ● Management on Database Server for list of priority project	
Database Operation			● Supervision of AMS's Database management **AMS** ● Management on Database Server including Tablets	● Technical cooperation with university (Lecture on FileMaker Software Operation for Road Disaster Prevention Database by MOTR)
Hazard Map of Road	● Distribution of hazard map to road users	● Preparation of hazard map per DEU in their jurisdiction	● Preparation of common format for hazard map	
Prediction of Disaster	● Preparedness for the disaster informed by ROs-RMD/UADs	● Instruction of preparedness of road cleaning to DEUs by analysis of meteorological data from MES	● Development of the methodology of disaster prediction using correlation between meteorological data and road disaster data	● Provision of meteorological data from MES

（2） Decree on Responsibilities and Activities for Road Disaster Prevention

The roles and activities of relevant units of MOTR for road disaster prevention was issued by RMD on 5th November 2018 as the Director's Order as shown below

КЫРГЫЗ РЕСПУБЛИКАСЫНЫН
ТРАНСПОРТ ЖАНА ЖОЛ
МИНИСТРЛИГИНИН
АЛДЫНДАГЫ ЖОЛ ЧАРБА
ДЕПАРТАМЕНТИ

ДЕПАРТАМЕНТ ДОРОЖНОГО
ХОЗЯЙСТВА
ПРИ МИНИСТЕРСТВЕ
ТРАНСПОРТА И ДОРОГ
КЫРГЫЗСКОЙ РЕСПУБЛИКИ

БУЙРУК **ПРИКАЗ**

Чыгыш № 149-од Дата «05» 11 2018г

«О роли и ответственности подведомственных организаций Департамента дорожного хозяйства при Министерстве транспорта и дорог Кыргызской Республики»

В рамках проекта Агентства международного сотрудничества ЛСА «Укрепление потенциала в управлении предотвращением бедствий на автомобильных дорогах Кыргызской Республики» в целях повышения обеспечения безопасности на автомобильных дорогах общего пользования, для ускорения обмена информации выполнения ежедневной инспекции, а также для планирования бюджета,

ПРИКАЗЫВАЮ:

1. **Начальникам управлений РО, УАД, ГДАД Бишкек- Ош, в том числе и ДЭУ:**
   - назначить ответственных сотрудников за своевременное предоставление информации в Отдел управления активами Департамента дорожного хозяйства согласна Приложения № 1;
   - руководствоваться **Приложением № 1** *(Роль и ответственность МТ и Д при бедствиях на дорогах)* для дальнейшей работы.
2. **Отделу управления активами**:
   – вести учет и контроль работ указанных в **Приложении № 1**;
3. Контроль за исполнением настоящего приказа возложить на заместителя директора Департамента дорожного хозяйства при Министерстве транспорта и дорог Кыргызской Республики Содомбаева Ж.А.

Директор **Ш. Иманкулов**

Figure 2-4 RMD Director's Order for Roles of MOTR on Road Disaster Prevention

ROAD MAINTENANCE DEPARTMENT
UNDER THE
MINISTRY OF TRANSPORT AND ROADS OF THE KYRGYZ REPUBLIC

Outgoing No. 149-OD
Date: 5 November 2018

ORDER
on the role and responsibility of the subordinate organizations of the Road Maintenance Department under the Ministry of Tansport and Roads of the Kyrgyz Republic

Within the framework of JICA's "Project for capacity development for road disaster prevention management in the Kyrgyz Republic", to ensure safety on public roads, to speed up information exchange on daily inspection, as well as to plan budget,

I hereby order:

1. **to the Heads of RO, UAD, GDAD Bishkek-Osh, including DEU:**
   - to appoint responsible staff for timely provision of information to the Assets Management Section of the Road Maintenance Department in compliance with the Attachment 1;
   - to stick to the Attachment 1 (Role and responsibility of the MOTR during road disasters) for further work.

2. **to the Assets Management Section:**
   - to record and control of works indicated in the Attachment 1.

3. **To reserve the control over the execution of this order to the Deputy Director of the Road Maintenance Department under the Minstry of Transport and Roads of the Kyrgyz Republic, J. Sodombaev.**

Sh. Imankulov
Director
[signed]

This document is an English translation of the original. (Unofficial)

Figure 2-5 RMD Director's Order for Roles of MOTR on Road Disaster Prevention (English: Unofficial)

2.2.1.2 Achievement of Output-2

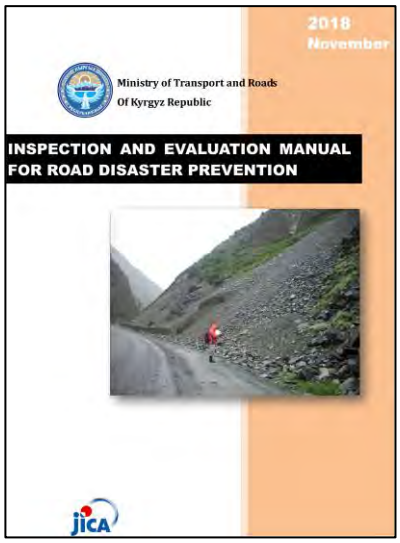
Indicators and achievement of Output-2 are as shown in Table 2-17.

Table 2-17 Indicators and Achievement of Output-2

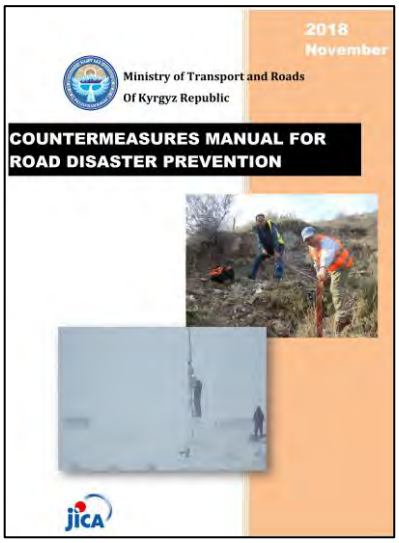
Output-2: Capacity of target UADs and DEUs for inspection and analysis of road disaster is enhanced.			
Indicators	**Before Project, April 2016**	**Achievements of March 2019**	**Achievement (%)**
1) Road disaster hazard sections are determined with their feature and classification by target UADs and DEUs by [May 2017].	✓ Information on road disaster hazard sections has not been shared sufficiently from DEU to relevant units of MOTR. ✓ Information on road disaser sections, disaster types and features was not managed by MOTR.	✓ The longlist, which summarizes the road disaster hazard sections, disaster types, disaster scale and cost estimation for the countermeasure, was prepared by RMD, target UADs and DEUs based on the existing condition on the site. ✓ The indicator 1) is achieved.	100
2) Inspection and Evaluation Manual for Road Disaster Prevention is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019].	✓ No inspection and evaluation manual for road disaster prevention has been prepared for Kyrgyz.	✓ Inspection and evaluation manual for road disaster prevention was drafted, reviewed and finalized by RMD as shown in Picture 2-1. ✓ The indicator 2) is achieved.	100
3) Countermeasures Manual for Road Disaster Prevention is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019].	✓ No countermeasures manual for road disaster prevention has been prepared for Kyrgyz.	✓ Countermeasures manual for road disaster prevention was drafted, reviewed and finalized by RMD as shown in Picture 2-2. ✓ The indicator 3) is achieved.	100
4) All the staff in target UADs and DEUs trained for inspection/evaluation and standard disaster prevention countermeasures based on the manuals pass the final exam prepared by the Project.	✓ Visual inspection of road slopes is implemented by DEU as road routine maintenance.	✓ 22 staff members of target relevant units (RMD, target UADs and DEUs) and 116 staff members of other units were trained by Master Trainers (hereinafter referred to as "MT") through the training program and passed the final exam on inspection and countermeasures prepared by the Project. ✓ The indicator 4) is achieved.	100

（1）Preparation of Inspection/Evaluation and Countermeasures Manual

The "Inspection and Evaluation Manual for Road Disaster Prevention" and the "Countermeasures Manual for Road Disaster Prevention" shown in Picture 2-1 and Picture 2-2 were drafted, reviewed and finalized by RMD through the project activities, such as the workshop, seminar and training. The manuals were authorized for use by the RMD Director's Order.



Picture 2-1 Inspection/Evaluation Manual for Road Disaster Prevention



Picture 2-2 Countermeasures Manual for Road Disaster Prevention

（2） Training on Inspection/Evaluation and Countermeasure for Road Disaster

A total of 13 workshops/seminars and 38 site trainings on the inspection/evaluation and countermeasures for road disaster prevention have been implemented by the relevant units of MOTR.

Picture 2-3 Workshop on Slope Disaster Prevention

Picture 2-4 Installation of Monitoring Pole for Landslide

2.2.1.3 Achievement of Output-3

Indicators and achievement of Output-3 are as shown in Table 2-18.

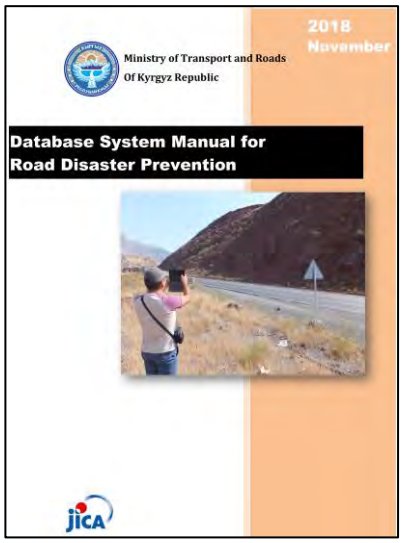
Table 2-18 Indicators and Achievements of Output-3

Output-3: Capacity of RMD to operationalize Database Management System for road disaster prevention is developed.			
Indicators	**Before Project, April 2016**	**Achievements of March 2019**	**Achievement (%)**
1) A database format for information on road disaster prevention management planning (incl. costing for countermeasures) is prepared by RMD by [August 2016].	✓ No database format for information on road disaster prevention has been prepared for Kyrgyz. ✓ Database formats for tunnel and bridge maintenance was prepared in the previous JICA project.	✓ The database formats, which are Disaster Hazard List, Disaster Record List, Disaster Record Sheet, Monitoring Sheet for Landslide and Priority List, were prepared by RMD. ✓ The indicator 1) is achieved.	100
2) Practically usable Manual for Data Collection and Input is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019].	✓ No manual for data collection and input for road disaster prevention in Kyrgyz is prepared. ✓ Manuals for data collection and input for tunnel and bridge maintenance was prepared by the previous JICA project.	✓ Data input and data operation manual for road disaser database was drafted, reviewed and finalized by RMD as shown in Picture 2-5. ✓ Data input and data operation manual for bridge and tunnel maintenance was updated by RMD to enhance the cooperativeness between the road disaster database system and bridge & tunnel database system as shown in Picture 2-6. ✓ The indicator 2) is achieved.	100
3) Data collected and input by target UADs and DEUs are integrated to the database for prioritizing countermeasures and certified by RMD by [May 2017].	✓ Road disaster record in 2013 to 2017 that contains disaster data, location and disaster types is managed by RMD in Excel files.	✓ 137 inventory data of road disaster hazard sections was collected by target UAD and DEU, and integrated in the database and certified. ✓ 895 data of past road disaster data was collected byRMD, target UADs and DEUs, and integrated into the database.The indicator 3) is achieved.	100
4) Staff of target UADs and DEUs trained for data collection and input based on the Manual pass the exam that evaluates their mastery in filling required information in database format.	✓ Database collection and input method for bridge and tunnel was understood by target UADs and DEUs in the previous JICA project ✓ Database operation for bridge and tunnel was understood by AMS and previous JICA project.	✓ 12 staff members of target relevant units (RMD, target UADs and DEUs) and 48 staff members of other units were trained by MTs through the training program and passed the final exam on data collection, input and database operation prepared by the Project. ✓ The indicator 4) is achieved.	100

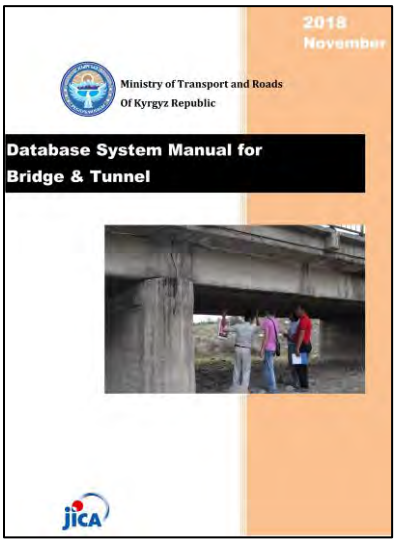
Output-3: Capacity of RMD to operationalize Database Management System for road disaster prevention is developed.			
Indicators	**Before Project, April 2016**	**Achievements of March 2019**	**Achievement (%)**
5) Database Management System that contains information necessary for road disaster prevention management in the project area is developed for preparing budget by RMD by [May 2017].	✓ Database management system that contains information on road disaster prevention management has not been developed for Kyrgyz. ✓ Database management system that contains information on bridge and tunnel maintenance was developed by the previous JICA project.	✓ Database management system contains information on road disaster inventory data, past hazard record, landslide monitoring and priority list is prepared by RMD. ✓ Information on database can be used for preparing the short-term road disaster prevention management plan. ✓ The indicator 5) is achieved.	100
6) Practically usable Manual for Database Operation is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019].	✓ Manuals for database operation for road disaster prevention has not been prepared for Kyrgyz. ✓ Manuals for database operation for tunnel and bridge maintenance was prepared by the previous JICA project.	✓ Data input and data operation manual for road disaser database is drafted, reviewed and finalized by RMD as shown in Picture 2-5. ✓ Data input and data operation maual for the bridge and tunnel maintenance is updated by RMD to enhance the cooperativeness between the road disaster database system and bridge & tunnel database system as shown in Picture 2-6. ✓ The indicator 6) is achieved.	100

（1） Preparation of Database Manual for Road Disaster Prevention

“Data Input and Database Operation Manual for Road Disaster Prevention” was drafted, reviewed and finalized by RMD through the project activities such as the workshop, seminar and training as shown in Picture 2-5. Also, “Data Input and Database Operation Manual for Bridge & Tunnel Maintenance” was updated by RMD to enhance the cooperativeness between the road disaster database system and bridge & tunnel database system as shown in Picture 2-6. The manuals were authorized by the RMD Director’s Order.



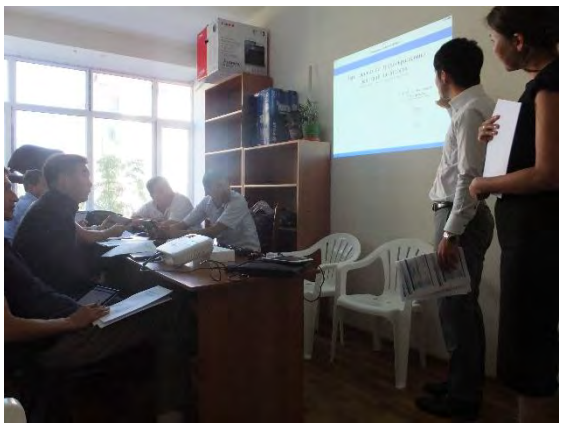
Picture 2-5 Database Manual for Road Disaster Prevention



Picture 2-6 Database Manual for Bridge & Tunnel Maintenance

（2） Training on Data Collection, Input and Database Operation

A total of 10 workshops/seminars and 9 site trainings on data collection, input and database operation were implemented by relevant units of MOTR.



Picture 2-7 Workshop on Database Operation

Picture 2-8 Practice Training on Data Input

2.2.1.4 Achievement of Output-4

Indicators and achievement of Output-4 are as shown in Table 2-19.

Table 2-19 Indicators and Achievement of Output-4

Output-4: Capacity of RMD for preparing road disaster prevention management plans of the target areas is enhanced.			
Indicators	**Before Project, April 2016**	**Achievements of March 2019**	**Achievement (%)**
1) Nation-wide management criteria for road disaster prevention is developed by RMD by [May 2017].	✓ No nationwide management criteria for road disaster prevention has been developed. for Kyrgyz	✓ Nation-wide management criteria, which can classify the priority of road disaster countermeasures based on the importance of the road and the diaster risk, was developed by RMD. ✓ The indicator 1) is achieved.	100
2) Short-Term Road Disaster Prevention Management Plan (urgent response plan) with cost estimation for road disaster prevention management of the target area is prepared by RMD by [September 2017 and September 2018]	✓ Short-term Road Disaster Prevention Management Plan for road disaster prevention management has been prepared for Kyrgyz. ✓ Short-term Maintenance Managemet Plan for bridge was prepared by the previous JICA project.	✓ "The Short-term Road Disaster Prevention Management Plan in 2017" for the target area was prepared by RMD. ✓ "The Short-term Road Disaster Prevention Management Plan in 2018" for nationwide hazardous area was prepared by RMD. ✓ The indicator 2) is achieved.	100
3) Preparation Manual for Short-Term and Medium-Term Road Disaster Preventnion Management Plans is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019].	✓ No Manual for Short-term and Medium-term Road Disaster Prevention Management Plans has been prepared for Kyrgyz. ✓ Manuals for Short-term Maintenance Managemet Plan for bridge was prepared by the previous JICA project.	✓ Manual for Short-term and Medium-term Road Disaster Prevention Management Plan was drafted, reviewed and finalized by RMD. ✓ The indicator 3) is achieved.	100

2.2.2 Project Purpose and Indicators

2.2.2.1 Project Purpose

The project purpose is to enhance the capacity of MOTR's relevant units (HQ, RMD, target UADs and DEUs) in projects for the management of road disaster prevention including road disaster inspection, preparation of road disaster prevention management plan and planning of budget for road disaster prevention. The relationships between the project purpose and the achievement of outputs is as shown in Figure 2-6.

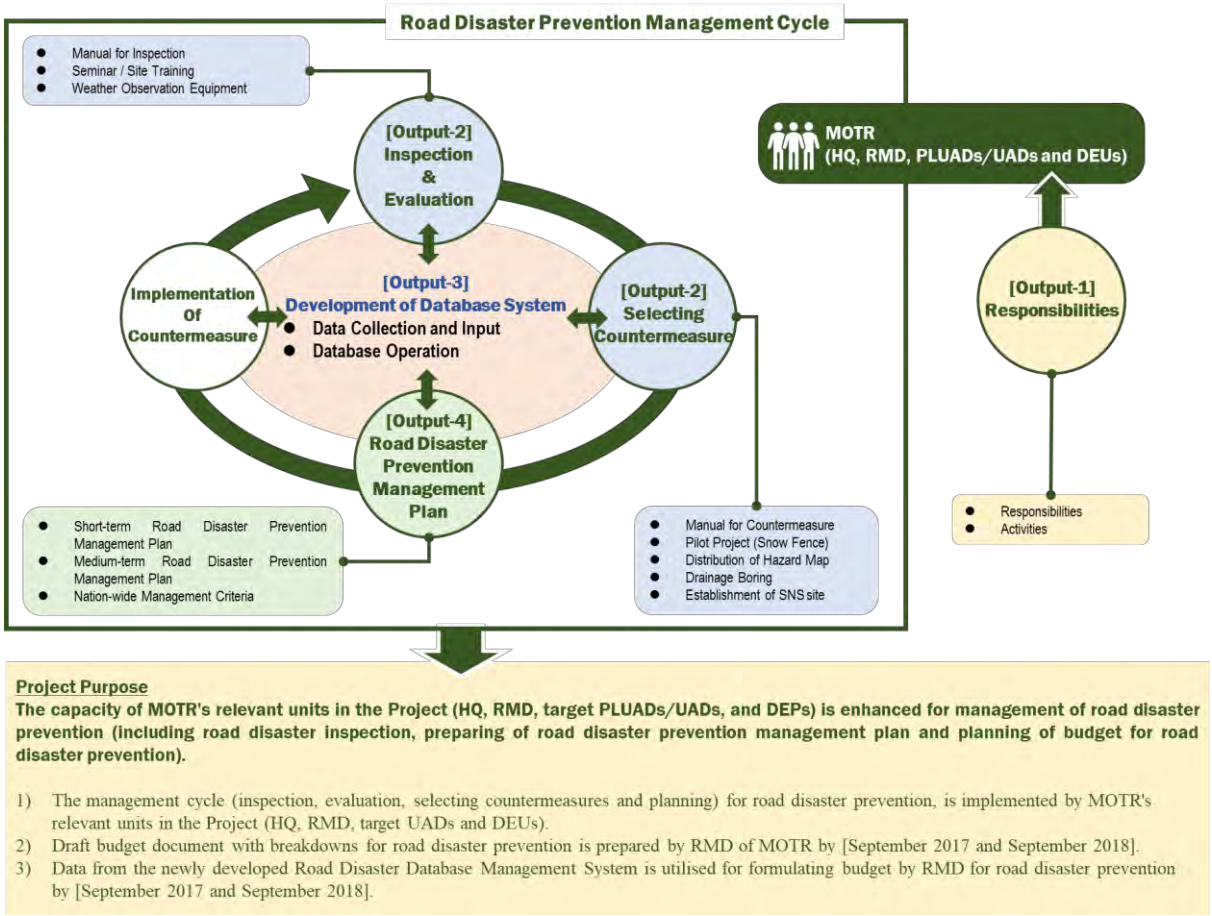


Figure 2-6 Schematic Structure of Project Outputs

Table 2-20 Indicators and Achievements of Project Purpose

Project Purpose: The capacity of MOTR's relevant units in the Project (HQ, RMD, target UADs, and DEUs) is enhanced for management of road disaster prevention (including road disaster inspection, preparing of road disaster prevention management plan and planning of budget for road disaster prevention).		
Indicators	**Before Project, April 2016**	**Achievements of March 2019**
1) The management cycle (inspection, evaluation, selecting countermeasures and planning) for road disaster prevention, is implemented by MOTR's relevant units in the Project (HQ, RMD, target UADs and DEUs).	✓ No management cycle for road disaster prevention has been implemented in Kyrgyz. ✓ Road maintenance work such as the removal of rocks and snow cleaning on the road are implemented after occurence of road disaster, but no countermeasure for road disaster prevention has been implemented in Kyrgyz.	✓ Management cycle (inspection, evaluation, selectionn of countermeasures and plannning) of road disaster prevention has been implemented for 85.5km of BO Road by relevant units of MOTR. ✓ The indicator 1) is achieved.
2) Draft budget document with breakdowns for road disaster prevention is prepared by RMD of MOTR by	✓ No budget document with breakdowns for road disaster prevention has been prepared for Kyrgyz.	✓ Short-term Road Disaster Prevention Management Plans containing countermeasure sections to be implemented within 3 years, countermeasure

Project Purpose: The capacity of MOTR's relevant units in the Project (HQ, RMD, target UADs, and DEUs) is enhanced for management of road disaster prevention (including road disaster inspection, preparing of road disaster prevention management plan and planning of budget for road disaster prevention).		
Indicators	**Before Project, April 2016**	**Achievements of March 2019**
[September 2017 and September 2018].		type and estimated cost were prepared by RMD in September 2017 and September 2018. ✓ The indicator 2) is achieved.
3) Data from the newly developed Road Disaster Database Management System is utilised for formulating budget by RMD for road disaster prevention by [September 2017 and September 2018].	✓ Road disaster records in 2013 to 2017 containing disaster data, location and disaster types are managed by RMD in Excel files, but the data has not been utilized for formulating a budget for road disaster prevention.	✓ Data on the database system for road disaster prevention developed by the project were utilized to prepare Short-term Road Disaster Prevention Management plans in September 2017 and September 2018. ✓ The indicator 3) is achieved.

2.2.3 Other Achievement not stated in the PDM

2.2.3.1 Meteorological Observation and Pilot Project for Snowdrift

The equipment for meteorological observation was handed over to MOTR by the Project and were installed at 126.4km, 128.7km, 129.8km, 216km, 217.5km and 220.8km of BO Road by the relevant units of MOTR and the JICA Project Team (see Picture 2-9) in October 2016. Meteorological data such as temperature, wind speed, wind direction and snow depth have been observed by the relevant units of MOTR since November 2016 to grasp the condition of snowdrift.

In addition, the pilot project for snowdrift, which include test construction of snow fence and snowdrift simulation analysis, was conducted in the Project to grasp the snowdrift phenomenon in more detail and to enhance the capacity of MOTR for selecting/planning countermeasures for snowdrift (see Picture 2-10).

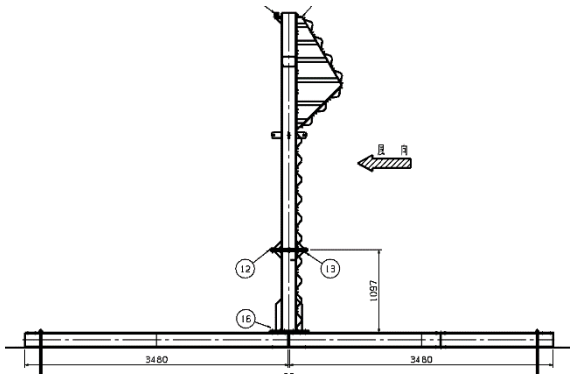
The outline of the pilot project is shown in Table 2-21.

Picture 2-9 Installation of Meteorological Observation Equipment

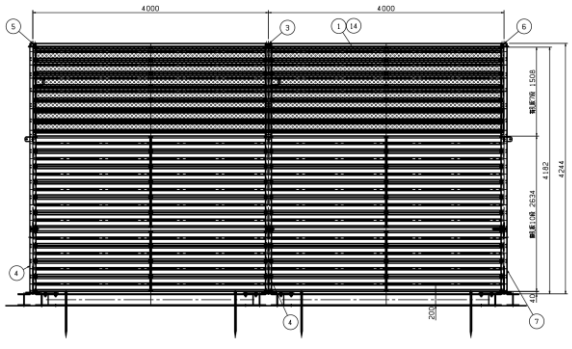
Picture 2-10 Pilot Project (Construction of Snow Fence)

Table 2-21 Summary of Pilot Project for Snowdrift

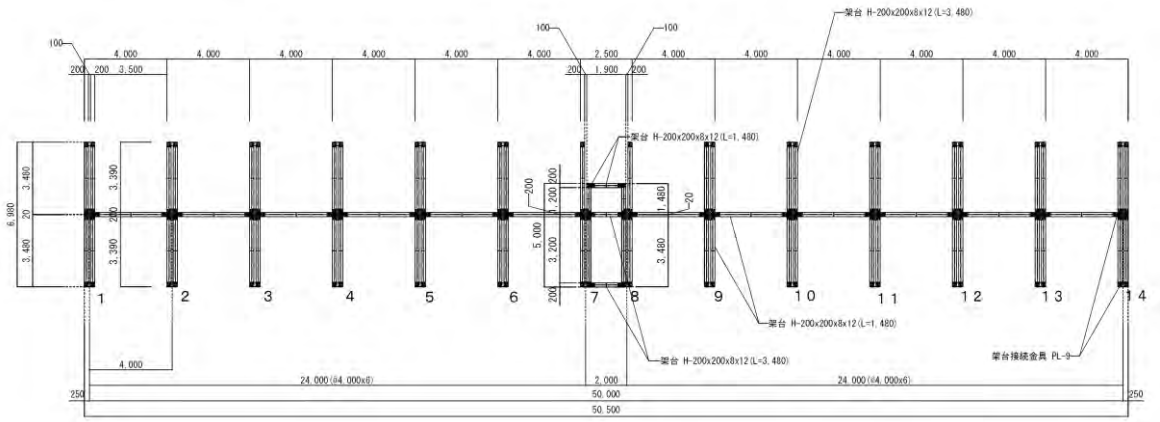
Main Contents	Sub-Contents	Details	Date
1. Test Construction (Snow Fence)	(1) Manufacture	Type: snow fence (H=4.0m, L=50m) Material: Steel	5 June 2017 to 27 June 2017
	(2) Transportation	Japan to Kyrgyz	12 July 2017 to 12 September 2017
	(3) Construction	Snow Fence: L=50m Location: BO Road 128.5km	12 September 2017 to 19 September 2017
2. Observation of Snowdrift		Observation over the accumulation of snow cover; Survey of efficiency of snow fence (deterioration of visibility)	November 2017 to March 2018
3. Snowdrift Analysis		Simulation of digital values of snowdrift ● Model used: RANS（3D model） Input data: wind speed and direction, snowfall level ● Algorithm for calculation: 3 values of wind direction to road x 3 values of road structures x existence/absence of protective structures (plan)	May 2018 to July 2018



Cross Section of Snow Fence



Front View of Snow Fence



Plan of Snow Fence

2.2.3.2 Landslide Monitoring and Countermeasure on 85.5km of BO Road

Knowledge on the landslide monitoring method by simple extensometer, which can be made of local materials, has been transferred to relevant units of MOTR by the JICA Project Team. The displacement of landslide at the 85.5km of Bishkek-Osh Road has been observed by MOTR since June 2016. Since the fluctuation of landslide has been confirmed continuously, drainage drilling which is one of the countermeasures for landslide, was planned by relevant units of MOTR and the JICA Project Team from January to April 2018. Besides, GDAD-BO budgeted 5 million Kyrgyz Som (approx. 8 million Japanese Yen) for the road disaster prevention works (horizontal drainage drilling) in May 2018 for the first time in Kyrgyz.

Picture 2-11 Monitoring for Landslide at 85.5km

Picture 2-12 Drone Survey for planning the countermeasure at 85.5km

2.2.3.3 Preparation of Hazard Map and Development of SNS Site

With the cooperation of MOTR and the JICA Project Team, a map of hazardous areas along the BO Road (Brochure) and a public relations system using SNS were created by RMD on January 2018. The printing cost of the Hazard Map was covered by a donation from the United Nations Development

Programme (hereinafter referred to as “UNDP”), and the number of copies printed was about 169,500 copies (for DEUs 9 & 23: 127,000 copies, for DEU 30: 42,500 copies). The brochure distribution was carried out at the tollgate, café and school along BO Road by RMD and MES.

The SNS information system using “Facebook” had commenced to establish real time road hazard information intercommunity between MOTR and the public and had delivered road information on road disaster hazard and traffic regulations due to road disasters.

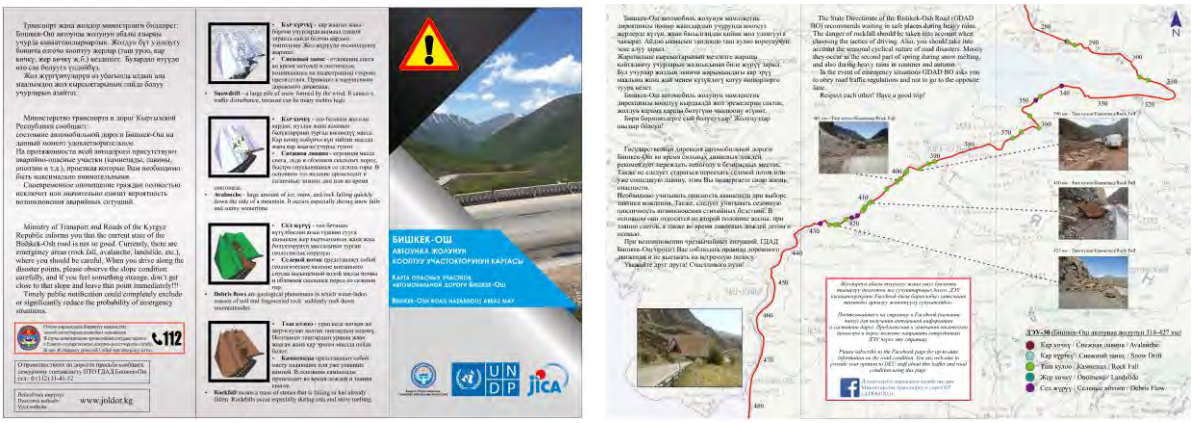


Figure 2-7 Hazard Map

Picture 2-13 Hazard Map Distribution at School (Toktogul No.1 Middle School)

Picture 2-14 Hazard Map Presentation by RMD and MES at School l (Toktogul No.4 Middle School)

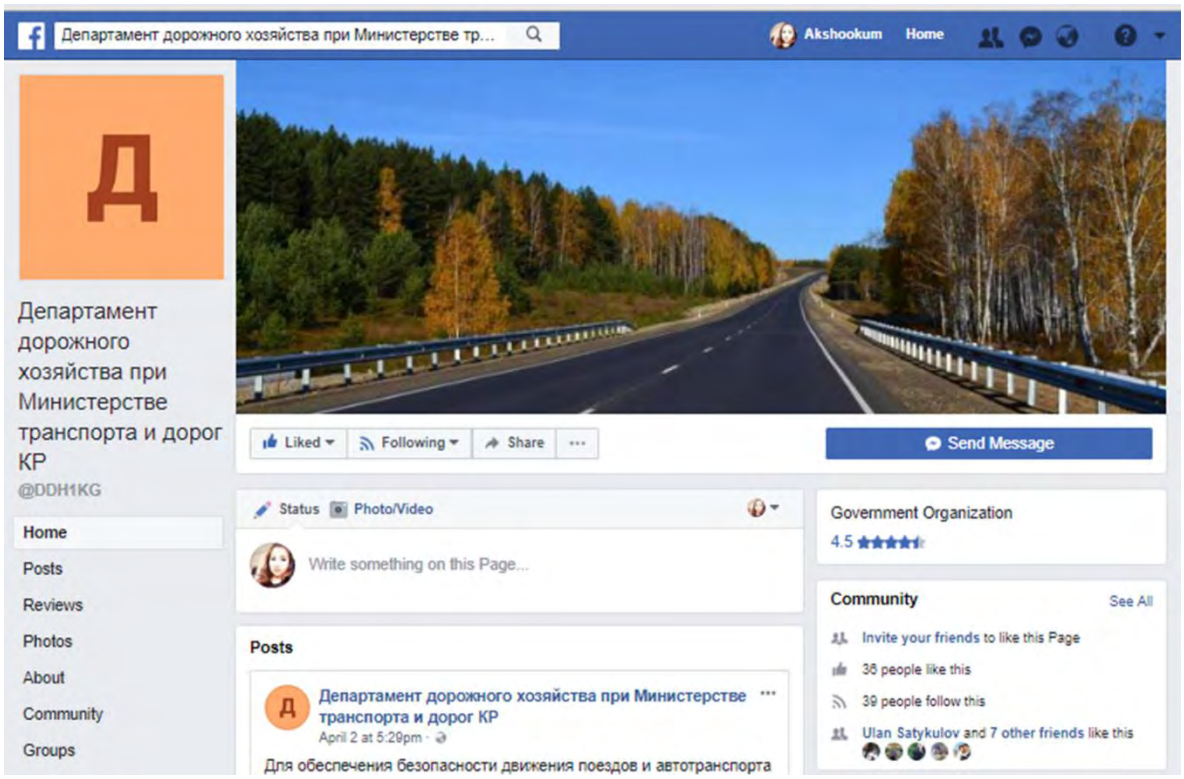


Figure 2-8 SNS Site for Real Time Road Disaster Information

2.2.3.4 Database Seminar for KSUCTA

The technical cooperation between MOTR and the Kyrgyz, State University of Construction, Transport and Architecture (hereinafter referred to as "KSUCTA") was approved on November 2, 2016 with support from Mr. Takuya Tanaka (JICA Road Administration Advisor) and the JICA Project Team. In response to this, seven (7) seminars on database development for road disaster prevention were held in KSUCTA from November 2016 to March 2017. A total of 19 students of KSUCTA have acquired the knowledge on database development, such as general information of database software (FileMaker) and development method of database system, through the seminars and mini-exam.

Table 2-22 Seminar Schedule

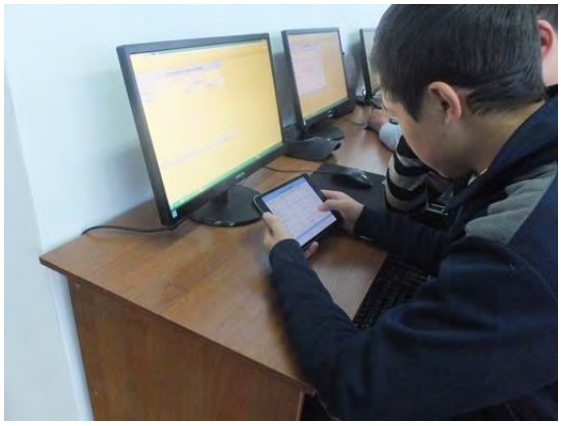
Seminar No.	Date	Activity Description
1	October 30 2016	**Introduction Course** Introduction and Lecture on General Information for Database Development using FileMaker
2	December 1 2016	**General Course on Database for Project Implementation** Detailed Information on Components (model, script and algorithm) for Database Development
3	December 14 2016	**Database Development Course Using FileMaker. (Practice Lessons 1)** 1) General Description of Database Operation System 2) Menu Contents (menu, sublevels, forms) of FileMaker Software 3) Description of FileMaker Detailed Contents
4	February 14 2017	**Database Development Course Using FileMaker. (Practice Lessons 2)** 1) Format and Script Creation for Interaction between Formats 2) Table creation (disaster type, disaster category) and table content (number, text).
5	February 28 2017	**Database Development Course Using FileMaker. (Practice Lessons 3)**

Seminar No.	Date	Activity Description
		1) Graph Elements in Model (elements-label, edit box, drop-down list, check box, radio button, drop-down calendar) 2) Presentation Format of Database Data in Model 3) Practical Lesson on Graph Elements and Presentation Format
6	March 23 2017	**Database Development Course Using FileMaker. (Practice Lessons 4)** 1) Data Import 2) Data Export 3) Practical Lesson on Data Import and Export
7	March 27 2017	**Final Course (Mini Exam)** Practical Test

Picture 2-15 Introduction of DB Seminar

Picture 2-16 Presentation of DB Development

Picture 2-17 Situation of Seminar



Picture 2-18 Practical Lesson

2.2.3.5 Improvement of Bridge and Tunnel Database System

Since the input method of the bridge and tunnel database system (transmitted through a phone and input, saved and updated manually) developed in the previous JICA project is different from the input method of the road disaster database system (inputting and sending data by tablet and saved/updated automatically on the server at the Head Office of MOTR), the reliability of data input of the bridge and tunnel database system was lower. Therefore, the bridge and tunnel database system and the manual were improved by RMD and the JICA Project Team to the same system to enhance the cooperation between the bridge and tunnel database system and the road disaster database system.

Picture 2-19 Meeting on Bridge & Tunnel Database System Improvement (1)

Picture 2-20 Meeting on Bridge & Tunnel Database System Improvement (2)

2.2.3.6 Training Program by MT

MT and RMD prepared the training program on road disaster prevention management that includes slope/snow disaster prevention and database operation to sustain and expand the knowledge and technique on road disaster prevention transferred by the Project continuously after the Project.

The training program was started in April 2018 and a total of 13 training sessions have been implemented by MT and the JICA Project Team by August 2018. Also, MOTR additionally implemented 2 training sessions with its budget in September 2018. In the trainings, MT trained, not only the staff of target relevant units of MOTR, but also other relevant unit's staff, and confirmed the participant's understanding of the training contents by examination. Besides, a total of 138 staff members of the relevant units of MOTR have passed the examinations for inspection/evaluation and countermeasures. Likewise, a total 60 staff members of relevant units of MOTR have passed the examination on database system.

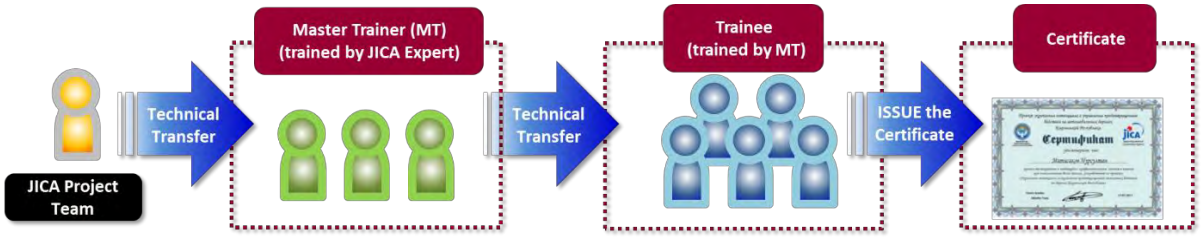


Figure 2-9 Training Program by MT

Picture 2-21 Training on Database System by MT

Picture 2-22 Site Training on Landslide Monitoring by MT

Picture 2-23 Examination on Road Disaster Prevention

Picture 2-24 Practical Training on Database Input

2.2.3.7 Road Asset Management Seminar

Due to budgetary constraints, it was difficult for MOTR to ensure sufficient budget for road disaster prevention work. Under the severe budget status, MOTR need to provide appropriate and effective plan and implementation for road disaster prevention work in consideration of road asset management. As a part of capacity development of road disaster prevention, the seminar on road asset management was held in October 2018 and March 2019. Japanese professors and experts participated and introduced Japanese technology on road disaster prevention and road asset management. Moreover, MOTR, MES and the Central-Asian Institute for Applied Geosciences (hereinafter referred to as “CAIAG”) and other related agencies discussed the responsibilities/activities of MOTR and MES on road disaster prevention and the utilization of Japan and Kyrgyz technologies for road disaster prevention and road asset management.

Picture 2-25 Road Asset Management Seminar

Picture 2-26 Excel Patch Demonstration

2.3 History of PDM Modification

Version	Date	Amendment of PDM
Version 0	April 2016	Original
Version 1	April 2016	**[Amendment]: Output-2** 2-1. Road disaster hazard sections are determined with their feature and classification by target UADs and DEUs by [May 2017]. 2-2. Inspection and Evaluation Manual for Road Disaster Prevention is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019]. 2-3. Countermeasures Manual for Road Disaster Prevention is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019]. **[Amendment]: Output-3** 3-1. A database format for information on road disaster prevention management planning (incl. costing for countermeasures) is prepared by RMD by [August 2016]. 3-2. Practically usable Manual for Data Collection and Input is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019]. 3-3. Data collected and input by target UADs and DEUs are integrated to the database for prioritizing countermeasures and certified by RMD by [May 2017]. 3-5. Database Management System that contains information necessary for road disaster prevention management in the project area is developed for preparing budget by RMD by [May 2017]. 3-6. Practically usable Manual for Database Operation is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019]. **[Amendment]: Output-4** 4-1. Nation-wide management criteria for road disaster prevention is developed by RMD by [May 2017]. 4-2. Short-Term Road Disaster Prevention Management Plan (urgent response plan) with cost estimation for road disaster prevention management of the target area is prepared by RMD by [September 2017 and September 2018]. 4-3. Preparation Manual for Short-Term and Medium-Term Road Disaster Prevention Management Plans is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019]. **[Reason]: Output-2/Output-3/Output-4** ✓ Since Target date to achieve the indicators of the outputs was not yet determined in PDM Version 0, they were decided in PDM Version 1.
Version 2	October 2016	**[Amendment]: Input (Japanese Side)**

Version	Date	Amendment of PDM
		1. Experts 1) Team Leader / Road Maintenance Expert 2) Deputy Team Leader/Debris Flow Disaster Prevention/River Engineering Expert 3) Snow Disaster Prevention Expert (1) 4) Snow Disaster Prevention Expert (2) 5) Snow Disaster Prevention Expert (3) 6) Slope Disaster Prevention Expert 7) Database Expert 8) Disaster Prevention Countermeasures Expert 9) Geological Expert 10) Disaster Prevention Facilities Expert/Cost Estimator/ Construction Planner 11) Coordinator / Road Disaster Inspection Assistant **[Reason]: Input (Japanese Side)** ✓ Snow Disaster Prevention Expert (3) was added to support the installation of meteorological observation equipment. **[Amendment]: Other** The MOTC (Ministry of Transport and Communication) was reorganized into the MOTR (Ministry of Transport and Roads) **[Reason]: Other** ✓ Implementation agency was changed from MOTC (Ministry of Transport and Communication) to MOTR (Ministry of Transport and Roads) by "Resolution No. 436 of the Government of the Kyrgyz Republic dated 9 August 2016".
Version 3	April 2017	**[Amendment]: Activities** 2-2. To draft, review and finalize an Inspection Manual indicating check points for road disaster prevention in consideration with disaster types not only on target roads but also on local roads by RMD. 2-5. To draft, review and finalize a Countermeasures Manual for road disaster prevention including cost estimation to prepare budget plan in consideration with disaster types not only on target roads but also on local roads by RMD, UADs and DEUs. 3-2. To establish the procedure for data input and reporting while enhancing cooperativeness of existing databases by RMD. 4-1. To establish priority criteria for road disaster prevention in consideration with the balance of the overall budget plan for the road sector by RMD. 4-3. To prepare Short-Term Road Disaster Prevention Management Plan in consideration with the balance of the overall budget plan for the road sector. **[Reason]: Activities** ✓ The results of initial inspection of target roads in this project, it is difficult to prepare inspection manual and countermeasure manual covering various disaster types since the type of road disaster occurring on the target road were limited. Therefore, the site observation in local roads should be implemented to prepare the manuals covering various disaster types. (Amendment of Activities for Output-2) ✓ Since thr Tunnel/Bridge database system developed in the previous project applied a different input method from the input method of the road disaster database system, the reliability of data input of the Tunnel/Bridge database system is lower than the road disaster database system. Therefore, the Tunnel/Bridge database system should be improved to the same system as the road disaster database system to formulate appropriate short-term road disaster prevention management plan which shall ensure the consistency of the entire road sector plan. (Amendment of Activities for Output-3 and Output-4)

Version	Date	Amendment of PDM
Version 4	October 2017	**[Amendment]: Input (Japanese Side)** 1. Experts 1) Team Leader / Road Maintenance Expert 2) Deputy Team Leader/Debris Flow Disaster Prevention/River Engineering Expert 3) Snow Disaster Prevention Expert (1) 4) Snow Disaster Prevention Expert (2) 5) Snow Disaster Prevention Expert (3) 6) Slope Disaster Prevention Expert 7) Database Expert 8) Database Expert (2) 9) Disaster Prevention Countermeasures Expert 10) Geological Expert 11) Disaster Prevention Facilities Expert/Cost Estimator/ Construction Planner 12) Construction Supervisor 13) Topographic Survey Expert 14) Landslide Observation Expert 15) Coordinator / Road Disaster Inspection Assistant 16) Japan Training Assistant 4. Pilot Project for Snowdrift **[Reason]: Input (Japanese Side)** ✓ Pilot project for snowdrift, which include trial construction of snow fence and snowdrift simulation analysis, was conducted in the Project. The purpose of the pilot project is to grasp the snowdrift phenomenon in more detail and to enhance the capacity of MOTR for inspection and analysis of snow disasters. The results of the pilot project can be utilized for future projects on the mitigation of snowdrift disasters. (Addition to Input from the Japanese Side; "1. Experts, 12) Construction Supervisor/ Expert" and "4. Pilot Project for Snowdrift") ✓ The landslide section at 85.5km on BO-Road has been observed by MOTR staff members and the Project Team since June 2016. The noticeable displacement of landslide at 85.5km on BO-Road was detected after May 2017. As a result, the simplified extensometer for landslide observation was installed by MOTR with the technical cooperation of the Project Team on July 2017. Likewise, two Japanese Experts were assigned to enhance the skill of MOTR staff members for the observation of landslide and to conduct topographic survey by drone. Besides, two Japanese Experts supported the landslide analysis and the study for adequate countermeasures. (Addition to Input from the Japanese Side; "1. Experts, 13) Topographic Survey Expert and 14) Landslide Observation Expert")
Version 5	October 2018	**[Amendment]: Input (Japanese Side)** 5. Road Asset Management Seminar **[Reason]: Input (Japanese Side)** ✓ Due to budgetary constraint, it was difficult for MOTR to ensure a sufficient budget for road disaster prevention work. Under the severe budget status, MOTR need to provide appropriate and effective plan and implementation for road disaster prevention work in consideration of road asset management. As part of capacity development of road disaster prevention, the seminar on road asset management was held on October 2018 and March 2019. Japanese professors and experts participated and introduced Japanese technology on road disaster prevention and road asset management. (Addition to Input from the Japanese Side; "5. Road Asset Management Seminar")

Chapter 3 The Project Outcomes, Implementation Operational Challenges, Lessons Learned, and Ingenuity

3.1 Overall

3.1.1 Work Balance of Regular Works of C/P and Project Activities

Challenges

It is necessary for the C/P (RMD, GDAD-BO, UAD-JAB, UAD-OSI and 6 DEUs) to participate in the activities of the Project while doing ordinary works. Under such a situation, they cannot actively participate in the project activities at spring season (March to May) when busy with their ordinary work.

Ingenuity/ Lessons Learned

The JICA Project Team discussed/adjusted the schedule beforehand with C/P in order not to affect the schedule of ordinary works of C/P. When multiple activities of the Project were planned, the activities were set on the same date as much as possible. Also, staff members of DEUs living far from Bishkek and Osh take a long time to move to activity venues and it is often difficult for them to participate in the activities. Under such a situation, it became possible for more C/P to participate in the activities and to understand the knowledge and technique on the technical transfer through the activities, such as seminar/workshop at DEU offices far from Bishkek and Osh individually by the Japanese experts as needed.

3.1.2 Project Activities in Collaboration with MES

Challenges

MES has a responsibility for natural disaster countermeasures. Under such a situation, although it is essential for MOTR to clarify the responsibility and activities of MOTR for road disaster prevention sharing and activities, they have not collaborated each other actively.

Ingenuity/ Lessons Learned

When the responsibilities and activities of MOTR for road disaster presentation were considered and discussed, MOTR invited MES to the meeting. As the result of that, it has become possible to clarify the cooperation with MES shown the following items and to make the activities related to road disaster prevention efficient and effective.

- The inspection on road disaster prevention in spring season and the emergency inspection after the disaster are implemented by MOTR and MES. (The information on the road disaster hazardous area and the knowledge of MES on the natural disaster countermeasures can be shared.)

- MES shares the climate information to MOTR for the road maintenance works after disaster such as removal of rocks and debris flow on the road to prevent the secondary disaster during the work.
- MOTR implements the activities on hazard map distribution with MES.

3.1.3 Continuous Technology Transfer and Expansion by C/P

Challenges

It is extremely important that knowledge and techniques transferred to C/P in the Project are continued and expanded by them even after the Project. Therefore, in addition to achieving outputs that meet the indicators of PDM, it is necessary to operate the Project activities so that C/P can continue and expand their knowledge and techniques even after the completion of the Project.

Ingenuity/ Lessons Learned

The Project was divided into three (3) phases, namely; Development of Basic Skills and Knowledge (Phase-1); Trial Implementation of Basic Skills and Knowledge (Phase-2); and Sustainable Implementation of Basic Skills and Knowledge (Phase-3), as shown in Figure 1-2. The project operation shown in Figure 1-2 was, therefore, expected to shift the subject of the Project from the JICA Project Team to C/P step by step.

In Phase-1, the JICA Project Team selected MT by category, which are the slope disaster prevention, the snow disaster prevention and the database operation, and gave lectures on the basic skills and knowledge on road disaster prevention intensively to them. In Phase-2, knowledge on the inspection/evaluation for road disaster prevention, study on countermeasures, database input and the operation and preparation of road disaster prevention management plan were taught with the support of the JICA Project Team, utilizing the basic skills and knowledge developed in Phase-1. In Phase-3, C/P secured the budget for the activities on road disaster prevention and continued implementing the activities by themselves. Furthermore, MT trained the staff members of the related units of MOTR.

The lessons learned contributed to the sustainability of road disaster prevention management and the expansion of technical transfer.

3.1.4 Continuous Follow-up System

Challenges

Since Japanese experts cannot be dispatched to the project for a long period of time, it is necessary to devise a project management system to follow up the activities of C/P continuously.

Ingenuity/ Lessons Learned

Since there were periods when Japanese experts do not stay in Kyrgyz during the Project, local staff members were assigned in all stages of the Project so that the JICA Project Team can always follow up

the project activities and manage the Project smoothly. In addition, the hiring of local members with experience in similar JICA projects in the past contributed to the good relationship with their C/P.

3.2 Output-1

3.2.1 Determination of Responsibilities and Activities of MOTR on Road Disaster Prevention

Challenges

Before the Project, the responsibilities and activities of MOTR on road disaster prevention had not been determined, and the road maintenance works such as removal of rocks and snow on the road had been carried out after the road disaster by MOTR.

Ingenuity/ Lessons Learned

Since MOTR had not had basic knowledge on road disaster prevention before the Project, it is necessary to clarify the responsibilities and activities of MOTR on road disaster prevention. The JICA Project Team, through the meetings, workshops and seminars in the project, have made the relevant units of MOTR understand their roles and responsibilities. As MES is in charge of disaster prevention management in the Kyrgyz (especially information management on natural disasters and implementation of non-structural measures against them), the roles of responsibilities and activities on road disaster prevention in each stage of road disaster management cycle (prevention/mitigation, pre preparation, response and rehabilitation/recovery) and the cooperation method with MES such as the hazard map distribution and disaster/climate data sharing have been discussed and determined with MES.

3.2.2 State Enterprise of UAD

Challenges

MOTR planned to abolish the existing UADs and establish the State Enterprise of the Oblast of Chui. The DEUs of the oblasts of Issyk-kul, Naryn, Osh, Batken, Jalal-Abad, Talas will belong to the State Enterprise. The State Enterprise will have an independent accounting system, etc., and be able to compete with private companies, which is expected to contribute to cost reduction and technology upgrade of road maintenance. The State Enterprise of Chui has been working on it practically from 2019, and RMD plans to place an order the road maintenance works with the State Enterprises with a direct contract in five years up to 2024. In addition, after 2025, RMD plans to make transition from direct contact system to competitive bidding system to place an order the road maintenance work for five years and plans to complete the policy of the State Enterprise in 2038.

Under such a situation, there is the possibility that this change will have an impact on the roles and responsibilities of MOTR on road disaster prevention management after completion of the Project.

Ingenuity/ Lessons Learned

In this project, RMD discussed with the relevant units of the State Enterprise about the effects of the State Enterprise on the responsibility and activities of MOTR on road disaster prevention, and MOTR and relevant units confirmed the following items,

- Responsibilities and activities of RMD on road disaster prevention prepared by the Project will not be changed after establishment of the State Enterprise.
- The competitive bidding mainly consist of road maintenance works such as road cleaning and snow removal, and road disaster prevention works such as the inspection, evaluation and countermeasure plan will not be included in the bidding. Therefore, the responsibilities and activities of UAD and DEU on road disaster prevention will not be change after establishment of the State Enterprise.

3.3 Output-2

3.3.1 Limited Disaster Types on Target Roads

Challenges

Based on the results of the initial inspection, the road disaster types occurring on the target roads, international and national roads are limited. Hence, it is difficult to prepare inspection/evaluation and countermeasure manuals to cover various road disasters.

Ingenuity/ Lessons Learned

The target area of the Project was expanded to include the local road along the BO road which receive various road disasters by changing PDM. Manuals covering the various disasters will be prepared by C/P.

3.3.2 Gap of Knowledge Depending on Individual Expertise for Road Disaster by MOTR Staff

Challenges

There are gaps of knowledge depending on individual expertise on road disaster, such as type, cause and scale, by MOTR staff members. The staff members of MOTR are required to have and share basic and proper common knowledge on road disasters in order to transfer knowledge and techniques of inspection and measures against road disasters.

Ingenuity/ Lessons Learned

At the initial stage of the Project, the type, date of occurrence and scale (duration of closed to traffic) of road disasters were listed on the basis of hearing survey from staff members of UADs and DEUs. The listed data were utilized to prepare the long list, shortlist and manuals for road disaster prevention management as the basic information of road disaster occurrence in Kyrgyz. The long list, shortlist and manuals were utilized in the workshops, seminars and lectures conducted by MTs to have and share basic and proper common knowledge on road disasters.

3.3.3 Lack of Knowledge on Low Cost Road Disaster Countermeasures

Challenges

MOTR requires budget for road construction and improvement, as well as recovery and rehabilitation from road disasters. Hence, the knowledge and technical transfer for road disaster prevention need to consider the budget condition of MOTR due to budgetary constraint.

Ingenuity/ Lessons Learned

Based on the current budget situation for road disaster prevention works in MOTR, the Project Team transferred the knowledge and skills of the structural countermeasures, that can be constructed in Kyrgyz, and the non-structural countermeasures, that is low cost measures.

The gabion mattress which is comparatively low cost and procurable in Kyrgyz was proposed as structural countermeasures. MOTR carried out the several non-structural countermeasures for road disaster prevention such as the preparation/distribution of the hazard map, the establishment of Facebook (SNS) services, the installation of emergency board along the road and the monitoring works for landslide and snow drifting through the seminars and workshops in the Project.

3.4 Output-3

3.4.1 Inadequate Information Sharing on Road Disaster between UAD/RO-RMD/DEU and Head Officers of MOTR

Challenges

The information on road disasters such as hazard sections, hazard types and disaster history are grasped by individual DEU staff members differently before the Project. Since a unified recording format was not prepared, only a part of the information on the road maintenance works after road disasters such as road cleaning and snow removal was recorded by individual DEU staff with non-unified method. There are challenges including inconsistent format for road disaster information record, undeveloped environment of personal computer (PC) in DEU and inappropriate communication environment.

Ingenuity/ Lessons Learned

The road disaster prevention management database system was developed to immediately collect and make a record of road disaster information by using mobile phone line network and tablets. The database system was able to transfer data directly from the tablets to the database in the Head Office of MOTR without a PC. This contributed to the smooth information sharing with the Head Office of MOTR.

3.4.2 In Cooperation with Existing Database System

Challenges

The results of inspection on road disaster input on tablets at site were automatically saved and updated the data on the database in the Head Office of MOTR. The database system was established by using internet communication and tablets. On the other hand, the existing database system for bridges and tunnels manually saved data on the database in the Head Office of MOTR by phone from DEUs. The correctness of input data of the existing database system was, therefore, lower than the database for road disaster prevention management. It was then difficult to manage the two databases (road disaster and bridge & tunnel) at the same level and to prepare the road maintenance management plan covering the whole road sector.

Ingenuity/ Lessons Learned

The Project Team discussed the improvement of the existing database system for bridges and tunnels with MOTR. As a result, the existing database system was rebuilt to the same system as the road disaster prevention management by using internet communication and tablets. This contributed to the sustainable operation of the database system and correctness of input data.

3.5 Output-4

3.5.1 No Budget Allocation for Road Disaster Prevention Works

Challenges

The recovery and rehabilitation work from road disasters which include removal of rock-fall, debris and snow cleaning on roads after disasters were implemented under the budget for road maintenance. On the other hand, since a budget for preventive countermeasure works against road disasters was seldom prepared in Kyrgyz, it was necessary for MOTR to establish a new budget for the prevention works.

Ingenuity/ Lessons Learned

GDAD-BO, which manage the most important route (BO roads) in Kyrgyz, has been allocated a relatively abundant budget compared with other target UADs, and is an organization that is likely to carry out road disaster prevention work. Therefore, the Project Team has actively introduced several countermeasures, that can be implemented by GDAD-BO even under budgetary constraints, such as wire monitoring and drainage drilling against disaster prone area to many staff members of GDAD-BO including director and deputy director can be interested. As the result of that, it possible to secure the initiative of the C/P, and the GDAD-BO voluntarily planned the preventive countermeasure against the landslide (drainage drilling) at the site and secured the budget of 5 million Kyrgyz Som (approx. 8 million Japanese Yen) for the drainage drilling for the first time in the MOTR.

3.5.2 Contract of Drainage Drilling at 85.5km on BO Road

Challenges

Although the countermeasure works (Drainage Drilling) against the landslide mentioned above were budgeted and ordered by GDAD-BO, it was difficult to make a contract with the private company due to the following issues.

- According to the regulation of MOTR, the design outputs such a specification and drawings of the construction should be verified by DI before ordering, but it was difficult for DI to verify the outputs because it was a type of work that MOTR had never implemented.
- There is few private companies owned horizontal boring licenses in Kyrgyz, and these companies are only small companies.
- With the MOTR contract regulation, only 10% of the downpayment to the contractor was paid, and it was difficult for these companies to operate the construction financially.

Ingenuity/ Lessons Learned

The GDAD-BO and the Project Team explained the construction details to the DI and assisted the completion of the inspection. In addition, the first bid was held in June 2018, but a total of four bids failed due to the absence of bidding companies and financial problems of participating companies. Under such a situation, the GDAD-BO and the Project Team had meetings repeatedly and MOTR and success the bidding by advising the applicants on joint participation with a company that can afford financially. As the result of that, GDAD-BO could success the bidding on January 2019.

3.5.3 Preparation of Short-term Road Disaster Management Plan

Challenges

MOTR had not managed the information on road disaster such as the site location of disaster prone area and disaster type before the Project, and had not planned the adequate budget plan for road disaster prevention.

Ingenuity/ Lessons Learned

MOTR prepared the Short-term Road Disaster Management Plan in cooperate with the Project Team based on the following ingenuities,

- MOTR prepared the nation-wide management criteria to determine the measures priority with 3 levels (Level 1, Level 2, Level 3 in descending order of priority) based on the 2 factors which are the importance of the route and the height of the disaster risk.

- Based on MOTR's budget situation so far, less than 1 million Kyrgyz Som (approx. 1.6 million Japanese Yen) was set as a countermeasure that can be implemented by MOTR, and list up the disaster hazardous area, where countermeasure cost is less than 1 million Kyrgyz Som and the measures priority is Level-1, to the Short-term Road Disaster Management Plan.

Chapter 4 Achievement of the Project Purpose

4.1 Project Purpose

The purpose of the project is as outlined below.

Project Purpose	The capacity of MOTR's relevant units in the Project (HQ, RMD, target ROs-RMD/UADs, and DEUs) is enhanced for management of road disaster prevention (including road disaster inspection, preparing of road disaster prevention management plan and planning of budget for road disaster prevention).
Indicators	1. The management cycle (inspection, evaluation, selecting countermeasures and planning) for road disaster prevention, is implemented by MOTR's relevant units in the Project (HQ, RMD, target ROs-RMD/UADs, and DEUs). 2. Draft budget document with breakdowns for road disaster prevention is prepared by RMD of MOTR by September 2017 and September 2018. 3. Data from the newly developed Road Disaster Database Management System is utilized for formulating budget by RMD for road disaster prevention by September 2017 and September 2018.

4.2 Achievement of the Project Purpose

4.2.1 Result of Review based on Development Assistance Committee (DAC) Evaluation Criteria

In accordance with the Development Assistance Committee (hereinafter referred to as "DAC") Evaluation Criteria, the Project was jointly evaluated with MOTR according to the five evaluation criteria (Relevance, Effectiveness, Efficiency, Impact and Sustainability) using the following categories:

High, Fair, Low

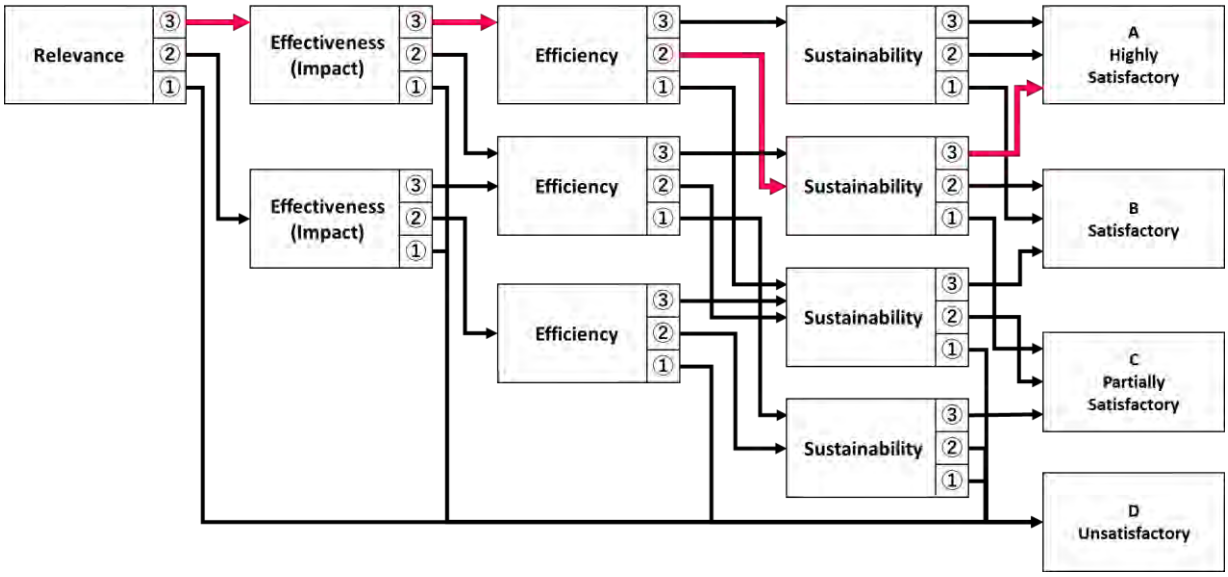
Then the total project evaluation rate was given using;

Highly Satisfactory / Satisfactory / Partially Satisfactory / Unsatisfactory

Eventually, the project was rated as;

Highly Satisfactory

(Evaluation result of sub-criteria, ***Relevance: High, Effectiveness: High, Efficiency: Fair, Impact: High, Sustainability: High****)*



Note: 1: Low, 2: Fair, 3: High

Figure 4-1 Overall Rating of the Project

4.2.2 Relevance

Relevance – High

4.2.2.1 Relevance with Development Strategy of Kyrgyz Republic

The emphasis on maintenance (careful maintenance) including measures against road disaster was provided as the major policy of the National Sustainable Development Strategy (hereinafter referred to as "NSDS") 2007–2010. NSDS-2010 mentioned securement of budget for road maintenance in terms of rehabilitation after the disaster (remedial action). It does not mention securement of budget for the activities against road disaster. Hence, NSDS-2010 does not mention measures for road disaster prevention. Subsequently, MOTR prepared the Road Sector Development Strategy (hereinafter referred to as "RSDS") to 2025, which mentions road management to secure road safety. RSDS also includes MOTR's policy to improve traffic safety. The overall goal of the Project was to improve the safety of road traffic and this corresponds to the RSDS.

On the other hand, the "Unification, Trust, Creation 2018 ~ 2022" was based on the RSDS, and it is the top priority of the national development plan and the first document to orient the development of politics, economy and society in Kyrgyz. This is a priority for the transport and road sector, which calls for the quality improvement of major highways connecting major cities with neighboring cities.

4.2.2.2 Relevance with National Disaster Risk Reduction Policy of Kyrgyz Republic

The role and responsibility for road disaster prevention management among related agencies, such as MES, MOTR, MIA, MOH, etc., was established under a Resolution of the Kyrgyz Republic Government, namely, "Establishment of a Permanent Headquarters for Prevention of Avalanches, Landslides and Other Slope Processes and for Mitigation of their Consequences on the Public Roads of the Kyrgyz Republic, July 29, 2011, No. 435". The Project corresponds to this Resolution. Moreover, the output of the Project is highly relevant to this Resolution since the Project includes the output to clarify the role allotment of MOTR on road disaster prevention.

4.2.2.3 Relevance with Assistance Policy of Japan

The Kyrgyz Republic was the first to promote democracy and market economy among the Central Asian countries after the independence in 1991. However, the economy of Kyrgyz has been stagnant because sufficient investment from other countries was not attractive due to the lack of valuable products except gold and the undeveloped investment environment

The Japanese assistance policy for Kyrgyz aims to support the promotion of poverty reduction through economic growth by transition to a market economy. Besides, the Government of Japan mainly cooperates for capacity development in the transportation infrastructure, agriculture and transition to a market economy with the Kyrgyz Republic. Hence, the Project for capacity development for road disaster prevention management is highly relevant to the assistance policy of Japan.

4.2.3 Effectiveness

Effectiveness – High

The status of achievement of the output in PDM and the Project Purpose is evaluated in this subsection. The Project Purpose predetermined in the PDM, i.e., "The capacity of MOTR's relevant units in the Project (HQ, RMD, target UADs and DEUs), is enhanced for the management of road disaster prevention (including road disaster inspection, preparing of road disaster prevention management plan and planning of budget for road disaster prevention)." The following items show the status of the achievement of each output.

4.2.3.1 Output-1

The status of the achievement of Output-1 of the Project is as given in Table 2-11. The concrete results of Output-1 are as follows:

- Responsibilities and activities of MOTR on road disaster prevention, including specific duties to be performed by the relevant units (HQ, RMD, AMS、ROs-RMD/UADs, DEUs), such as inspection, plan of countermeasures, preparation/update/management of database and establishment of road

disaster management plan, were clearly determined through the discussions with the relevant units of MOTR, DI and MES.

- Responsibilities and activities on road disaster prevention of MOTR were institutionalized by the Project as the RMD Director's Order on November 2018.

4.2.3.2 Output-2

The status of the achievement of Output-2 of the Project is as given in Table 2-17. The concrete results of Output-2 are as given below.

- Site inspection at road disaster hazardous areas was conducted by RMD, target UADs and DEUs in cooperation with the Japanese Expert. Based on the site inspection, the long list of road disaster hazardous sections, type/scale of hazards and type/cost of measures was prepared by RMD, target UADs and DEUs.
- The "Inspection and Evaluation Manual for Road Disaster Prevention" and the "Countermeasure Manual for Road Disaster Prevention" were prepared by RMD. Besides, the manuals were utilized for training on technical transfer to MOTR's staff members and KSUCTA by MT. Likewise, the manuals have been utilized in the lecture of KSUCTA since September 2018.
- The pilot project for snowdrift that included installation of the snow fence (L=50m), monitoring of the amount of snow at snowdrifts and verification of effectiveness of the snow fence by the snowdrift simulation, were implemented at 128.5km on BO road. Capabilities for collection and analysis of snowdrift data was enhanced by technical transfer of the utilization of the meteorological data and verification of effectiveness of the snow fence through the pilot project.
- The inspection and countermeasure manuals covering various road disasters could be prepared by the site survey not only target road (international and national road) on BO road but also local road along BO road.
- The monitoring of landslide at 85.5km on BO road has been conducted by MOTR since June 2016 in cooperation with JICA Experts as part of capacity development for inspection and analysis of road disasters. Based on the results of that, the countermeasure plan and the budget of 5 million Kyrgyz Som (approx. 8 million Japanese Yen) for the countermeasure were prepared by MOTR.
- The following table shows the summary list of number of trainees of MOTR. 14 MTs for slope disaster and 5 MTs for snow disaster were trained through the training program, seminar and workshop in the Project. Furthermore, 77 staff members for slope disaster and 61 staff members for snow disaster passed the final examination prepared by the Project. The capacity for road disaster inspection and preparation of countermeasures plan have been enhanced by the Project.

Table 4-1 Summary List of Number of Trainees of MOTR

MOTR Units			Database System		Slope Disaster (Including River Bank Erosion)		Snow Disaster		Trainees (Not passed Final Exam)
			MT	Trainees (Passed Final Exam)	MT	Trainees (Passed Final Exam)	MT	Trainees (Passed Final Exam)	
Project Target Units	RMD		3	3	5	5	2	2	13
	ROs-RMD/UADs	GDAD-BO (BO-UAD)	1	1	1	1	1	1	5
		UAD-JAB (PLUAD-6)	0	1	0	0	0	1	4
		UAD-OSI	0	1	0	0	0	1	6
	DEUs	DEU-9	0	1	1	2	0	1	4
		DEU-23	0	1	0	0	1	0	4
		DEU-26	0	1	0	1	0	2	3
		DEU-30	1	1	0	0	0	0	4
		DEU-50	0	1	2	2	0	0	2
		DEU-959	0	1	1	2	0	1	2
	Sub-Total		5	12	10	13	4	9	47
Other Units	ROs-RMD/UADs		0	44	0	57	0	48	15
	DEUs		1	4	4	7	1	4	31
	Sub-Total		1	48	4	64	1	52	46
Total			6	60	14	77	5	61	93

4.2.3.3 Output-3

The status of the achievement of Output-3 of the Project is as given in Table 2-18. The concrete results of Output-3 are as given below.

- As database formats for information on road disaster prevention management planning, the "Disaster Hazard List", "Disaster Record List", "Disaster Record Sheet" and "Monitoring Sheet for Landslide" were prepared by the RMD.
- Database operation and input manuals for road disaster prevention and bridge & tunnel were prepared by RMD. Besides, the manuals were utilized for training on technical transfer to MOTR's staff members and Kyrgyz State University of Construction, KSUCTA by MT. Likewise, the "Database Operation & Input Manuals for Road Disaster Prevention" has been utilized in the lecture of KSUCTA since September 2018.
- The inventory data of disaster hazard section (total 137 data entries) and the past disaster record data (total 913 data entries) were collected and input by target UADs and DEUs. Likewise, this data was integrated into the road disaster database by RMD.
- A total of 60 staff members of relevant units of MOTR were trained for data collection and input based on the database manuals through training program, seminar and workshop by the Project. The MOTR's staff members passed the final exam prepared by the Project, and are able to operate and manage the road disaster prevention database system.
- The road disaster database system including information on past road disaster records, priority of road disaster hazard sections and landslide monitoring was developed for RMD's preparation of the short-term road disaster prevention management plan.

4.2.3.4 Output-4

The status of the achievement of Output-4 of the Project is as given in Table 2-19. The concrete results of Output-4 are as given below.

- Nationwide management criteria to prioritize the road disaster prevention based on the disaster hazard level and road category was developed by the RMD.
- "The Short-term Road Disaster Prevention Management Plan in 2017" for the target area was prepared by the RMD in consideration of cost of countermeasures and priority on the basis of the above criteria. A year later, "The Short-term Road Disaster Prevention Management Plan in 2018" for nationwide hazardous areas was prepared by RMD.
- Based on the Short-term Road Disaster Prevention Management Plan, the budget for road disaster prevention works, including landslide monitoring, horizontal drainage drilling against landslide, and electronic message board for emergency warning, were allocated and implemented.
- The technical transfer training on the preparation of short-term and medium-term road disaster prevention management plan was conducted. Besides, the "Preparation Manual for Short-term and Medium-term Road Disaster Prevention Management Plan" was prepared by the RMD.

4.2.4 Efficiency

Efficiency – Fair

The comparison table between original plan and actual condition of project period, project cost and project input are as shown in the following. The actual condition of project period and input by Kyrgyz side is the same as the original plan. On the other side, the actual condition of project cost and input by Japan side is increased from the original plan.

Table 4-2 Comparison between Original Plan and Actual Condition

Japan Side	Original Plan	Actual Condition
Project Period	38 months (April 2016 ~ May 2019)	38 months (April 2016 ~ May 2019) **(No change)**
Project Cost	272,178,360 JPY	333,589,320 JPY **(123% of Original Plan)**
Input by Japan Side	1. Experts (70.00 MM) 2. Training in Japan 3. Equipment	1. Experts (81.03 MM: 116% of Original Plan) 2. Training in Japan 3. Equipment 4. Pilot Project for Snowdrift 5. Seminar of Road Asset Management **(Description in red font show the contents modified from original plan)**

Japan Side	Original Plan	Actual Condition
Input by Kyrgyz Side	1. C/P for the project 2. Preparation Works for the installation of the equipment 3. Office for the Project with office furniture and utilities such as internet connectivity, telephone line, electricity, etc. 4. Running expenses necessary for the implementation of the Project	1. C/P for the project 2. Preparation Works for the installation of the equipment 3. Office for the Project with office furniture and utilities such as internet connectivity, telephone line, electricity, etc. 4. Running expenses necessary for the implementation of the Project **(No change)**

Note: Descriptions in red font show the contents modified during the project from the original plan or planned in Version 0 (ver. 0) of the Project Design Matrix

4.2.4.1 Intensive Expert Input in Winter Season

The initial plan was to dispatch one (1) expert (Snow Disaster Prevention Expert (1)) in winter season. However, two (2) experts (Snow Disaster Prevention Expert (1) and (2)) were simultaneously dispatched without additional MM in the winter season to efficiently provide appropriate guidance on snow disaster prevention activities in consideration of site conditions during winter season, snow disaster type/scale, and review of countermeasures.

4.2.5 Impact

Impact - High

4.2.5.1 Achievement of Overall Goal

The objectively verifiable indicator for the overall goal and the status of achievements are as shown below.

Objectively Verifiable Indicator	1. In reference to the Project experiences and Manuals produced by the Project, Short-Term Road Disaster Prevention Management Plan continues to be prepared by RMD of MOTR every year. 2. Road disaster prevention work is implemented based on the Short-Term Road Disaster Prevention Management Plan prepared by RMD of MOTR.
Status of Achievements	● Before the Project, the road disaster prevention plan was not formulated by MOTR in the Kyrgyz. After the Project, MOTR worked out the Short-Term Road Disaster Prevention Management Plan for the target areas in 2017.

	Besides, nationwide Short-Term Road Disaster Prevention Management Plan was prepared by MOTR in 2018 in cooperation with JICA Experts. ● Before the Project, MOTR seldom conducted preventive measures against road disasters. After the Project, MOTR budgeted for preventive measures against road disaster. Besides, road disaster prevention work (like landslide monitoring, horizontal drainage drilling against landslide, electronic message board for emergency warning) were implemented based on the Short-Term Road Disaster Prevention Management Plan.

The necessity of extraction of hazardous areas, road disaster prevention work and countermeasures were clarified by the Project and the Short-Term Road Disaster Prevention Management Plan was prepared by RMD. Particularly, the sense of responsibility for the safety of road traffic as a road administrator have been developed by instructions on landslide monitoring and visualization of increased risk of road disaster. The following were proactively conducted, and this contributed to the achievement of the overall goal of "Safety of road traffic at the selected disaster-prone area is improved".

（1） Activities to Prepare Short-Term Road Disaster Prevention Management Plan

1) Selection and Verification of Applicable Measures by Meteorological Observation and Pilot Project

- Six (6) sets of meteorological observation equipment were provided by the Project to develop the capacity for inspection and analysis of road disasters.
- At the listed snowdrift hazardous area of 128.5km on BO Road on the Short-Term Road Disaster Prevention Management Plan, the data collection by meteorological observation equipment and the Pilot Project that included installation of the snow fence and verification of effectiveness of the snow fence by the snowdrift simulation were conducted.
- This contributed to the capacity development for collection and utilization of meteorological data, and selection of applicable countermeasures at site.

2) Collection of Road Disaster Information using Database System

- The format of records in post-disaster situations on the road was prepared and the database system to accumulate the road disaster record was developed. The information on database were utilized to update the Short-Term Road Disaster Prevention Management Plan.

（2） Activities to Execute Road Disaster Prevention Work based on Short-Term Road Disaster Prevention Management Plan

1) Countermeasures against Landslide at 85.5km on BO Road

- Instructions on the production and installation of simple device for landslide monitoring and method of observation were given by the JICA experts. Landslide monitoring and maintenance of the device are continuously conducted by MOTR.
- The risk of landslide was recognized through the above-mentioned monitoring. Besides, budget for the countermeasure with horizontal drainage drilling work against landslide was allocated by MOTR for the first time.

2) Activities for Road Disaster Risk Reduction by Non-Structural Measures

- Road disaster hazard maps for BO Road have been prepared. AMS and BO-UAD in collaboration with MES distributed the hazard maps and instructed/guided the road users and residents on the utilization of the hazard maps and the disaster risk on BO Road.
- Road disaster information service system using SNS (Facebook) was developed by AMS, which provide real-time road disaster information.
- Based on the Short-Term Road Disaster Prevention Management Plan, the two electronic message boards for emergency warning (200,000 Kyrgyz Som/location: approx. 360,000 Japanese Yen) were installed on BO Road.

4.2.5.2 Spreading Effect

（1） Contribution to/ Collaboration with New Project

- The applicability of Japanese technology product was studied in the Project on the basis of the road disaster situation in the target area. JICA’s “Feasibility Survey for Slope Disaster Prevention on Road in the Kyrgyz Republic” using Japanese product was proposed and adopted. The feasibility survey was executed around the same time as the Project (2017-2018), and the SDGs Business Verification Survey with the Private Sector will be executed in the near future. Besides, the Japanese product for slope disaster prevention was introduced to MOTR, and the knowledge was shared within the MOTR through the feasibility survey. The specific image and understanding of disaster prevention including measures selection and rough cost estimation deepened.
- The observed meteorological data and analyzed data for snowdrift in the Project were provided to “The Project for Snowdrift Protection on BO Road” as a basic material for basic design. The specification and layout of snow fence were planned and designed in reference to provided data effectively.

（2）Enhancing Cooperation with Educational Institutions

- Taking advantage of the technical cooperation with the Kyrgyz State University of Construction, Transport and Architecture (KSUCTA) and MOTR, lectures were given at the KSUCTA on database programming, establishment of database and on each manual for road disaster prevention management prepared by the Project. This contributed to the awareness of importance of road disaster prevention and enhancement of cooperation between KSUCTA and MOTR. Each manual for road disaster has been utilized by the KSUCTA as part of lecture materials since September 2018. Hence, the activities contribute to human resource development, research and development facilitation for road disaster prevention management.

4.2.6 Sustainability

Sustainability - High

4.2.6.1 Institutional Aspects

（1）Institutionalization of Roles and Responsibilities for Road Disaster Prevention Management of MOTR

- MOTR's roles and responsibilities for road disaster prevention management were not clearly stipulated before the Project. MOTR's roles and responsibilities for road disaster prevention management have been institutionalized by the Project through discussions with MES and MOTR's units in accordance with the RMD Director's Order.

（2）Integrated Road Disaster Prevention Management by RMD (for Smooth Decision-Making Process and Ownership)

- RMD comprehensively manages disaster data, implementation plan, budget plan, activities and training program for road disaster prevention management. Likewise, RMD has ownership to clarify the smooth decision-making process for road disaster prevention management in MOTR.

4.2.6.2 Technical Aspects

（1）Comprehensive Disaster Prevention Activities in Cooperation with MES

MES undertakes the role of execution of national disaster prevention activities. In the framework of national disaster prevention activities, MOTR need to tackle road disaster prevention activities including Monitoring and Forecasting in cooperation with MES. Likewise, information for road disaster

prevention and technology should be shared with MES. The following activities need to be conducted in cooperation with the MES:

- Specification of roles and responsibilities for road disaster prevention management of MOTR.
- Preparation and distribution of road disaster hazard maps of the BO Road.
- Conduct of periodical road disaster inspection in spring and autumn.
- Conduct of joint session and inspection for monitoring and countermeasure of landslide at 85.5km of the BO Road.
- Conduct of cooperative consultation about MOTR's roles on national disaster prevention management are strengthened (in addition to the post-disaster cooperation with MES, road disaster prevention activities including Monitoring and Forecasting in cooperation with MES).

(2) Enhancing Cooperativeness between Road Disaster Prevention Database and Bridge & Tunnel Database

The road disaster prevention database system was developed by the Project using internet communication and tablets in order to input the result of road disaster inspection at site and saved/updated automatically on the server at the Head Office of MOTR. On the other hand, the inspection data for bridge and tunnel maintenance were transmitted through a phone and input, saved and updated manually on the established database for bridge and tunnel by the past technical cooperation project. Therefore, the certainty for data input was lower on the previous database system of the bridge and tunnel.

Hence, it was difficult to operate/manage both road disaster prevention database and the bridge & tunnel database at the same level, which hindered formulation of holistic road maintenance planning including road disaster prevention management. Under this situation, the database system for bridge and tunnel was improved to the same system as the road disaster database system to enhance the cooperativeness of both database systems. This contributed to the sustainability and reliability of the database system operation of "Output-3" and the sustainability of road disaster prevention management plan of "Output-4".

(3) Expansion of Technical Transfer Program by MOTR

The technical transfer program for road disaster prevention and the Road Disaster Prevention Management Plan for target area were prepared by the MOTR in cooperation with the JICA Experts. The trainings were executed by MOTR's budget. Furthermore, the following activities were implemented by the MOTR which could contribute the sustainability of the Project.

- MT trained the staff of more 36 DEUs other than target units to expand the knowledge nationwide.
- "The Short-term Road Disaster Prevention Management Plan in 2017" for the target area was updated to "The Short-term Road Disaster Prevention Management Plan in 2018" for nationwide

hazardous areas by collecting the information on nationwide hazardous site through the expanded training program.

- Road disaster prevention works including monitoring against landslide, electric message board for emergency warning were implemented based on the Short-term Road Disaster Prevention Management Plan.

4.2.6.3 Financial Aspects

- Before the Project, MOTR seldom allocated a budget for preventive measures against road disasters. After the Project, MOTR will allocate a budget for preventive measures against road disaster on BO Road, a road of supreme importance in Kyrgyz, in conformity with the Short-Term Road Disaster Prevention Management Plan.

Chapter 5 Recommendation for the Achievement of Overall Goals

5.1 Prospects to achieve Overall Goal

（1）Performance of Overall Goal

The overall goal and objectively verifiable indicators of the Project are predetermined in the PDM as below.

Overall Goal
Safety of the road traffic at the selected disaster-prone areas is improved.
Objectively Verifiable Indicator
1) In reference to the Project experiences and Manuals produced by the Project, Short-Term Road Disaster Prevention Management Plan continues to be prepared by RMD of MOTR every year.
2) Road disaster prevention work is implemented based on the Short-Term Road Disaster Prevention Management Plan prepared by RMD of MOTR.

The short-term road disaster prevention management plan (hereinafter stated as the short-term plan) was prepared at the end of 2017. In August 2018, the short-term plan was updated to practice activities including other disaster-prone areas in addition to the target disaster areas covered by the Project. Furthermore, some of the road disaster prevention works have been conducted based on the short-term plan as follows:

- To monitor deformation along the landslide block at 85.5 km of Bishkek-Osh Road, and to secure the budget of 5 million Kyrgyz Som (approx. 8 million Japanese Yen) for discharge works to mitigate landslide risk which is the newly approved budget allocation for road disaster prevention at 85.5km.
- To share road disaster information by SNS.
- To prepare and distribute hazard maps.
- To install warning board at road disaster prone areas.

Therefore, it is expected that the Overall Goal of the Project, “To improve safety on road traffic at the selected disaster-prone areas”, can be achieved within 3-5 years after the Project termination, if the road disaster prevention works are continuously implemented as stated above.

（2）Factors to Achieve Overall Goal

Since the road disaster prevention works should be conducted after the Project’s termination continuously, the budget may become an inhibiting factor for the overall goal if it is difficult to secure the necessary budget steadily every year. Furthermore, training programs on road disaster prevention should be conducted every year to increase the number of engineers in regional offices (ROs-

RMD/UADs) and site offices (DEUs), because trained engineers for road disaster prevention are required for regional offices and site offices other than the originally selected areas of the Project.

5.2 Plan of Operation and Implementation Structure of the Kyrgyz side to achieve Overall Goals

（1）Plan of Operation in 2019-2021

The Overall Goal of the Project, "To improve safety on road traffic at the selected disaster-prone areas," is expected to be achieved, by preparing the short-term road disaster prevention management plan and by implementing the road disaster prevention work based on the short-term road disaster prevention management plan.

（2）Implementation structure

The RMD is the key agency to update road disaster prevention plans, and to implement the required works for the structural and non-structural methods of road disaster prevention. RMD is the agency responsible for preparing adequate road disaster prevention management plans based on the following activities:

- Management of the database system by collecting nationwide disaster records and countermeasures.
- Preparation of road disaster prevention priority list nationwide from the database.
- Preparation of required budget for road disaster prevention works nationwide.
- Management of nationwide road disaster prevention works.
- Management of training programs for road disaster prevention works.

5.3 Recommendations for the Kyrgyz Side

This Project is regarded as the start of road disaster prevention management in Kyrgyz. In order to continue appropriate road disaster prevention management, and to meet Indicator 1 "In reference to the Project experiences and Manuals produced by the Project, Short-Term Road Disaster Prevention Management Plan continues to be prepared by RMD of MOTR every year", the following measures should be taken by the Kyrgyz side:

- Updating of disaster records in the database system.
- Updating of the road disaster prevention priority list in the short-term plan based on the disaster record.
- Conduct of joint coordination meetings with MES and related agencies to share road disaster data, to exchange opinions and to discuss the utilization of road disaster prevention priority list.

- Conduct of training programs on road disaster prevention management for enhancing the capacity of MOTR officials and personnel.

To meet Indicator 2, road disaster prevention work shall be implemented based on the Short-Term Road Disaster Prevention Management Plan prepared by RMD of MOTR, with to the following activities:

- Allocation of budget for road disaster prevention works.
- Conduct of road disaster prevention works.
- Conduct of monitoring of landslides at 85.5km along the BO Road (quarterly).

5.4 Monitoring Plan from Project Termination up to Post Evaluation

After the termination of the Project, monitoring up to post evaluation shall be planned and implemented by the JICA Kyrgyz Office in consultation with the JICA Head Office. The proposed monitoring plan is as summarized in the following table.

Table 5-1 Target Setting and Actions to Take for Overall Goal

<table>
<tr><td colspan="3">Overall Goal: Safety of road traffic at the selected disaster-prone areas is improved.</td></tr>
<tr><td rowspan="3">Monitoring Schedule</td><td>1st</td><td>January 2020 (in 1 year or 8 months from project completion)</td></tr>
<tr><td>2nd</td><td>January 2021 (in 2 years)</td></tr>
<tr><td>3rd</td><td>January 2022 (in 3 years)</td></tr>
<tr><td>Indicators</td><td colspan="2">Target in 3 years</td><td>Monitoring Method</td></tr>
<tr><td>In reference to the Project experiences and Manuals produced by the Project, Short-Term Road Disaster Prevention Management Plan continues to be prepared by RMD of MOTR every year.</td><td colspan="2">Short-term road disaster prevention management plan is to be updated every year. The list will be utilized by MES and related agencies to monitor and to save lives of people. The activities to prepare the list should continue by training MOTR officials through the training program on road disaster prevention management.
<u>Target:</u>
1) Database (DB) system
● Continue to update disaster records.
2) Short-term road disaster prevention management plan
● Continue to update priority list in the short-term road disaster prevention managemnet plan (once a year).
3) Data sharing and communication
● Continue to conduct joint coordination meetings with MES and related agencies (once a year).
4) Training Program
● Continue to conduct training programs on road disaster prevention management (once a year)</td><td>1) Disater record in database
2) Short-term road disaster prevention priority list
3) Minutes of meeting / meeting materials
4) Training program and record</td></tr>
<tr><td>Road disaster prevention work is implemented based on the Short-Term Road Disaster</td><td colspan="2">Implementation of road disaster prevention work
<u>Target:</u>
1) Budget Allocation
● To allocate budget for road disaster prevention work (once a year).</td><td>1) Budget report
2) Project report</td></tr>
</table>

Prevention Management Plan prepared by RMD of MOTR.	2) Road disaster prevention work ● Continue to conduct road disaster prevention work (every year) 3) Monitoring of land slide ● Continue to conduct monitroing of landslides at 85.5km along BO Road (quatrerly)	3) Monitoring report

APPENDIXIES

Appendix 1: Project Design Matrix

Project Design Matrix (PDM): Version 5.0

(Revised on 5 November 2018)

Project Title: The Project for Capacity Development for Road Disaster Prevention Management in Kyrgyz Republic

Implementing Agency: Ministry of Transport and Roads (MOTR)

Target Group: Staff members of MOTR's HQ, RMD, PLUAD/UAD*, and DEP* that are responsible for selected disaster prone areas

Period of Project: April 2016 - May 2019 (3 years)

Project Site: MOTR's offices and selected disaster prone areas

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
Overall Goal			
Safety of the road traffic at the selected disaster prone areas is improved.	1. In reference to the Project experiences and Manuals produced by the Project, Short-Term Road Disaster Prevention Management Plan continues to be prepared by RMD of MOTR every year 2. Road disaster prevention work is implemented based on the Short-Term Road Disaster Prevention Management Plan prepared by RMD of MOTR	1. Short-Term Road Disaster Prevention Management Plan(s) 2. Implementation record of Short-Term Road Disaster Prevention Management Plan(s)	
Project Purpose			
The capacity of MOTR's relevant units in the Project (HQ, RMD, target PLUADs/UADs, and DEPs) is enhanced for management of road disaster prevention (including road disaster inspection, preparing of road disaster prevention management plan and planning of budget for road disaster prevention)	1. The management cycle (inspection, evaluation, selecting countermeasures and planning) for road disaster prevention, is implemented by MOTR's relevant units in the Project (HQ, RMD, target PLUADs/UADs, and DEPs). 2. Draft budget document with breakdowns for road disaster prevention is prepared by RMD of MOTR by [September 2017 and September 2018]. 3. Data from the newly developed Road Disaster Database Management System is utilised for formulating budget by RMD for road disaster prevention by [September 2017 and September 2018].	1. Project Report, Training Report 2. MOTR's budget document for road disaster prevention 3. Analysis of the quality of data for road disaster prevention, project report	* The Government of the Kyrgyz Republic allocates necessary budget and personnel for MOTR to continue activities * The level and frequency of natural calamities that require MOTR's attention and countermeasures do not radically exceed what are premised in the Short-Term Road Disaster Prevention Management Plan
Outputs			
1. Responsibilities of MOTR on road disaster prevention, including specific duties to be performed by relevant units (HQ, RMD, PLUADs/UADs, DEPs) with necessary staffing in each, become clear.	1-1. Roles of MOTR HQ, RMD, target PLUADs/UADs and DEPs for road disaster prevention management are specified by MOTR.	1-1. MOTR documents for organization, project report	* Trained counterparts do not resign, or are transferred, too frequently. * Policies that pertain to road safety do not change radically.
2. Capacity of target PLUADs/UADs and DEPs for inspection and analysis of road disaster is enhanced.	2-1. Road disaster hazard sections are determined with their feature and classification by target PLUADs/UADs and DEPs by [May 2017]. 2-2. Inspection and Evaluation Manual for Road Disaster Prevention is drafted by RMD by [May 2017],	2-1. Project report, Training report 2-2. Inspection Manual	

	reviewed by RMD by [May 2018] and finalized by RMD by [March 2019]. 2-3. Countermeasures Manual for Road Disaster Prevention is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019]. 2-4. All the staff in target PLUADs/UADs and DEPs trained for inspection/evaluation and standard disaster prevention countermeasures based on the manuals pass the final exam prepared by the Project.	2-3. Countermeasures Manual 2-4. Pass rate of the final exam	
3. Capacity of RMD to operationalize Database Management System for road disaster prevention is developed.	3-1. A database format for information on road disaster prevention management planning (incl. costing for countermeasures) is prepared by RMD by [August 2016]. 3-2. Practically usable Manual for Data Collection and Input is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019]. 3-3. Data collected and input by target PLUADs/UADs and DEPs are integrated to the database for prioritizing countermeasures and certified by RMD by [May 2017]. 3-4. Staff of target PLUAD/UAD and DEPs trained for data collection and input based on the Manual pass the exam that evaluates their mastery in filling required information in database format. 3-5. Database Management System that contains information necessary for road disaster prevention management in the project area is developed for preparing budget by RMD by [May 2017]. 3-6. Practically usable Manual for Database Operation is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019].	3-1. Database format 3-2. Manual for Data Collection and Input 3-3. Data accumulation status 3-4. Pass rate of the exam 3-5. Track record of periodical update of the Database, analysis of data, project report 3-6. Databased operation manual	
4. Capacity of RMD for preparing road disaster prevention management plans of the target areas is enhanced.	4-1. Nation-wide management criteria for road disaster prevention is developed by RMD by [May 2017]. 4-2. Short-Term Road Disaster Prevention Management Plan (urgent response plan) with cost estimation for road disaster prevention management of the target area is prepared by RMD by [September 2017 and September 2018] 4-3. Preparation Manual for Short-Term and Medium-Term Road Disaster Preventnion Management Plans is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019].	4-1. Note on criteria 4-2. A short-term plan for road disaster prevention 4-3. Preparation Manual for Short-Term Plans	
Activities	**Inputs**		**Important Assumption**

	The Japanese Side	The Kyrgyz Side	
1-1. To review the present work sharing among relevant organizations. 1-2. To identify the most suitable MOTR section to each take charge of collection, input and analysis of data in the road disaster prevention Database Management System. 1-3. To identify the most suitable MOTR section to each take charge of inspection, evaluation, plan preparation, and implementation of road disaster prevention. 1-4. To draft the Decree on assigning responsibilities to relevant organization. 2-1. To analyze existing condition (including compilation of data inventory and) on the slope and snow hazards causing road disaster by RMD and PLUADs/UADs, DEPs 2-2. To draft, review and finalize an Inspection Manual indicating check points for road disaster prevention in consideration with disaster types not only on target roads but also on local roads by RMD. 2-3. To practice routine, periodic and emergency inspections and to conduct condition rating based on inspection manual by RMD and PLUADs/UADs, DEPs. 2-4. To discuss countermeasures for road disaster prevention by RMD, PLUADs/UADs and DEPs. 2-5. To draft, review and finalize a Countermeasures Manual for road disaster prevention including cost estimation to prepare budget plan in consideration with disaster types not only on target roads but also on local roads by RMD, PLUADs/UADs and DEPs. 2-6. To practice selecting countermeasures of road disaster prevention including cost estimation based on Countermeasures Manual by RMD and PLUADs/UADs, DEPs. 3-1. To create a Database Management System of the slope and snow hazards along the international and national roads by RMD. 3-2. To establish the procedure for data input and reporting while enhancing cooperativeness of existing databases by RMD. 3-3. To draft, review and finalize a manual for data input and database operation by RMD. 3-4. To implement trainings for staff members of RMD and PLUADs/UADs, DEPs for data collection and input, and database operation. 4-1. To establish priority criteria for road disaster prevention	1. Experts 1) Team Leader / Road Maintenance Expert 2) Deputy Team Leader/Debris Flow Disaster Prevention/River Engineering Expert 3) Snow Disaster Prevention Expert (1) 4) Snow Disaster Prevention Expert (2) 5) Snow Disaster Prevention Expert (3) 6) Slope Disaster Prevention Expert 7) Database Expert 8) Database Expert (2) 9) Disaster Prevention Countermeasures Expert 10) Geological Expert 11) Disaster Prevention Facilities Expert/Cost Estimator/ Construction Planner 12) Construction Supervisor 13) Topographic Survey Expert 14) Landslide Observation Expert 15) Coordinator / Road Disaster Inspection Assistant 16) Japan Training Assistant 2. Equipment 1) Database Management System Program and Computer 2) Inspection/Observation Equipment (e.g. wind velocity and wind direction measurement equipment) 3. Trainings in Japan / third country 4. Pilot Project for Snow Drifting **5. Seminar of Road Asset Management**	1. Counterparts for the project 1) Project Director 2) Project Manager 3) Counterparts 2. Preparation Works for the installation of the equipment 3. Office for the Project with office furniture and utilities such as internet connectivity, telephone line, electricity, etc. 4. Running expenses necessary for the implementation of the Project	**Pre-Conditions** *MOTR satisfies counterpart requirements for the Project *The Kyrgyz Republic is continuously safe enough for project implementation. **<Issues and countermesures>**

in consideration with the balance of the overall budget plan for the road sector by RMD. 4-2. To implement training for staff of RMD for preparing a Short-Term plan for road disaster prevention as a basic document for annual budget request. 4-3. To prepare Short-Term Road Disaster Prevention Management Plan in consideration with the balance of the overall budget plan for the road sector. 4-4. To implement training for staff of RMD for preparing Medium-Term Road Disaster Prevention Management Plan. 4-5. To prepare Preparation Manual for Short-Term and Medium-Term Road Disaster Prevention Management Plans by staff members of RMD. 4-6. By referring to the Preparation Manual, to conduct trial preparation of Short-Term & Medium-Term Road Disaster Prevention Management Plans.			

Note: Descriptions in red font show the contents modified during the project from the Project Design Matrix ver.4.0

Process of Changing the Project Design Matrix (PDM): From Version 1.0 to Version 5.0

(Revised on 5 November 2018)

Project Title: The Project for Capacity Development for Road Disaster Prevention Management in Kyrgyz Republic

Implementing Agency: Ministry of Transport and Roads (MOTR)

Target Group: Staff members of MOTR's HQ, RMD, PLUAD/UAD*, and DEP* that are responsible for selected disaster prone areas

Period of Project: April 2016 - May 2019 (3 years)

Project Site: MOTR's offices and selected disaster prone areas

Objectively Verifiable Indicators		Process of Changing the PDM
Original (Version 1.0)	**Final (Version 5.0)**	
Overall Goal: *Safety of the road traffic at the selected disaster prone areas is improved.*		
1. In reference to the Project experiences and Manuals produced by the Project, Short-Term Road Disaster Prevention Management Plan continues to be prepared by RMD of MOTR every year 2. Road disaster prevention work is implemented based on the Short-Term Road Disaster Prevention Management Plan prepared by RMD of MOTR	1. In reference to the Project experiences and Manuals produced by the Project, Short-Term Road Disaster Prevention Management Plan continues to be prepared by RMD of MOTR every year 2. Road disaster prevention work is implemented based on the Short-Term Road Disaster Prevention Management Plan prepared by RMD of MOTR	No Change
Project Purpose: *The capacity of MOTR's relevant units in the Project (HQ, RMD, target PLUADs/UADs, and DEPs) is enhanced for management of road disaster prevention (including road disaster inspection, preparing of road disaster prevention management plan and planning of budget for road disaster prevention)*		
1. The management cycle (inspection, evaluation, selecting countermeasures and planning) for road disaster prevention, is implemented by MOTR's relevant units in the Project (HQ, RMD, target PLUADs/UADs, and DEPs). 2. Draft budget document with breakdowns for road disaster prevention is prepared by RMD of MOTR by [September 2017 and September 2018]. 3. Data from the newly developed Road Disaster Database Management System is utilized for formulating budget by RMD for road disaster prevention by [September 2017 and September 2018].	1. The management cycle (inspection, evaluation, selecting countermeasures and planning) for road disaster prevention, is implemented by MOTR's relevant units in the Project (HQ, RMD, target PLUADs/UADs, and DEPs). 2. Draft budget document with breakdowns for road disaster prevention is prepared by RMD of MOTR by [September 2017 and September 2018]. 3. Data from the newly developed Road Disaster Database Management System is utilised for formulating budget by RMD for road disaster prevention by [September 2017 and September 2018].	No Change
Output-1: *Responsibilities of MOTR on road disaster prevention, including specific duties to be performed by relevant units (HQ, RMD, PLUADs/UADs, DEPs) with necessary staffing in each, become clear.*		
1-1. Roles of MOTR HQ, RMD, target PLUADs/UADs and DEPs for road disaster prevention management are specified by MOTR.	1-1. Roles of MOTR HQ, RMD, target PLUADs/UADs and DEPs for road disaster prevention management are specified by MOTR.	No Change
Output-2: *Capacity of target PLUADs/UADs and DEPs for inspection and analysis of road disaster is enhanced.*		
2-1. Road disaster hazard sections are determined with their feature and classification by target PLUADs/UADs and DEPs by [May 2017]. 2-2. Inspection and Evaluation Manual for Road Disaster	2-1. Road disaster hazard sections are determined with their feature and classification by target PLUADs/UADs and DEPs by [May 2017]. 2-2. Inspection and Evaluation Manual for Road Disaster	No Change

Prevention is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019]. 2-3. Countermeasures Manual for Road Disaster Prevention is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019]. 2-4. All the staff in target PLUADs/UADs and DEPs trained for inspection/evaluation and standard disaster prevention countermeasures based on the manuals pass the final exam prepared by the Project.	Prevention is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019]. 2-3. Countermeasures Manual for Road Disaster Prevention is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019]. 2-4. All the staff in target PLUADs/UADs and DEPs trained for inspection/evaluation and standard disaster prevention countermeasures based on the manuals pass the final exam prepared by the Project.	
Output-3: *Capacity of RMD to operationalize Database Management System for road disaster prevention is developed.*		
3-1. A database format for information on road disaster prevention management planning (incl. costing for countermeasures) is prepared by RMD by [August 2016].	3-1. A database format for information on road disaster prevention management planning (incl. costing for countermeasures) is prepared by RMD by [August 2016].	No Change
3-2. Practically usable Manual for Data Collection and Input is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019].	3-2. Practically usable Manual for Data Collection and Input is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019].	
3-3. Data collected and input by target PLUADs/UADs and DEPs are integrated to the database for prioritizing countermeasures and certified by RMD by [May 2017].	3-3. Data collected and input by target PLUADs/UADs and DEPs are integrated to the database for prioritizing countermeasures and certified by RMD by [May 2017].	
3-4. Staff of target PLUAD/UAD and DEPs trained for data collection and input based on the Manual pass the exam that evaluates their mastery in filling required information in database format.	3-4. Staff of target PLUAD/UAD and DEPs trained for data collection and input based on the Manual pass the exam that evaluates their mastery in filling required information in database format.	
3-5. Database Management System that contains information necessary for road disaster prevention management in the project area is developed for preparing budget by RMD by [May 2017].	3-5. Database Management System that contains information necessary for road disaster prevention management in the project area is developed for preparing budget by RMD by [May 2017].	
3-6. Practically usable Manual for Database Operation is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019].	3-6. Practically usable Manual for Database Operation is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019].	
Output-4: *Capacity of RMD for preparing road disaster prevention management plans of the target areas is enhanced.*		
4-1. Nation-wide management criteria for road disaster prevention is developed by RMD by [May 2017].	4-1. Nation-wide management criteria for road disaster prevention is developed by RMD by [May 2017].	No Change
4-2. Short-Term Road Disaster Prevention Management Plan (urgent response plan) with cost estimation for road disaster prevention management of the target area is prepared by RMD by [September 2017 and September 2018]	4-2. Short-Term Road Disaster Prevention Management Plan (urgent response plan) with cost estimation for road disaster prevention management of the target area is prepared by RMD by [September 2017 and September 2018]	
4-3. Preparation Manual for Short-Term and Medium-Term Road Disaster Preventnion Management Plans is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019].	4-3. Preparation Manual for Short-Term and Medium-Term Road Disaster Preventnion Management Plans is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019].	

Activities		
1-1. To review the present work sharing among relevant organizations. 1-2. To identify the most suitable MOTR section to each take charge of collection, input and analysis of data in the road disaster prevention Database Management System. 1-3. To identify the most suitable MOTR section to each take charge of inspection, evaluation, plan preparation, and implementation of road disaster prevention.	1-1. To review the present work sharing among relevant organizations. 1-2. To identify the most suitable MOTR section to each take charge of collection, input and analysis of data in the road disaster prevention Database Management System. 1-3. To identify the most suitable MOTR section to each take charge of inspection, evaluation, plan preparation, and implementation of road disaster prevention.	No Change
2-1. To analyze existing condition (including compilation of data inventory) on the slope and snow hazards causing road disaster by RMD and PLUADs/UADs, DEPs. 2-2. To draft, review and finalize an Inspection Manual indicating check points for road disaster prevention by RMD. 2-3. To practice routine, periodic and emergency inspections and to conduct condition rating based on inspection manual by RMD and PLUADs/UADs, DEPs. 2-4. To discuss countermeasures for road disaster prevention by RMD, PLUADs/UADs and DEPs. 2-5. To draft, review and finalize a Countermeasures Manual for road disaster prevention including cost estimation to prepare budget plan by RMD, PLUADs/UADs and DEPs. 2-6. To practice selecting countermeasures of road disaster prevention including cost estimation based on Countermeasures Manual by RMD and PLUADs/UADs, DEPs.	2-1. To analyze existing condition (including compilation of data inventory) on the slope and snow hazards causing road disaster by RMD and PLUADs/UADs, DEPs. 2-2. To draft, review and finalize an Inspection Manual indicating check points for road disaster prevention in consideration with disaster types not only on target roads but also on local roads by RMD. 2-3. To practice routine, periodic and emergency inspections and to conduct condition rating based on inspection manual by RMD and PLUADs/UADs, DEPs. 2-4. To discuss countermeasures for road disaster prevention by RMD, PLUADs/UADs and DEPs. 2-5. To draft, review and finalize a Countermeasures Manual for road disaster prevention including cost estimation to prepare budget plan in consideration with disaster types not only on target roads but also on local roads by RMD, PLUADs/UADs and DEPs. 2-6. To practice selecting countermeasures of road disaster prevention including cost estimation based on Countermeasures Manual by RMD and PLUADs/UADs, DEPs.	[Activity 2-2 was revised in the 3rd JCC] To prepare the manuals covering various disaster types. [Activity 2-5 was revised in the 3rd JCC] To prepare the manuals covering various disaster types.
3-1. To create a Database Management System of the slope and snow hazards along the international and national roads by RMD. 3-2. To establish the procedure for data input and reporting by RMD. 3-3. To draft, review and finalize a manual for data input and database operation by RMD. 3-4. To implement trainings for staff members of RMD and PLUADs/UADs, DEPs for data collection and input, and database operation.	3-1. To create a Database Management System of the slope and snow hazards along the international and national roads by RMD. 3-2. To establish the procedure for data input and reporting while enhancing cooperativeness of existing databases by RMD. 3-3. To draft, review and finalize a manual for data input and database operation by RMD. 3-4. To implement trainings for staff members of RMD and PLUADs/UADs, DEPs for data collection and input, and database operation.	[Activity 3-2 was revised in the 3rd JCC] To improve the existing database system (Bridge & Tunnel Database System) to enhance cooperativeness of the database system developed in the Project.
4-1. To establish priority criteria for road disaster prevention by RMD. 4-2. To implement training for staff of RMD	4-1. To establish priority criteria for road disaster prevention in consideration with the balance of the overall budget plan for the road sector by RMD. 4-2. To implement training for staff of RMD	[Activity 4-1 was revised in the 3rd JCC] To prepare Short-term Road Disaster Prevention Management Plan in consideration of the balance of the overall budget plan for the road sector.

for preparing a Short-Term plan for road disaster prevention as a basic document for annual budget request. 4-3. To prepare Short-Term Road Disaster Prevention Management Plan. 4-4. To implement training for staff of RMD for preparing Medium-Term Road Disaster Prevention Management Plan. 4-5. To prepare Preparation Manual for Short-Term and Medium-Term Road Disaster Prevention Management Plans by staff members of RMD. 4-6. By referring to the Preparation Manual, to conduct trial preparation of Short-Term & Medium-Term Road Disaster Prevention Management Plans	for preparing a Short-Term plan for road disaster prevention as a basic document for annual budget request. 4-3. To prepare Short-Term Road Disaster Prevention Management Plan in consideration with the balance of the overall budget plan for the road sector. 4-4. To implement training for staff of RMD for preparing Medium-Term Road Disaster Prevention Management Plan. 4-5. To prepare Preparation Manual for Short-Term and Medium-Term Road Disaster Prevention Management Plans by staff members of RMD. 4-6. By referring to the Preparation Manual, to conduct trial preparation of Short-Term & Medium-Term Road Disaster Prevention Management Plans	[Activity 4-3 was revised in the 3rd JCC] To prepare Short-term Road Disaster Prevention Management Plan in consideration of the balance of the overall budget plan for the road sector.
Inputs		
Kyrgyz Side 1. Counterparts for the project 1) Project Director 2) Project Manager 3) Counterparts 2. Preparation Works for the installation of the equipment 3. Office for the Project with office furniture and utilities such as internet connectivity, telephone line, electricity, etc. 4. Running expenses necessary for the implementation of the Project	**Kyrgyz Side** 1. Counterparts for the project 1) Project Director 2) Project Manager 3) Counterparts 2. Preparation Works for the installation of the equipment 3. Office for the Project with office furniture and utilities such as internet connectivity, telephone line, electricity, etc. 4. Running expenses necessary for the implementation of the Project	No Change
Japan Side 1. Experts 1) Team Leader / Road Maintenance Expert 2) Deputy Team Leader/Debris Flow Disaster Prevention/River Engineering Expert 3) Snow Disaster Prevention Expert (1) 4) Snow Disaster Prevention Expert (2) 5) Slope Disaster Prevention Expert 6) Database Expert 7) Database Expert (2) 8) Disaster Prevention Countermeasures Expert 9) Geological Expert 10) Disaster Prevention Facilities Expert/Cost Estimator/ Construction Planner 11) Construction Supervisor 12) Topographic Survey Expert 13) Landslide Observation Expert	**Japan Side** 1. Experts 1) Team Leader / Road Maintenance Expert 2) Deputy Team Leader/Debris Flow Disaster Prevention/River Engineering Expert 3) Snow Disaster Prevention Expert (1) 4) Snow Disaster Prevention Expert (2) 5) Snow Disaster Prevention Expert (3) 6) Slope Disaster Prevention Expert 7) Database Expert 8) Database Expert (2) 9) Disaster Prevention Countermeasures Expert 10) Geological Expert 11) Disaster Prevention Facilities Expert/Cost Estimator/ Construction Planner 12) Construction Supervisor 13) Topographic Survey Expert	[Expert 5) was added in the 2nd JCC] To support the installation of the meteorological observation equipment. [Expert 12) was added in the 3rd JCC] To supervise the construction of the snow fence for the pilot project. [Expert 13) and 14) were added in the 3rd JCC] To support to prepare the countermeasure plan for landslide at 85.5km of BO road. [Expert 16) was added in the 3rd JCC] To support the Japan Training.

14) Coordinator / Road Disaster Inspection Assistant 15) Japan Training Assistant	14) Landslide Observation Expert 15) Coordinator / Road Disaster Inspection Assistant 16) Japan Training Assistant	
2. Equipment 1) Database Management System Program and Computer 2) Inspection/Observation Equipment (e.g. wind velocity and wind direction measurement equipment)	2. Equipment 1) Database Management System Program and Computer 2) Inspection/Observation Equipment (e.g. wind velocity and wind direction measurement equipment)	No Change
3. Trainings in Japan / third country	3. Trainings in Japan / third country	No Change
	4. Pilot Project for Snow Drifting	[Input 3 was added in the 4th JCC] To enhance the capacity of MOTR for inspection and analysis of snow disasters.
	5. Seminar of Road Asset Management	[Input 3 was added in the 5th JCC] To understand the importance of the infrastructure asset management and the technologies of that to enhance the capacity of MOTR for effective plan for road disaster prevention works.

Note: Descriptions in red font show the contents modified during the project from the original plan or planned in Version 0 (ver. 0) of the Project Design Matrix

Appendix 2: Work Break Structure

Work Break Structure (WBS) ver.2

Overall Goal

Safety of the road traffic at the selected disaster prone areas is improved.

Project Purpose

The capacity of MOTR's relevant units in the Project (HQ, RMD, target UADs, and DEPs) is enhanced for management of road disaster prevention (including road disaster inspection, preparing of road disaster prevention management plan and planning of budget for road disaster prevention).

Project Goal and Purpose
Output

【Output-1】
Responsibilities of MOTR on road disaster prevention, including specific duties to be performed by relevant units (HQ, RMD, target UADs, and DEPs) with necessary staffing in each, become clear.

1-1	1-2	1-3	1-4
To review the present work sharing among relevant organizations.	To identify the most suitable MOTR section to each take charge of collection, input and analysis of data in the road disaster prevention Database Management System.	To identify the most suitable MOTR section to each take charge of inspection, evaluation, plan preparation, and implementation of road disaster prevention.	To draft the Decree on assigning responsibilities to relevant organization.

1-4-1
To draft the Decree on assigning responsibilities to relevant organization.
1-4-2
To review the Decree on assigning responsibilities to relevant organization.
1-4-3
To establish the Decree on assigning responsibilities to relevant organization.

【Output-2】
Capacity of target UADs and DEPs for inspection and analysis of road disaster is enhanced.

2-1	2-2	2-3	2-4	2-5	2-6
To analyze existing condition (including completion of data inventory) on the slope and snow hazards causing road disaster by RMD and UADs, DEPs.	To draft, review and finalize an Inspection, Manual indicating check points for road disaster prevention in consideration with disaster types not only on target roads but also on local roads by RMD.	To practice routine, periodic and emergency inspection and to conduct condition rating based on inspection manual by RMD and PLUSDs/UADs, DEPs.	To discuss countermeasures for road disaster prevention by RMD, UADs and DEPs.	To draft, review and finalize a Countermeasures Manual for road disaster prevention including cost estimation to prepare budget plan in consideration with disaster types not only on target roads but also on local roads by RMD, UADs and DEPs.	To practice selecting countermeasures of road disaster prevention including cost estimation based on Countermeasures Manual by RMD and UADs, DEPs.

2-1-1	2-2-1	2-3-1	2-4-1	2-5-1	2-6-1
To analyze existing condition (including compilation of data inventory) on the slope and snow hazards causing road disaster	To draft an Inspection Manual indicating check points for road disaster prevention	For slope disaster	To confirm the existing structural measures and to discuss the adequate proposed structural measures	To draft Countermeasures Manual for road disaster prevention including cost estimation to prepare budget plan	To practice selecting structural countermeasures of road disaster prevention including cost estimation based on Countermeasures Manual
2-1-2	2-2-2	2-3-2	2-4-2	2-5-2	2-6-2
To decide the location and specification of inspection/observation equipment for meteorological data	To review an Inspection Manual indicating check points for road disaster prevention	For snow disaster	To confirm the existing non-structural measures and to discuss the adequate proposed non-structural measures	To review Countermeasures Manual for road disaster prevention including cost estimation to prepare budget plan	To practice selecting non-structural countermeasures of road disaster prevention including cost estimation based on Countermeasures Manual
2-1-3	2-2-3			2-5-3	
To install inspection/observation equipment for meteorological data including calibration	To finalize an Inspection Manual indicating check points for road disaster prevention			To finalize Countermeasures Manual for road disaster prevention including cost estimation to prepare budget plan	
2-1-4					
To inspect/observe the meteorological data					
2-1-5					
To determined road disaster hazard sections with their feature and classification					

【Output-3】
Capacity of RMD to operationalize Database Management System for road disaster prevention is developed.

3-1	3-2	3-3	3-4
To create a Database Management System of the slope and snow hazards along the international and national roads by RMD.	To establish the procedure for data input and reporting while enhancing cooperativeness of existing databases by RMD.	To draft, review and finalize a manual for data input and database operation by RMD.	To implement trainings for staff members of RMD and UADs, DEPs for data collection and input, and database operation.

3-3-1
To draft manual for data input and database operation
3-3-2
To review manual for data input and database operation
3-3-3
To finalize manual for data input and database operation

【Output-4】
Capacity of RMD for preparing road disaster prevention management plans of the target areas is enhanced.

4-1	4-2	4-3	4-4	4-5	4-6
To establish priority criteria for road disaster prevention in consideration with the balance of the overall budget plan for the road sector by RMD.	To implement training for staff of RMD for preparing a Shor-Term plan for road disaster prevention as a basic document for annual budget request.	To prepare Short-Term Road Disaster Prevention Management Plan in consideration with the balance of the overall budget plan for the road sector.	To implement training for staff RMD for preparing Medium-Term Road Disaster Prevention Management Plan.	To prepare Preparation Manual for Short-Term and Medium-Term Road Disaster Prevention Management Plans by staff members of RMD.	By referring to the Preparation Manual, to conduct trial preparation of Short-Term & Medium-Term Road Disaster Prevention Management Plan.

4-5-1
To prepare budget document with breakdown for road disaster prevention
4-5-2
To draft Preparation Manual for Short-Term and Medium-Term Road Disaster Prevention Management Plans
4-5-3
To review Preparation Manual for Short-Term and Medium-Term Road Disaster Prevention Management Plans
4-5-3
To finalize Preparation Manual for Short-Term and Medium-Term Road Disaster Prevention Management Plans

* PLUAD/UAD was changed to RD/UAD on January 2017.
* DEP was changed to DEU on January 2017.

Appendix 3: Plan of Operation

Plan of Operation (Version 5)

Activities		Expert in charge		1st Year				2nd Year				3rd Year			
			Quarter	I	II	III	IV	I	II	III	IV	I	II	III	IV
			Year	2016				2017				2018			2019
			Month	4 5 6	7 8 9	10 11 12	1 2 3	4 5 6	7 8 9	10 11 12	1 2 3	4 5 6	7 8 9	10 11 12	1 2 3 4 5
Output 1: Responsibilities of MOTR on road disaster prevention, including specific duties to be performed by relevant units (HQ, RMD, UADs, DEPs) with necessary staffing in each, become clear.															
1.1	**To review the present work sharing among relevant organizations.**	Mizota	Plan												
		Tanaka	Actual		(Complete)										
1.2	**To identify the most suitable MOTR section to each take charge of collection, input and analysis of data in the road disaster prevention Database Management System.**	Mizota	Plan												
		Tanaka	Actual			(Complete)									
1.3	**To identify the most suitable MOTR section to each take charge of inspection, evaluation, plan preparation, and implementation of road disaster prevention.**	Mizota	Plan												
		Tanaka	Actual			(Complete)									
1.4	**To draft the Decree on assigning responsibilities to relevant organization.**	Mizota	Plan												
		Tanaka	Actual												(Complete)
1.4.1	To draft the Decree on assigning responsibilities to relevant organization.	Mizota	Plan												
		Tanaka	Actual					(Complete)							
1.4.2	To review the Decree on assigning responsibilities to relevant organization.	Mizota	Plan												
		Tanaka	Actual									(Complete)			
1.4.3	To establish the Decree on assigning responsibilities to relevant organization.	Mizota	Plan												
		Tanaka	Actual												(Complete)

Activities		Expert in charge	Year	1st Year				2nd Year				3rd Year			
			Quarter	I	II	III	IV	I	II	III	IV	I	II	III	IV
			Year	2016				2017				2018			2019
			Month	4 5 6	7 8 9	10 11 12	1 2 3	4 5 6	7 8 9	10 11 12	1 2 3	4 5 6	7 8 9	10 11 12	1 2 3 4 5
Output 2: Capacity of target UADs and DEPs for inspection and analysis of road disaster is enhanced.															
2.1	**To analyze existing condition (including compilation of data inventory) on the slope and snow hazards causing road disaster by RMD and UADs, DEPs.**	Mizota,Otsuki, Honma, Kawakami, Ohashi, Sasaki	Plan												
			Actual									(Complete)			
2.1.1	To analyze existing condition (including compilation of data inventory) on the slope and snow hazards causing road disaster	Mizota,Otsuki, Honma, Kawakami, Ohashi, Sasaki	Plan												
			Actual		(Complete)										
2.1.2	To decide the location and specification of inspection/observation equipment for meteorological data	Otsuki, Honma	Plan												
			Actual		(Complete)										
2.1.3	To install inspection/observation equipment for meteorological data including calibration	Otsuki, Honma, Saito	Plan												
			Actual			(Complete)									
2.1.4	To inspect/observe the meteorological data	Otsuki, Honma	Plan		Inspection/Observation ★										
			Actual									(Complete)			
2.1.5	To determined road disaster hazard sections with their feature and classification	Otsuki, Honma, Kawakami, Ohashi, Sasaki	Plan			★									
			Actual					(Complete)							
2.2	**To draft, review and finalize an Inspection Manual indicating check points for road disaster prevention in consideration with disaster types not only on target roads but also on local roads by RMD.**	Otsuki, Honma, Kawakami, Ohashi, Sasaki	Plan												
			Actual												(Complete)
2.2.1	To draft an Inspection Manual indicating check points for road disaster prevention	Otsuki, Honma, Kawakami, Ohashi, Sasaki	Plan					★							
			Actual					(Complete)							
2.2.2	To review an Inspection Manual indicating check points for road disaster prevention	Otsuki, Honma, Kawakami, Ohashi, Sasaki	Plan									★			
			Actual									(Complete)			
2.2.3	To finalize an Inspection Manual indicating check points for road disaster prevention	Otsuki, Honma, Kawakami, Ohashi, Sasaki	Plan												★
			Actual												(Complete)
2.3	**To practice routine, periodic and emergency inspections and to conduct condition rating based on inspection manual by RMD and UADs, DEPs.**	Otsuki, Honma, Kawakami, Ohashi, Sasaki	Plan												
			Actual												(Complete)
2.3.1	For slope disaster	Otsuki, Honma, Sasaki	Plan												
			Actual										(Complete)		
2.3.2	For snow disaster	Kawakami, Ohashi, Sasaki	Plan												
			Actual												(Complete)
2.4	**To discuss countermeasures for road disaster prevention by RMD, UADs and DEPs.**	Otsuki, Honma, Kawakami, Ohashi, Sasaki	Plan												
			Actual		(Complete)										
2.4.1	To confirm the existing structural measures and to discuss the adequate proposed structural measures	Otsuki, Honma, Kawakami, Ohashi	Plan												
			Actual		(Complete)										
2.4.2	To confirm the existing non-structural measures and to discuss the adequate proposed non-structural measures	Sasaki	Plan												
			Actual		(Complete)										

2.5	**To draft, review and finalize a Countermeasures Manual for road disaster prevention including cost estimation to prepare budget plan in consideration with disaster types not only on target roads but also on local roads by RMD, UADs and DEPs.**	Otsuki, Honma, Kawakami, Ohashi, Sasaki	Plan	
			Actual	(Complete)
2.5.1	To draft Countermeasures Manual for road disaster prevention including cost estimation to prepare budget plan	Otsuki, Honma, Kawakami, Ohashi, Sasaki	Plan	
			Actual	(Complete)
2.5.2	To review Countermeasures Manual for road disaster prevention including cost estimation to prepare budget plan	Otsuki, Honma, Kawakami, Ohashi, Sasaki	Plan	
			Actual	(Complete)
2.5.3	To finalize Countermeasures Manual for road disaster prevention including cost estimation to prepare budget plan	Otsuki, Honma, Kawakami, Ohashi, Sasaki	Plan	
			Actual	(Complete)
2.6	**To practice selecting countermeasures of road disaster prevention including cost estimation based on Countermeasures Manual by RMD and UADs and DEPs.**	Otsuki, Honma, Kawakami, Ohashi, Sasaki	Plan	
			Actual	(Complete)
2.6.1	To practice selecting structural countermeasures of road disaster prevention including cost estimation based on Countermeasures Manual	Otsuki, Honma, Kawakami, Ohashi	Plan	Budgetary Request / Budgetary Request
			Actual	(Complete)
2.6.2	To practice selecting non-structural countermeasures of road disaster prevention including cost estimation based on Countermeasures Manual	Sasaki	Plan	Budgetary Request / Budgetary Request
			Actual	(Complete)

Activities		Expert in charge	Year	1st Year				2nd Year				3rd Year			
			Quarter	I	II	III	IV	I	II	III	IV	I	II	III	IV
			Year	2016				2017				2018			2019
			Month	4 5 6	7 8 9	10 11 12	1 2 3	4 5 6	7 8 9	10 11 12	1 2 3	4 5 6	7 8 9	10 11 12	1 2 3 4 5
Output 3: Capacity of RMD to operationalize Database Management System for road disaster prevension is developed.															
3.1	**To create a Database Management System of the slope and snow hazards along the international and national roads by RMD.**	Sawada, Abdyrahmanova	Plan												
			Actual					(Complete)							
3.2	**To establish the procedure for data input and reporting while enhancing cooperativeness of existing databases by RMD.**	Sawada, Abdyrahmanova	Plan												
			Actual			(Complete)									
3.3	**To draft, review and finalize a manual for data input and database operation by RMD.**	Sawada, Abdyrahmanova	Plan												
			Actual												(Complete)
3.3.1	To draft manual for data input and database operation	Sawada, Abdyrahmanova	Plan				★								
			Actual					(Complete)							
3.3.2	To review manual for data input and database operation	Sawada, Abdyrahmanova	Plan								★				
			Actual									(Complete)			
3.3.3	To finalize manual for data input and database operation	Sawada, Abdyrahmanova	Plan											★	
			Actual												(Complete)
3.4	**To implement trainings for staff members of RMD and UADs, DEPs for data collection and input, and database operation.**	Sawada, Abdyrahmanova	Plan												
			Actual					(Complete)							

Activities	Expert in charge	Year	1st Year				2nd Year				3rd Year			
		Quarter	I	II	III	IV	I	II	III	IV	I	II	III	IV
		Year	2016				2017				2018			2019
		Month	4 5 6	7 8 9	10 11 12	1 2 3	4 5 6	7 8 9	10 11 12	1 2 3	4 5 6	7 8 9	10 11 12	1 2 3 4 5
Output 4: Capacity of RMD for preparing road disaster prevention management plans of the target areas is enhanced.														
4.1	**To establish priority criteria for road disaster prevention in consideration with the balance of the overall budget plan for the road sector by RMD.**	Inagaki, Tanaka	Plan			★								
			Actual				(Complete)							
4.2	**To implement training for staff of RMD for preparing a Short-Term plan for road disaster prevention as a basic document for annual budget request.**	Inagaki, Tanaka	Plan				★	Budgetary Request			Budgetary Request ★			
			Actual										(Complete)	
4.3	**To prepare Short-Term Road Disaster Prevention Management Plan in consideration with the balance of the overall budget plan for the road sector.**	Mizota, Inagaki, Tanaka	Plan											
			Actual			(Complete)								
4.4	**To implement training for staff of RMD for preparing Medium-Term Road Disaster Prevention Management Plan.**	Inagaki, Tanaka	Plan				★	Budgetary Request			Budgetary Request ★			
			Actual										(Complete)	
4.5	**To prepare Preparation Manual for Short-Term and Medium-Term Road Disaster Prevention Management Plans by staff members of RMD.**	Inagaki, Tanaka	Plan	★	Budgetary Request		★	Budgetary Request			Budgetary Request ★			
			Actual											(Complete)
4.5.1	To prepare budget document with breakdown for road disaster prevention	Otsuki, Honma, Kawakami, Ohashi, Sasaki	Plan											
			Actual										(Complete)	
4.5.2	To draft Preparation Manual for Short-Term and Medium-Term Road Disaster Prevention Management Plans	Inagaki, Tanaka	Plan			★								
			Actual				(Complete)							
4.5.3	To review Preparation Manual for Short-Term and Medium-Term Road Disaster Prevention Management Plans	Inagaki, Tanaka	Plan							★				
			Actual						(Complete)					
4.5.4	To finalize Preparation Manual for Short-Term and Medium-Term Road Disaster Prevention Management Plans	Inagaki, Tanaka	Plan										★	
			Actual											(Complete)
4.6	**By referring to the Preparation Manual, to conduct trial preparation of Short-Term & Medium-Term Road Disaster Prevention Management Plans**	Mizota, Inagaki, Tanaka	Plan											
			Actual											(Complete)

Administrative Activities	Year	1st Year				2nd Year				3rd Year			
	Quarter	I	II	III	IV	I	II	III	IV	I	II	III	IV
Joint Coordinating Committee	Plan	▲		▲		▲		▲		▲		▲	
	Actual	▲		▲	▲			▲		▲		▲	
Meeting/Seminar	Plan	▲ Kick off Meeting							Road Asset Management Seminar ▲				Final Seminar ▲
	Actual	▲									▲		▲
Set-up the Detailed Plan of Operation	Plan	▲				▲				▲			
	Actual	▲				▲				▲			
Submission of Monitoring Sheet	Plan	▲		▲		▲		▲		▲		▲	
	Actual	▲		▲		▲		▲		▲		▲	
Progress Report (As annexed documents of Monitoring Sheet)	Plan	▲		▲		▲		▲		▲		▲	
	Actual	▲		▲		▲		▲		▲		▲	

★ : Performance Deadline of Objectively Verifiable Indicators in PDM

★ : Control Point for Activities

* PLUAD/UAD was chenged to RD/UAD on January 2017.

* DEP was chenged to DEU on January 2017.

Appendix 4: Assignment Record/Schedule of Experts

Assignment Record/Schedule of Experts

Project Name: The Project for Capacity Development for Road Disaster Prevention Management in Kyrgyz Republic

1. Work in Kyrgyz Republic

Expert Name / Position	Grading	Plan/ Actual	No. of Trip	2016 4	5	6	7	8	9	10	11	12	2017 1	2	3	4	5	6	7	8	9	10	11	12	2018 1	2	3	4	5	6	7	8	9	10	11	12	2019 1	2	3	4	5	Total Days	Total Months
MIZOTA Yuzo *Team Leader / Road Maintenance Expert*	2	Plan	16																																						300	10.00
		Actual	16	4/14–5/3 (18)		5/30–6/23 (25)		8/19–8/27 (9)		9/26–10/21 (26)						4/3–4/12 (10)		5/9–5/20 (12)		7/10–7/25 (19)		9/29–10/20 (22)					2/25–3/15 (19)		4/11–4/28 (18)		5/22–6/8 (18)		8/2–8/22 (21)		9/25–10/5 (11)	10/17–29 (13)	11/24–12/13 (20)		1/28–2/15 (19)	3/6–3/17 (12)	3/24–3/31 (8)			300	10.00
TANAKA Hirofumi *Deputy Team Leader / Debris Flow Disaster Prevention / River Engineering Expert*	3	Plan	7																																						261	8.70
		Actual	7			5/10–6/28 (50)				9/26–11/24 (60)						3/26–4/14 (20)						10/8–11/6 (30)								5/21–7/9 (50)				9/29–11/4 (37)				3/10–3/23 (14)					261	8.70
OTSUKI Masaya *Snow Disaster Prevention Expert-1*	3	Plan	8																																						133	4.43
		Actual	8			5/15–6/3 (20)			8/10–8/18 (9)		10/3–10/22 (20)			1/4–1/12 (9)				5/1–5/28 (28)				9/23–10/6 (14)							4/30–5/19 (20)				8/13–8/25 (13)									133	4.43
HONMA Shinichi *Snow Disaster Prevention Expert-2*	3	Plan	6																																						120	4.00
		Actual	6			5/15–6/3 (20)								1/4–1/12 (9)				5/1–5/28 (28)								1/6–1/19 (14)				5/20–6/17 (29)			8/10–8/29 (20)									120	4.00
SAITO Yoshihiko *Snow Disaster Prevention Expert-3*	4	Plan	2																																						23	0.77
		Actual	2							10/14–10/22 (9)												9/23–10/6 (14)																				23	0.77
KAWAKAMI Kyoichi *Slope Disaster Prevention Expert*	3	Plan	6																																						330	11.00
		Actual	6			5/10–7/4 (56)				9/26–11/24 (60)								5/9–6/29 (52)				8/21–10/19 (60)							4/15–6/7 (54)				9/30–11/16 (48)									330	11.00
SAWADA Kentaro *Database Expert-1*	5	Plan	12																																						357	11.90
		Actual	12			4/14–6/12 (60)				9/9–10/8 (30)						3/16–4/14 (30)				6/20–7/14 (25)		8/5–9/2 (29)					1/13–1/27 (15)		3/30–5/9 (41)		5/18–5/31 (14)		8/4–8/25 (22)		9/24–10/22 (29)		12/1–12/21 (21)			3/4–4/13 (41)				357	11.90
IBAYASHI Ko *Database Expert-2*	4	Plan	1																																						10	0.33
		Actual	1																			8/10–8/19 (10)																				10	0.33
SASAKI Takao *Disaster Prevention Countermeasures Expert*	4	Plan	5																																						120	4.00
		Actual	5					6/25–7/25 (31)			10/2–10/21 (20)												9/23–10/24 (32)				1/7–1/21 (15)				5/26–6/16 (22)											120	4.00
OHASHI Kengo *Geotechnical Expert*	4	Plan	3																																						120	4.00
		Actual	3			5/10–7/8 (60)												4/18–5/17 (30)												5/7–6/5 (30)											120	4.00
INAGAKI Motohiro *Disaster Prevention Facilities Expert / Cost Estimator /Construction Planner*	4	Plan	5																																						150	5.00
		Actual	5			6/6–7/1 (26)				10/3–11/4 (33)								5/15–6/16 (33)				9/16–10/11 (26)								5/12–6/12 (32)											150	5.00
TOMOSADA Ryoichi *Construction Supervisor*	4	Plan	1																																						21	0.70
		Actual	1																			9/9–9/29 (21)																				21	0.70
KOIKE Toru *Landslide Observation Expert*	3	Plan	1																																						15	0.50
		Actual	1																			10/8–10/19 (12)																				12	0.40
MIKAMI Soshi *Topographic Survey Expert*	5	Plan	1																																						15	0.50
		Actual	1																			10/1–10/12 (12)																				12	0.40
																																									Subtotal of Work in KR	Plan	1975	65.83
																																										Actual	1969	65.63

: Assignment Plan　　: Actual Assignment　　: Assignment of Other Project in KR

2. Work in Japan

Expert Name *Position*	Grading	Plan/ Actual	No. of Trip	2016 4	5	6	7	8	9	10	11	12	2017 1	2	3	4	5	6	7	8	9	10	11	12	2018 1	2	3	4	5	6	7	8	9	10	11	12	2019 1	2	3	4	5	Total Days	Total Months
MIZOTA Yuzo *Team Leader / Road Maintenance Expert*	2	Plan																																							14	0.70
		Actual		4/12–4/13 (2)	3/9–3/10 (2)																						3/16–3/30 (15)															14	0.70
TANAKA Hirofumi *Deputy Team Leader / Debris Flow Disaster Prevention / River Engineering Expert*	3	Plan																																							6	0.30
		Actual		4/12–3/15, 4/25–4/26 (4)																																						6	0.30
SAITO Yoshihiko *Snow Disaster Prevention Expert-3*	4	Plan																																							51	2.55
		Actual																									3/5–3/30 (20)	4/13–4/27 (11)	5/18–6/14 (20)														51	2.55
KOIKE Toru *Landslide Observation Expert*	3	Plan																																							0	0.00
		Actual																					10/20, 10/23 (2)																			2	0.10
MIKAMI Soshi *Topographic Survey Expert*	5	Plan																																							0	0.00
		Actual																					10/13, 10/16 (2)																			2	0.10
Abdyrahmanova Akshookum *Coordinator / Road Disaster Inspection Assistant*	5	Plan																																							193	9.65
		Actual		4/18–4/29 (10)	5/16–5/20 (5)				9/5–9/30 (20)	11/10–11/20 (10)	12/1–12/28 (20)		2/22–2/28 (5)	(5)	4/6–4/19 (10)	4/20 (10)	5/16–5/18 (3)						10/16–10/20 (5)			1/4–1/31 (20)			4/1–4/30 (20)	5/18–5/31 (10)									3/1–4/13 (33)			193	9.65
ICHIKAWA Syumpei *Training in Japan*	5	Plan							11/30–10/14				2/13–2/17		3/20–3/31																											40	2.00
		Actual																					10/11–11/7 (20)												10/11–11/7 (20)						40	2.00

		Subtotal of Work in JP	Plan	304	15.20
			Actual	308	15.40

: Assignment Plan : Actual Assignment

Toal	Plan	81.03
	Actual	81.03

3. Report/Meeting/Seminar

Month	2016 4	5	6	7	8	9	10	11	12	2017 1	2	3	4	5	6	7	8	9	10	11	12	2018 1	2	3	4	5	6	7	8	9	10	11	12	2019 1	2	3	4	5
Report etc.	▲ Inception Report	▲ Monitoring Sheet Ver.1				▲ Monitoring Sheet Ver.2							▲ Monitoring Sheet Ver.3									▲ Monitoring Sheet Ver.4					▲ Monitoring Sheet Ver.5						▲ Monitoring Sheet Ver.6							▲ Completion Report
Meeting/Seminar	▲ 1st JCC	▲ Kick-off Meeting				▲ 2nd JCC							▲ 3rd JCC									▲ 4th JCC					▲ 5th JCC						▲ 6th JCC						▲ Final Seminar		

Appendix 5: Record of Training in Japan

1st Training in Japan (October 22, 2017 ~ November 1, 2017)

1. Participants

No.	Name	Position
1	Mr. NARBEKOV Bakytbek	Head, Capital investment planning, Ministry of Finance
2	Mr. DZHUMAGAZIEV Nurlan	Head, Economics and audit, Ministry of Transport and Road
3	Mr. KULUEV Nurbek	Chief specialist, Department of Production Quality Control, BO UAD, Ministry of Transport and Road
4	Mr. MUKASHOV Kyialbek	Head, Economic sectors expenditures planning, Ministry of Finance
5	Mr. TOKTOMUSHEV Bolotbek	Chief specialist, Production quality control, Ministry of Transport and Road
6	Mr. SADAKBAEV Talant	Chairman, Technical Committee - 55, Ministry of Transport and Road
7	Mr. KALYGULOV Belek	Head, DEP 30, PLANNING DEP-T, Ministry of Transport and Road

2. Training Schedule

Date	Time			Activities	Venue/Site
10/22 (San)				Arrival in Japan	
10/23 (Mon)		~	9:30	Move to JICA Hokkaido Center	
	9:30	~	12:00	JICA Briefing	JICA Hokkaido Center
	12:00	~	13:30	Lunch @ JICA Hokkaido Center	
	13:30	~	15:00	Move to Hokkaido University	
	15:00	~	16:30	Lecture on Road Disaster Prevention (Snow Drifting)	Hokkaido University
	16:30	~	17:30	Move to Hotel	
10/24 (Tue)	9:00	~	9:30	Move to Civil Engineering Research Institute for Cold Region	
	9:30	~	11:00	Lecture on Slope Disaster Prevention during Snowmelt Season	Civil Engineering Research Institute for Cold Region
	11:00	~	12:30	Lecture on Countermeasures against Snow Drifting	Civil Engineering Research Institute for Cold Region
	12:30	~	13:00	Move to Sapporo Station	
	13:00	~	14:00	Lunch @ Sapporo Station	
	14:00	~	14:30	Move to Snow Fence Manufacturing Plant	
	14:30	~	16:30	Site Visit of Snow Fence Manufacturing Plant	MINORI-ZOUKI. Co., Ltd.
	16:30	~	17:30	Move to Hotel	
10/25 (Wed)	9:00	~	10:30	Move to Countermeasures Site on Route 453	
	10:30	~	12:00	Site Visit of Countermeasures against Avalanche and Slope Collapse (Route 453)	in Chitose-city
	12:00	~	13:00	Move to Shin-chitose Airport	
	13:00	~	14:00	Lunch @ Shin-chitose Airport	
	14:00	~	17:30	Move (Hokkaido to Aichi)	
	17:30	~	18:30	Move to JICA Chubu Center	
10/26	9:30	~	11:00	Lecture on Toll Road System in NEXCO	JICA Chubu Center

Date	Time			Activities	Venue/Site
(Tur)	11:00	~	12:00	Lecture on Earthworks Technologies for Highways	JICA Chubu Center
	12:00	~	13:00	Lunch @ JICA Chubu Center	
	13:00	~	15:00	Move to Washimi Bridge	
	15:00	~	16:00	Site Visit of Washimi Bridge	Construction Site of Washimi Bridge
	16:00	~	17:30	Move to Takayama-city	
10/27 (Fri)	9:00	~	9:45	Move to Abo Tunnel	
	9:45	~	11:30	Site Visit of Abo Tunnle	Abo Tunnel
	11:30	~	12:00	Move to Takayama-city	
	12:00	~	13:00	Lunch	
	13:00	~	13:30	NEXCO Takayama Maintenance Service Center	
	13:30	~	15:00	Observation of the Center and Snowplow	NEXCO Takayama Maintenance Service Center
	15:00	~	15:20	Move to Slope Protection Site	
	15:20	~	17:30	Site Visit of Slope Protection Site	Takayama-city
	17:30	~	19:00	Move to JICA Chubu Center	
10/28 (Sat)				Document Preparation	
10/29 (Sat)				Document Preparation	
10/30 (Mon)	9:00	~	9:30	Move to Ichinomiya Road Control Center	
	9:30	~	11:00	Observation of Ichinomiya Road Control Center	Ichinomiya Road Control Center (NEXCO)
	11:00	~	13:30	Lunch / Move to Slope Inspection Training Center	
	13:30	~	15:30	Slope Inspection Training Center	Mino-city (Gifu)
	15:30	~	17:00	Move to JICA Chubu Cenbter	
10/31 (Tue)	9:30	~	12:00	Evaluation Meeting	JICA Chubu Center
11/1 (Wed)				Departure in Japan	

3. Training Photo

Picture-1: Lecture in Civil Engineering Research Institute for Cold Region	Picture-2: Site Visit of Snow Fence Manufacturing Plant
	
Picture-3: Site Visit of Rock Fence on Route 453 (NEXCO)	Picture-4: Site Visit of Countermeasure against Avalanche on Route 453 (NEXCO)
	
Picture-5: Lecture on Earthworks Technologies for Highways (NEXCO)	Picture-6: Site Visit of Slope Protection Site (Takayama-city)
	

2nd Training in Japan (October 21, 2018 ~ October 31, 2018)

1. Participants

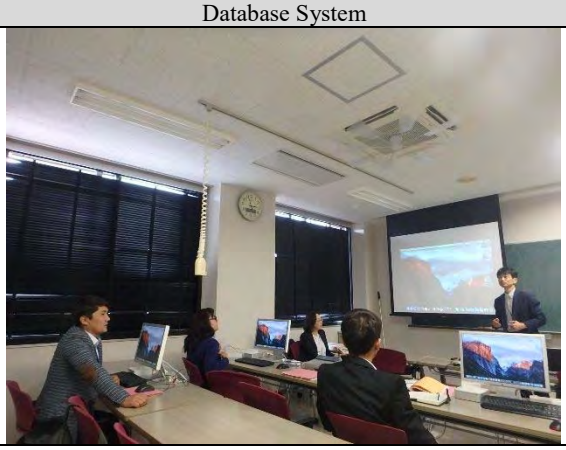
No.	Name	Position
1	Mr. Usonbekov Aitbek	Leading Specialist, Asset Management Section, Road Management Department, Ministry of Transport and Road
2	Ms. Abdyrashymkyzy Aigerim	Chief Specialist, Road Management Department, Ministry of Transport and Road
3	Mr. Isakov Erlan	Chief Specialist, BO-UAD
4	Mr. Kasymbaev Taalai	Head, DEU 50

2. Training Schedule

Date	Time	Activities	Venue/Site
10/21 (Sun)		Arrival in Japan	
10/22 (Mon)	10:00 ~ 12:30	JICA Briefing	JICA Tokyo Center
	12:30 ~ 15:30	Move to JICA Chubu Center	
	16:30 ~ 17:30	Lecture on Countermeasures against Road Disasters	JICA Chubu Center
10/23 (Tue)	8:30 ~ 11:00	Move to Suruga Maintenance Service Center	
	11:00 ~ 12:00	Briefing	Suruga Maintenance Service Center
	12:00 ~ 12:30	Move to Hokuriku Expressway	
	12:30 ~ 15:30	Site Visit of Snow Fence and Slope Protection at Sugitsu Parking Area	Hokuriku Expressway
	15:30 ~ 16:30	Move to NEXCO Kanazawa Branch	
	16:30 ~ 17:00	Observation of Kanazawa Road Control Center	NEXCO Kanazawa Branch
	17:00 ~ 17:30	Move to Hotel	
10/24 (Wed)	9:00 ~ 14:00	Move to Niigata-city	
	14:00 ~ 16:00	Lecture on Countermeasures against Avalanche and Observation of Snow Fence Manufacturing Plant	PROTEC ENGINEERING
	16:00 ~ 17:00	Move to Hotel	
10/25 (Tur)	9:00 ~ 9:30	Move to Niigata Prefectural Government	
	9:30 ~ 11:30	Lecture on Current situation and challenges of slope disaster hazardous area and countermeasures in Niigata	Niigata Prefectural Government
	11:30 ~ 14:00	Move to Nagaoka-city	
	14:00 ~ 16:30	Lecture on Utilization of Road Disaster Database System and Practical Training on Preparation of Road Disaster Database System	National Institute of Technology, Nagaoka College
	16:30 ~ 17:00	Move to Hotel	
10/26 (Fri)	9:30 ~ 10:00	Move to Nagaoka University of Technology	
	10:00 ~ 12:00	Lecture on Maintenance Works of infrastructure in Province Area and Road Disaster Prevention Technology against Debris Flow	Nagaoka University of Technology
	12:00 ~ 14:00	Move to Snow and Ice Research Center	

Date	Time	Activities	Venue/Site
	14:00 ~ 15:30	Lecture on Observation, Countermeasure and Research of Snow Disaster/ Observation of Research Facilities at Snow and Ice Research Center	Snow and Ice Research Center
	15:30 ~ 16:30	Move to Tochio-Tashiro Weather Station	
	16:30 ~ 17:00	Site Visit of Tochio-Tashiro Weather Station	Tochio-Tashiro Weather Station
	17:00 ~ 18:00	Move to Hotel	
10/27 (Sat)	10:30 ~ 13:00	Move to JICA Tokyo Center	
10/28 (Sun)		Document Preparation	
10/29 (Mon)	10:00 ~ 17:00	Document Preparation	JICA Tokyo Center
10/30 (Tue)	9:30 ~ 12:00	Evaluation Meeting	JICA Tokyo Center
10/31 (Wed)		Departure in Japan	

3. Training Photo

Picture-1: Briefing (NEXCO)	Picture-2: Site Visit of Snow Fence (NEXCO)
	
Picture-3: Site Visit of Slope Protection (NEXCO)	Picture-4: Observation of Snow Fence Manufacturing Plant (PROTEC ENGINEERING)
	
Picture-5: Practical Training on Preparation of Road Disaster Database System	Picture-6: Lecture on Observation, Countermeasure and Research of Snow Disaster
	

Appendix 6: List of Equipment (Handover Certificate)

CERTIFICATE OF HANDOVER

PROJECT TITLE: The Project for Capacity Development for Road Disaster Prevention in Kyrgyz Republic

This is to certify that the equipment in the attached list for above-mentioned project has been handed over properly as of June 29, 2017 to Road Management Section (RMD) under Ministry of Transport and Roads (MOTR). RMD will use and maintain the equipment properly in accordance with the purpose of the project activities.

(Signature)

Mr. Yuzo Mizota
Team Leader
JICA Expert Team

(Signature)

Ms. Abdyrashim kysy Aygerim
Head of AMS
Road Management Department
MOTR

(Attachment)

List of Equipment

No.	Name of Item	Qty	Place of Installment	Date of Handover
1	FileMaker Server Software	1	AMS	June 21, 2017
2	Laptop for Database Server	1	AMS	June 21, 2017
3	Tablet for Database	16	AMS	September 12, 2016
4	Laptop for Meteorological Observation	1	AMS	June 21, 2017

CERTIFICATE OF HANDOVER

PROJECT TITLE: The Project for Capacity Development for Road Disaster Prevention in Kyrgyz Republic

This is to certify that the equipment in the attached list for above-mentioned project has been handed over properly as of June 29, 2017 to GDAD BO under Ministry of Transport and Roads (MOTR). GDAD BO will use and maintain the equipment properly in accordance with the purpose of the project activities.

(Signature)

Mr. Yuzo Mizota
Team Leader
JICA Expert Team

(Signature)

Mr. Kadyrbaev T.T.
Director
GDAD BO

(Attachment)

List of Equipment

No.	Name of Item	Qty	Place of Installment	Date of Handover
1	Wind Speed and Direction Sensor	6	DEU9/DEU23	October 16, 2016
2	Snow Depth Meter	6	DEU9/DEU23	October 16, 2016
3	Radiation Shield	6	DEU9/DEU23	October 16, 2016
4	Solar Panel System	6	DEU9/DEU23	October 16, 2016
5	Storage Box	6	DEU9/DEU23	October 16, 2016
6	Accessories (Data Logger, CF Card, Communication Software)	6	DEU9/DEU23	October 16, 2016
7	Laptop Computer for Meteorological Observation	1	DEU9/DEU23	October 16, 2016

Appendix 7: Record of Seminar and Workshops

Record of Seminars/Workshops and Trainings

1. JCC and Other Meetings

Activity Name	Date	Contents
1st JCC	April 27, 2016	✓ Project Outline ✓ Achievement of Outputs
Kick-off Meeting	June 1, 2016	✓ Project Outline ✓ Site Inspection Results and Countermeasures ✓ Database Operation
2nd JCC	October 3, 2016	✓ Achievement of Outputs ✓ Amendment of PDM ✓ Draft Short-term Road Disaster Prevention Management Plan ✓ Database Formats
3rd JCC	March 27, 2017	✓ Achievement of Outputs ✓ Amendment of PDM ✓ Preparation of Manuals and Database Development
4th JCC	October 17, 2017	✓ Achievement of Outputs ✓ Slop and Snow Disaster Inspection/Countermeasures ✓ Non-structural Countermeasures ✓ Training Program by Master Trainers
5th JCC	April 25, 2018	✓ Achievement of Outputs ✓ Training Program by Master Trainers ✓ Short-term Road Disaster Prevention Management Plan ✓ Countermeasures Plan at 85.5km on BO Road ✓ SNS Information System/ Hazard Map Distribution
Road Asset Management Seminar	October 3rd ~ 4th, 2018	✓ Outline of Road and Bridge Asset Management ✓ Road Asset Management Technologies in Japan
6th JCC	October 18, 2018	✓ Project Evaluation ✓ Project Sustainability ✓ Project Monitoring Plan
Final Seminar	March 13th ~ 14th, 2019	✓ Outline of the Project ✓ Project Activities ✓ Project Sustainability
JCC Review Meeting	March 28, 2019	✓ Project Evaluation ✓ Project Sustainability ✓ Project Monitoring

2. Workshops, Seminars and Trainings (Inspection and Countermeasures)

Activity Name	Date	Contents
Site Inspection Training (Slope Disaster)	May 16th ~ 20th, 2016	✓ Inventory Survey at Road Disaster Hazardous Area ✓ Training on Inspection Method
Site Inspection Training (Slope Disaster)	June 6th ~ 10th, 2016	✓ Inventory Survey at Road Disaster Hazardous Area ✓ Training on Inspection Method
Workshop	June 22nd, 2016	✓
Site Inspection Training (Slope Disaster)	June 29th ~ 30th, 2016	✓ Inventory Survey at Road Disaster Hazardous Area ✓ Training on Inspection Method
Site Inspection Training (Slope Disaster)	July 1st, 2016	✓ Inventory Survey at Road Disaster Hazardous Area ✓ Training on Inspection Method
Site Inspection Training (Non-structural Countermeasures)	July 11th ~ 15th, 2016	✓ Inventory Survey for Non-structural Countermeasures ✓ Training on Non-structural Countermeasures
Site Inspection Training (Slope Disaster)	August 11th ~ 12th, 2016	✓ Inventory Survey at Road Disaster Hazardous Area ✓ Training on Inspection Method
Site Inspection Training (Non-structural Countermeasures)	October 10th ~ 11th, 2016	✓ Inventory Survey for Non-structural Countermeasures ✓ Training on Non-structural Countermeasures
Site Inspection Training (Snow Disaster)	January 6th, 2017	✓ Inventory Survey at Road Disaster Hazardous Area ✓ Training on Inspection Method
Site Inspection Training (Slope Disaster)	April 26th ~ 27th, 2017	✓ Inventory Survey at Road Disaster Hazardous Area ✓ Training on Inspection Method
Site Inspection Training (Landslide Monitoring)	April 30th, 2017	✓ Monitoring Method for Landslide at 85.5km on BO Road
Site Inspection Training (Slope Disaster)	May 2nd ~ 4th, 2017	✓ Inventory Survey at Road Disaster Hazardous Area ✓ Training on Inspection Method
Workshop (Slope Disaster)	September 8th, 2017	✓ Slope Disaster Inspection and Evaluation ✓ Landslide Monitoring Method
Workshop (Slope Disaster)	October 4th, 2017	✓ Slope Disaster Countermeasures
Site Inspection Training (Snow Disaster)	January 10th, 2018	✓ Inventory Survey at Road Disaster Hazardous Area ✓ Training on Inspection Method
Workshop (Non-structural Countermeasures)	January 10th, 2018	✓ Introduction of Non-structural Countermeasures ✓ Applicable Non-structural Countermeasures in Kyrgyz
Seminar (Road Disaster)	April 18th, 2018	✓ Inspection and Evaluation on Slope Disaster ✓ Countermeasures against Slope Disasters
Seminar (Road Disaster)	April 26th, 2018	✓ Inspection and Evaluation on Slope Disaster ✓ Countermeasures against Slope Disasters

Site Inspection Training (Slope Disaster)	April 27th, 2018	✓ Inventory Survey at Road Disaster Hazardous Area ✓ Training on Inspection Method
Seminar (Road Disaster)	May 2nd, 2018	✓ Inspection and Evaluation on Slope Disaster ✓ Countermeasures against Slope Disasters
Site Inspection Training (Slope Disaster)	May 3rd, 2018	✓ Inventory Survey at Road Disaster Hazardous Area ✓ Training on Inspection Method
Seminar (Snow Disaster)	May 7th, 2018	✓ Inspection and Evaluation on Snow Disaster ✓ Countermeasures against Snow Disasters
Seminar (Snow Disaster)	May 10th, 2018	✓ Inspection and Evaluation on Snow Disaster ✓ Countermeasures against Snow Disasters
Seminar (Snow Disaster)	May 24th, 2018	✓ Inspection and Evaluation on Snow Disaster ✓ Countermeasures against Snow Disasters
Seminar (Slope Disaster)	May 24th, 2018	✓ Inspection and Evaluation on Slope Disaster ✓ Countermeasures against Slope Disasters
Site Inspection Training (Slope Disaster)	May 25th, 2018	✓ Training on Inspection Method
Site Inspection Training (Snow Disaster)	May 25th, 2018	✓ Training on Inspection Method
Site Inspection Training (Slope Disaster)	May 31st, 2018	✓ Training on Inspection Method
Site Inspection Training (Snow Disaster)	May 31st, 2018	✓ Training on Inspection Method
Seminar (Slope Disaster)	June 4th, 2018	✓ Inspection and Evaluation on Slope Disaster ✓ Countermeasures against Slope Disasters

3. Workshops, Seminars and Trainings (Database Development)

Activity Name	Date	Contents
Seminar	September 14th, 2016	✓ Database Structure and Operation ✓ Database Formats and Input Method
Site Training (Data Collection & Input)	September 15th ~ 16th, 2016	✓ Data Collection of Road Disaster Hazardous Area ✓ Training on Data Input
Site Training (Data Collection & Input)	September 19th, 2016	✓ Data Collection of Road Disaster Hazardous Area ✓ Training on Data Input
Seminar	October 4th, 2016	✓ Database Structure and Operation ✓ Database Formats and Input Method
Site Training (Data Collection & Input)	October 30th, 2016	✓ Data Collection of Road Disaster Hazardous Area ✓ Training on Data Input
Site Training (Data Collection & Input)	December 1st, 2016	✓ Data Collection of Road Disaster Hazardous Area ✓ Training on Data Input
Site Training (Data Collection & Input)	December 14th, 2016	✓ Data Collection of Road Disaster Hazardous Area ✓ Training on Data Input
Site Training (Data Collection & Input)	February 14th, 2017	✓ Data Collection of Road Disaster Hazardous Area ✓ Training on Data Input
Site Training (Data Collection & Input)	February 28th, 2017	✓ Data Collection of Road Disaster Hazardous Area ✓ Training on Data Input
Site Training (Data Collection & Input)	March 23th, 2017	✓ Data Collection of Road Disaster Hazardous Area ✓ Training on Data Input
Seminar	March 27th, 2017	✓ Database Operation ✓ Data Input Test
Seminar	July 7th, 2017	✓ Database Operation ✓ Data Input
Seminar	July 17th, 2017	✓ Database Operation ✓ Data Input
Seminar	July 24th, 2017	✓ Database Operation ✓ Data Input
Workshop	August 17th, 2017	✓ FileMaker Program ✓ Database Development System ✓ Data Networks System
Seminar	March 6th, 2018	✓ Database Operation ✓ Data Input
Seminar	March 6th, 2018	✓ Database Operation ✓ Data Input

Seminar	April 18th, 2018	✓ Database Operation ✓ Data Input
Seminar	March 6th, 2018	✓ Database Operation ✓ Data Input
Seminar	May 28th, 2018	✓ Database Operation ✓ Data Input
Seminar	May 30th, 2018	✓ Database Operation ✓ Data Input

Appendix 8: Minutes of Discussion

MINUTES OF MEETING
BETWEEN
MINISTRY OF TRANSPORT AND COMMUNICATIONS
OF THE KYRGYZ REPUBLIC
AND
JAPAN INTERNATIONAL COOPERATION AGENCY

ON THE FIRST JOINT COORDINATING COMMITTEE FOR

THE PROJECT FOR CAPACITY DEVELOPMENT

FOR ROAD DISASTER PREVENTION MANAGEMENT

IN THE KYRGYZ REPUBLIC

Bishkek April 27th, 2016

Kubanychbek Mamaev
Head
Investment Project Implementation Group
Ministry of Transport and Communications
of the Kyrgyz Republic

Kazuhiko Kikuchi
Chief Representative
Kyrgyz Republic Office
Japan International Cooperation Agency

Nurlan Kaiynbayev
Deputy Director
Road Maintenance Department
Ministry of Transport and Communications
of the Kyrgyz Republic

Yuzo Mizota
Leader of Expert Team
Japan International Cooperation Agency

The first Joint Coordinating Committee (hereinafter referred to as the "1st JCC") between the Ministry of Transport and Communications of the Kyrgyz Republic (MOTC), Japan International Cooperation Agency (JICA) and the related organizations on the "Project for Capacity Development for Road Disaster Prevention Management in the Kyrgyz Republic" (hereinafter referred to as the "Project") was held on April 27th, 2016 at "Sapphire" Conference Hall of "Golden Tulip" Hotel located at 37 Isanov Str., 2nd floor.

Discussions and exchange of opinions were made to confirm the Work Plan of the Project. The 1st JCC meeting was chaired by Mr. Kubanychbek Mamaev, Project Director of the Project under MOTC.

MOTC and JICA agreed on the details of the Work Plan of the Project and on the main points of the discussion as described in the Appendix 1. The list of participants of the meeting is provided in Appendix 2. Approved PDM, Version1 is attached as Appendix 3.

Appendix 1

MINUTES OF THE FIRST JOINT COORDINATION COMMITEE MEETING

Agenda	1. Presentation of Work Plan Report 2. Discussion

MEETING RESULTS

- Opening Remarks
- Presentation of the Work Plan
- Discussion
- Demonstration of database
- Baseline Survey
- Closing Remarks

1. Opening remarks

In the opening remarks, Chairman of the 1st JCC, Mr. Mamaev greeted the participants of the meeting and invited the representatives of the MOTC to participate actively in the work of the meeting and share their experience. He emphasized the importance of the Project in view of the necessity of taking active actions to mitigate the consequences of natural disasters such as snowdrifts, avalanches, etc. on the roads of the country.

2. Presentation of the Work Plan

Ms. Adbrashim kyzy, Specialist of the Road Assets Management Department (RAMS) under the Road Maintenance Department (RMD), made a presentation on the Project Work Plan, including current disaster condition in the target DEPs; outline of the Project with a detailed explanation of objectively verifiable indicators and activities for each output; JCC member list, JICA Expert Team members and Counterparts.

She informed of the Project implementation schedule, meteorological data observation on snow drifting and explained Project technical approach in detail including main issues and countermeasures, work contents of the relevant institutions, education program for inspection experts, standardization of countermeasure examination, sustainable database utilization, and draft priority evaluation criteria.

3. Contents of Discussion

Question No.1

During the discussion, Senior Officer of the International Department of the Ministry of Emergency Situations of the Kyrgyz Republic, Ms. Kalchakeyeva asked three questions on: (1-a) how the inspection of areas of the road prone to disasters will be conducted; (1-b) what kind of (electronic) database will be created based on the data collected during the inspection, and how will it be utilized; and (1-c) who will use the meteorological data from the observation poles, and whose balance these poles will be stored at afterwards.

Mr. Mizota, Leader of the JICA Expert Team, replied as follows:

Answer 1-a: MOTC staff with the assistance of the JICA Experts will prepare the Inspection Form, which is filled up directly by using the tablet. Japanese Experts will consider the technical issues at site with regards to training the local MOTC staff on how to input, process and transfer data from site to MOTC Head Office.

Answer 1-b: Data is automatically saved and uploaded at MOTC database in Excell base, because the installation of a special software may be difficult to maintain, while Excell base is simple and easy to use. However, it is not convenient for the preparation of presentations for high officials. Thus, it is planned to install specific software like "FileMaker" that uses the data from Excell. The database will be operated by the RAMS. RMD will prepare the Road Disaster Management Plan based on this database, and suggest the prioritization of actual repair works based on this Plan. PLUAD/UAD will conduct countermeasures as instructed by the RMD.

Answer 1-c: Meteorological observation will be conducted by BO UAD. Because the most serious snowdrift areas are located under BO UAD's management, and taking into consideration RMD's recommendations, it was decided that BO UAD will be responsible for the installation and storage of the poles, while the Japanese side will provide the observation equipment itself.

Question No.2

Ms. Kalchakeyeva asked to clarify if the meteorological observation poles will be installed at specific points and if the observations will be limited to snowdrifts.

In reply Mr. Mizota stated that the main purpose of the observation is to prepare the countermeasures against snow drifting. In particular, it is planned to install the poles at 2 locations, where the snowdrifts are regularly observed: a) at KM 125-129 near the Kolbaev Tunnel; and b) at KM 216-222 near the Ala-Bel pass of the Bishkek-Osh road.

Question No.3

Mr. Kudaibergenov, Head of the Preparation of Production and Acceptance of Work Division (PPAW), RMD addressed a question on the possibility of inclusion of organizations other than the three selected as targets for the Project, given that there are many other sections where serious natural disasters occur.

Mr. Mizota replied that in three years it is difficult to cover all of the areas prone to road disasters, which is why in May 2015 JICA and MOTC selected the most dangerous target areas in order to prepare the countermeasures for the target areas in the first place. Transfer of knowledge to the specialists of the target organizations will be conducted in accordance with the developed Education Program for Inspection Experts. Through the system of training the staff of target organizations, and further authorizing them to transfer the gained knowledge to other PLUAD/UADs, the Project Team hopes to cover all other areas and organizations not included in the Project.

Question No.4

During the discussion, Mr. Eshenaliev, Senior Project Officer of the ADB Kyrgyz Republic Resident Mission, addressed the following three questions:

(4-a) Noting the fairness of consideration of the human resources issue by the Project, ADB has an

experience of cooperation with the MoTC by organizing the trainings for the graduating (up to 10) students of the Kyrgyz State University of Construction, Transport and Architecture (KSUCTA). Would it be possible to consider the inclusion of students in the similar trainings planned within the framework of the Project with the condition that these students will join the MOTC, or possibly to allow these students to consider the topic of the Project as their graduation diploma work?

(4-b) Currently, MOTC is preparing the Draft Road Sector Development Strategy. Earlier there was a request made by JICA, and supported by the ADB, to include in the Road Strategy the countermeasures on road disaster prevention. We would like to request to include and check to what extent these measures have been considered in the Strategy.

(4-c) Recently there have been many disasters that have caused significant damage to the environment, especially on the Bishkek-Osh road, accidents with the involvement of fuel tankers and leakage of fuel into the river occurred. The question is addressed to both JICA and MOTC if the training on prevention and emergency measures to be taken in such cases are considered.

Mr. Mizota replied as follows:

Answer 4-a: Involvement of students is possible upon receipt of approval from Mr. Mamaev.

Answer 4-b: The Project Team is interested in cooperating with the ADB, but we cannot answer definitely at the moment.

Answer 4-c: Traffic safety is not considered in the Project. This issue can be addressed to JICA's Representative Ms. Maruyama.

Mr. Mamaev stressed the importance of the issues raised by Mr. Eshenaliev and replied as follows:

Answer 4-a: Possibility of inclusion of the students in the trainings will be discussed later with the JICA Expert Team.

Answer 4-b: Draft Road Sector Development Strategy was revised and sent to the Government of the Kyrgyz Republic. Let us confirm of the latest status. But definitely the disaster prevention and forecasting issues are included in the Strategy.

Ms. Maruyama replied with regards to the third question from Mr. Eshenaliev as follows:

Answer 4-c: JICA has many trainings in relevant sectors. For this year, no training is considered in Russian language on traffic safety. Later we may check on the available trainings in English.

Question No.5

Mr. Ibragimov, Head of DEP 959, asked which of the sections of the Osh-Sarytash-Irkeshtam road are considered for the installation of the meteorological observation poles.

Mr. Mizota replied that both poles will be installed at Bishkek-Osh road sections for collection of data solely on snowdrifts.

4. Demonstration of database

Operation mode of the database was demonstrated by the Project Coordinator/Road Disaster Inspection Assistant, Mr. Davletaliev. In particular, the process of data collection and input into the Inspection Form by using the tablet was demonstrated to the participants of the meeting. During the presentation, it was highlighted that this way of data collection and storage is very simple, timesaving and convenient while working with remote areas. It was also confirmed that for the Project, the database will be prepared in Russian language.

5. Baseline Survey

Mr. Davletaliev explained to the participants of the meeting how to fill in the questionnaire created to evaluate the effectiveness of the Project's implementation.

6. Closing remarks

In the closing remarks, Chief Representative of JICA, Mr. Kikuchi, thanked participants of the meeting, and noted that the subject Project is the third Project implemented by JICA jointly with the MOTC, and mentioned that the activities set forth in the Project Work Plan can only be successfully implemented jointly with the Partners, Japanese Experts, and related organizations. Mr. Kikuchi expressed his appreciation for the active participation of the Project partners in the realization of the Project not only for the improvement of the transport sector itself, but also for the improvement of the general safety and wellbeing of the Kyrgyz citizens. In conclusion, Mr. Kikuchi expressed his hope in that this Project will demonstrate an example of successful cooperation between the Governments of the Kyrgyz Republic and Japan.

Revision on Project Design Matrix (PDM):

The revised Project Design Matrix, Version 1, is shown in Appendix 3 and the revised contents are explained and agreed by both sides as follows:

Revision on Objectively Verifiable Indicators

Objectively Verifiable Indicators in the PDM	Revised Objectively Verifiable Indicators
2-1. Road disaster hazard sections are determined with their feature and classification by PLUADs/UADs and DEPs by [month, year].	2-1. Road disaster hazard sections are determined with their feature and classification by target PLUADs/UADs and DEPs by [May 2017].
2-2. Inspection and Evaluation Manual for Road Disaster Prevention is prepared by RMD by [month, year].	2-2. Inspection and Evaluation Manual for Road Disaster Prevention is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019].
2-3. Countermeasures Manual for Standard Disaster Prevention is prepared by RMD by [month, year].	2-3. Countermeasures Manual for Road Disaster Prevention is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019].
3-1. A database format for information on road disaster prevention management planning (incl. costing for countermeasures) is prepared by RMD by [month, year].	3-1. A database format for information on road disaster prevention management planning (incl. costing for countermeasures) is prepared by RMD by [August 2016].

3-2. Practically usable Manual for Data Collection and Input is prepared by RMD by [month, year].	3-2. Practically usable Manual for Data Collection and Input is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019].
3-3. Data collected and input by PLUADs/UADs and DEPs are integrated to the database for prioritizing countermeasures and certified by RMD by [month, year].	3-3. Data collected and input by target PLUADs/UADs and DEPs are integrated to the database for prioritizing countermeasures and certified by RMD by [May 2017].
3-5. Database Management System that contains information necessary for road disaster prevention management is developed for preparing budget by RMD by [month, year].	3-5. Database Management System that contains information necessary for road disaster prevention management in the project area is developed for preparing budget by RMD by [May 2017].
3-6. Practically usable Operations Manual for Database Management System is prepared by RMD by [month, year].	3-6. Practically usable Manual for Database Operation is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019].
4-1. Nation-wide management criteria for road disaster prevention is developed by RMD by [month, year].	4-1. Nation-wide management criteria for road disaster prevention is developed by RMD by [May 2017].
4-2. Short-Term Road Disaster Prevention Management Plan (urgent response plan) with cost estimation for road disaster prevention management is prepared by RMD by [month, year].	4-2. Short-Term Road Disaster Prevention Management Plan (urgent response plan) with cost estimation for road disaster prevention management of the target area is prepared by RMD by [September 2017 and September 2018].
4-3. Preparation Manual for Short-Term and Medium-Term Road Disaster Preventnion Management Plans is prepared by [RMD] by [month, year].	4-3. Preparation Manual for Short-Term and Medium-Term Road Disaster Prevention Management Plans is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019].

Two trainings in Japan are scheduled to be conducted in October 2017 and October 2018.

LIST OF PARTICIPANTS OF THE 1st JOINT COORDINATING COMMITTEE (JCC) MEETING

№	Name	Position	Organization
		JCC members	
1.	Mr. Mamaev Kubanychbek	Director	Investment Projects Implementation Group (IPIG), MOTC
2.	Mr. Seiitbekov Istanbek	Head of section	Road Assets Management Section, RMD
3.	Mr. Kudaibergenov K.	Head of division	Preparation of Production and Acceptance of Work Division (PPAW), RMD
4.	Mr. Kikuchi Kazuhiko	Chief Representative	Japan International Cooperation Agency (JICA) in Kyrgyz Republic
5.	Ms. Maruyama Hitomi	Representative	Japan International Cooperation Agency (JICA) in Kyrgyz Republic
		JCC Observers	
1.	Ms. Sherimbekova Akmaral	Leading Specialist	Preparation of Production and Acceptance of Work Division (PPAW), RMD
2.	Ms. Milovatskaya Nina	Head of division	Road Management Department (RMND), MOTC
3.	Mr. Musabaev Akyl	Chief Specialist	Preparation of Production and Acceptance of Work Division (PPAW), RMD
4.	Mr. Tanaka Takuya	Road Administrative Adviser	Road management, JICA
5.	Ms. Abdrazakova Sabira	Assistant of Project	Road management, JICA
6.	Ms. Suyunalieva Guljan	Program Officer	JICA Kyrgyz Office
7.	Mr. Abyshov Tursunbek	Leading Specialist	PLUAD 1
8.	Ms. Abdyrashim kyzy Aigerim	Specialist	Road Asset Management Section, RMD
9.	Mr. Eshenaliev Mirdin	Senior Project Officer	Asian Development Bank
10.	Ms. Toktorbaeva Sh.	Head	International Department, MES
11.	Ms. Kalchakeeva G.	Senior Officer	International Department, MES
12.	Mr Toktomushev B.	Chief Specialist	UAD BO
13.	Mr Ajygulov Imanbai	Engineer	DEP-23, UAD BO
14.	Mr Orozova Bubukadicha	Head of division	Production Technical division DEP-23, UAD BO
15.	Mr Tuleeva Gulzada	Chief specialist	RMD
16.	Mr Adyl uulu Mederbek	Leading specialist	DEP-959, UAD OSI
17.	Mr Temirov Turdubek	Chief Specialist	UAD OSI
18.	Mr Ibragimov Ganyjan	Head	DEP-959, UAD OSI
19.	Mr Esenbaev Sagynbek	Road master	DEP-960, UAD OSI
20.	Mr Junusov Toktogul	Site engineer	UAD OSI
21.	Mr Tajibai uulu Usonbai	Leading specialist	DEP-37, UAD OSI
22.	Mr Asanaiev Ruslan	Leading specialist	Production Technical division,
23.	Mr Jalilov Arstanbek	Head of ACP	Asphalt-concrete plant of DEP-26. UAD BO
24.	Mr Akmatov Salmoorbek	Chief specialist	DEP-45, UAD OSI
25.	Mr Alibaev S.	Chief specialist	DEP-31, PLUAD 6
26.	Mr Salimov S.	Chief engineer	DEP-51, PLUAD 6
27.	Mr Alikeev Anvar	Head of RRP	Road repair point of DEP-50, PLUAD 6
28.	Mr Berdikulov A.	Head of division	Production-technical division, PLUAD 6

29.	Mr Makeev A.	Head of division	Production-technical division of DEP-9, PLUAD 6
30.	Mr Eraliev Nurlan	Chief Specialist	Road Asset Management Section, RMD
31.	Mr Abdrahmanov M.	Head of RRP	Road repairing point of DEP-9, UAD BO
32.	Mr Mamadjanov Ulan	Chief Specialist	DEP-21, UAD OSI
33.	Mr Muratov Alisher	Chief Specialist	RMD
34.	Mr Abykulov	Leading specialist	RMD
35.	Mr Abyshov Tursunbek	Leading specialist	PLUAD 1
36.	Mr Ysyrayilov J.	Chief engineer	DEP-30, UAD BO
37.	Mr Kenjetaev M.	Engineer	DEP-30, UAD BO
38.	Mr Isakov Erlan	Leading specialist	UAD BO
39.	Mr Kuluev Nurbek	Estimator-engineer	UAD BO
40.	Mr MIzota Yuzo	Team Leader	Project for Capacity Development for Road Disaster Prevention Management in the Kyrgyz Republic
41.	Mr Sawada Kentaro	Expert	Project for Capacity Development for Road Disaster Prevention Management in the Kyrgyz Republic
42.	Mr Davletaliev Ruslan	Coordinator	Project for Capacity Development for Road Disaster Prevention Management in the Kyrgyz Republic

Project Design Matrix

Project Title: The Project for Capacity Development for Road Disaster Prevention Management in Kyrgyz Republic

Version 1

Implementing Agency: Ministry of Transport and Communications (MOTC)

Dated 27,04,2016

Target Group: Staff members of MOTC's HQ, RMD, PLUAD/UAD, and DEP that are responsible for selected disaster prone areas

Period of Project: April 2016 - May 2019 (3 years)

Project Site: MOTC's offices and selected disaster prone areas

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption	Achievement	Remarks
Overall Goal					
Safety of the road traffic at the selected disaster prone areas is improved.	1. In reference to the Project experiences and Manuals produced by the Project, Short-Term Road Disaster Prevention Management Plan continues to be prepared by RMD of MOTC every year	1. Short-Term Road Disaster Prevention Management Plan(s)			
	2. Road disaster prevention work is implemented based on the Short-Term Road Disaster Prevention Management Plan prepared by RMD of MOTC	2. Implementation record of Short-Term Road Disaster Prevention Management Plan(s)			
Project Purpose					
The capacity of MOTC's relevant units in the Project (HQ, RMD, target PLUADs/UADs, and DEPs) is enhanced for management of road disaster prevention (including road disaster inspection, preparing of road disaster prevention management plan and planning of budget for road disaster prevention).	1. The management cycle (inspection, evaluation, selecting countermeasures and planning) for road disaster prevention, is implemented by MOTC's relevant units in the Project (HQ, RMD, target PLUADs/UADs, and DEPs).	1. Project Report, Training Report	* The Government of the Kyrgyz Republic allocates necessary budget and personnel for MOTC to continue activities		
	2. Draft budget document with breakdowns for road disaster prevention is prepared by RMD of MOTC by [September 2017 and September 2018].	2. MOTC's budget document for road disaster prevention	* The level and frequency of natural calamities that require MOTC's attention and countermeasures do not radically exceed what are premised in the Short-Term Road Disaster Prevention Management Plan		

	3. Data from the newly developed Road Disaster Database Management System is utilised for formulating budget by RMD for road disaster prevention by [September 2017 and September 2018].	3. Analysis of the quality of data for road disaster prevention, project report			
Outputs					
1. Responsibilities of MOTC on road disaster prevention, including specific duties to be performed by relevant units (HQ, RMD, PLUADs/UADs, DEPs) with necessary staffing in each, become clear.	1-1. Roles of MOTC HQ, RMD, target PLUADs/UADs and DEPs for road disaster prevention management are specified by MOTC.	1-1. MOTC documents for organization, project report	* Trained counterparts do not resign, or are transferred, too frequently. * Policies that pertain to road safety do not change radically.		
2. Capacity of target PLUADs/UADs and DEPs for inspection and analysis of road disaster is enhanced.	2-1. Road disaster hazard sections are determined with their feature and classification by target PLUADs/UADs and DEPs by [May 2017].	2-1. Project report, Training report			
	2-2. Inspection and Evaluation Manual for Road Disaster Prevention is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019].	2-1. Inspection Manual			
	2-3. Countermeasures Manual for Road Disaster Prevention is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019].	2-3. Countermeasures Manual			
	2-4. All the staff in target PLUADs/UADs and DEPs trained for inspection/evaluation and standard disaster prevention countermeasures based on the manuals pass the final exam prepared by the Project.	2-4. Pass rate of the final exam			

3 Capacity of RMD to operationalize Database Management System for road disaster prevention is developed.	3-1. A database format for information on road disaster prevention management planning (incl. costing for countermeasures) is prepared by RMD by [August 2016].	3-1. Database format				
	3-2. Practically usable Manual for Data Collection and Input is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019].	3-2. Manual for Data Collection and Input				
	3-3. Data collected and input by target PLUADs/UADs and DEPs are integrated to the database for prioritizing countermeasures and certified by RMD by [May 2017].	3-3. Data accumulation status				
	3-4. Staff of target PLUAD/UAD and DEPs trained for data collection and input based on the Manual pass the exam that evaluates their mastery in filling required information in database format.	3-4. Pass rate of the exam				
	3-5. Database Management System that contains information necessary for road disaster prevention management in the project area is developed for preparing budget by RMD by [May 2017].	3-5. Track record of periodical update of the Database, analysis of data, project report				
	3-6. Practically usable Manual for Database Operation is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019].	3-6. Databased operation manual				
4. Capacity of RMD for preparing road disaster prevention management plans of the target areas is enhanced.	4-1. Nation-wide management criteria for road disaster prevention is developed by RMD by [May 2017].	4-1. Note on criteria				

	4-2. Short-Term Road Disaster Prevention Management Plan (urgent response plan) with cost estimation for road disaster prevention management of the target area is prepared by RMD by [September 2017 and September 2018].	4-2. A short-term plan for road disaster prevention			
	4-3. Preparation Manual for Short-Term and Medium-Term Road Disaster Preventnion Management Plans is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019].	4-3. Preparation Manual for Short-Term Plans			

Activities	Inputs		Important Assumption
	The Japanese Side	The Kyrgyz side Side	
1-1. To review the present work sharing among relevant organizations. 1-2. To identify the most suitable MOTC section to each take charge of collection, input and analysis of data in the road disaster prevention Database Management System. 1-3. To identify the most suitable MOTC section to each take charge of inspection, evaluation, plan preparation, and implementation of road disaster prevention. 1-4. To draft the Decree on assigning responsibilities to relevant organization. 2-1.To analyze existing condition (including compilation of data inventory) on the slope and snow hazards causing road disaster by RMD and PLUADs/UADs, DEPs. 2-2. To draft, review and finalize an Inspection Manual indicating check points for road disaster prevention by RMD. 2-3. To practice routine, periodic and emergency inspections and to conduct condition rating based on inspection manual by RMD and PLUADs/UADs, DEPs. 2-4. To discuss countermeasures for road disaster prevention by RMD, PLUADs/UADs and DEPs. 2-5. To draft, review and finalize a Countermeasures Manual for road disaster prevention including cost estimation to prepare budget plan by RMD, PLUADs/UADs and DEPs.	1. Experts 1) Team Leader / Road Maintenance Expert 2) Disaster Prevention Countermeasures Expert 3) Slope Disaster Prevention Expert 4) Snow Disaster Prevention Expert 5) Debris Flow Disaster Prevention / River Engineering Expert 6) Disaster Prevention Facilities Expert 7) Geotechnical Expert 8) Database Expert 9) Cost Estimator /Construction Planner 10) Coordinator / Road Disaster Inspection Assistant 11) Local Coordinator 2. Equipment 1) Database Management System Program and Computer 2) Inspection/Observation Equipment (e.g. wind velocity and wind direction measurement equipment) 3. Trainings in Japan / third country 4. Inputs other than indicated here will be determined through mutual consultation between JICA and MOTC during the implementation of the Project, as necessary.	1. Counterparts for the project 1) Project Director: 2) Project Manager: 3) Counterparts: 2. Preparation Works for the installation of the equipment 3. Office for the Project with office furniture and utilities such as internet connectivity, telephone line, electricity, etc. 4. Running expenses necessary for the implementation of the Project	

2-6. To practice selecting countermeasures of road disaster prevention including cost estimation based on Countermeasures Manual by RMD and PLUADs/UADs, DEPs. 3-1. To create a Database Management System of the slope and snow hazards along the international and national roads by RMD. 3-2. To establish the procedure for data input and reporting by RMD. 3-3. To draft, review and finalize a manual for data input and database operation by RMD. 3-4. To implement trainings for staff members of RMD and PLUADs/UADs, DEPs for data collection and input, and database operation. 4-1. To establish priority criteria for road disaster prevention by RMD. 4-2. To implement training for staff of R MD for preparing a Short- Term plan for road disaster preventi on as a basic document for annual budget request 4-3. To prepare Short-Term Road Disaster Prevention Management Plan. 4-4. To implement training for staff of RMD for preparing Medium-Term Road Disaster Prevention Management Plan. 4-5. To prepare Preparation Manual for Short-Term and Medium-Term Road Disaster Prevention Management Plans by staff members of RMD.		

4-6. By referring to the Preparation Manual, to conduct trial preparation of Short-Term & Medium-Term Road Disaster Prevention Management Plans			**Pre-Conditions** * MOTC satisfies counterpart requirements for the Project * The Kyrgyz Republic is continuously safe enough for project implementation. **<Issues and countermesures>**

MINUTES OF MEETING
BETWEEN
MINISTRY OF TRANSPORT AND ROADS
OF THE KYRGYZ REPUBLIC
AND
JAPAN INTERNATIONAL COOPERATION AGENCY

ON THE SECOND JOINT COORDINATING COMMITTEE FOR

THE PROJECT FOR CAPACITY DEVELOPMENT

FOR ROAD DISASTER PREVENTION MANAGEMENT

IN THE KYRGYZ REPUBLIC

Bishkek October 13th, 2016

Kubanychbek Mamaev
Head
Investment Project Implementation Group
Ministry of Transport and Roads of the
Kyrgyz Republic

Kazuhiko Kikuchi
Chief Representative
Kyrgyz Republic Office
Japan International Cooperation Agency

Shabdanbek Imankulov
Deputy Director
Road Maintenance Department
Ministry of Transport and Roads of the
Kyrgyz Republic

for
Yuzo Mizota
Leader of Expert Team
Japan International Cooperation Agency

The second Joint Coordinating Committee (hereinafter referred to as the "2nd JCC") between the Ministry of Transport and Roads of the Kyrgyz Republic (MOTR), Japan International Cooperation Agency (JICA) and the related organizations on the "Project for Capacity Development for Road Disaster Prevention Management in the Kyrgyz Republic" (hereinafter referred to as the "Project") was held on October 13th, 2016 at "Sapphire" Conference Hall of "Golden Tulip" Hotel located at 37 Isanov Str., 2nd floor.

Discussions and exchange of opinions were made on the issues listed in the Agenda. The 2nd JCC meeting was chaired by Mr. Kubanychbek Mamaev, Project Director of the Project under MOTR.

MOTR and JICA agreed on the details of the Project work and on the main points of the discussion as described in the Appendix 1. The list of participants of the meeting is provided in Appendix 2. Approved PDM, Version 2 is attached as Appendix 3, which shows the change of implementation agency name from the Ministry of Transport and Communications (MOTC) to MOTR and the additional JICA experts of snow disaster prevention expert (3), with red color letter.

MINUTES OF THE SECOND JOINT COORDINATION COMMITEE MEETING

Agenda	1. Presentations 2. Discussion

MEETING RESULTS

- Opening Remarks
- Presentation on the Long list and Short list for possible road disaster countermeasures
- Presentation on the implementation of meteorological observation
- Demonstration of database
- Discussion
- Closing Remarks

- **Opening remarks**

In the opening remarks, Chairman of the 2nd JCC, Mr. Mamayev greeted the participants of the meeting and emphasized that preliminary results of the considerable work completed since the beginning of the Project will be presented during the meeting.

- **Presentations**

Ms. Adbrashim kyzy, Specialist of the Road Assets Management Department (RAMS) under the Road Maintenance Department (RMD), made a presentation on the current achievement status of the Project outcomes, amendments in the Project Design Matrix (PDM) including the extent of planned and actual achievement.

Ms. Sherimbekova, Leading Specialist of the RMD, presented samples of the Long and Short Lists for slope and snow disaster, explaining the contents of each list with the estimated cost of the proposed countermeasures. She also informed on some of the proposed countermeasures against rockfalls, debris flows, riverbank erosion, avalanche and snowdrift; and on the monitoring of the activity of landslide.

Mr. Jeldenov, Leading Specialist of RAMS, RMD made a presentation on the Non-structural countermeasures against road disaster, explaining the List of non-structural measures, sign-board alert for debris flow area, electrical sign board and a sample of the hazard map. Stressing the importance of road disaster awareness and simplified access to the disaster safety information for the road users, he specified that measures need to be taken to inform the road users through the internet and social networks (for example, by creating pages and groups at Facebook), because nowadays a lot of road users have access to mobile internet.

Mr. Kuluev, Leading Specialist of the Quality Control and Production Department, General Directorate of the Bishkek-Osh road, made a presentation on the implementation of meteorological observation including schedule, current implementation status, locations at the Too-Ashu and Ala-Bel passes, and installation of equipment. He also mentioned that progress of some of the activities are ahead of implementation schedule, and it is planned to start the meteorological observations in November 2016.

- **Demonstration of database**

Operation mode of the database was demonstrated by the Project Coordinator/Road Disaster Inspection Assistant, Mr. Konstantin Diu. In particular, the process of data collection and input into the Inspection Form by using the tablet was demonstrated to the participants of the meeting. Mr. Diu explained the purpose of the database, and informed that by the end of October collection of data from all of the target DEPs will be completed, and the installation of server at the RMD/MOTR will start. He also stated that the DEP staff, who participated in the seminars conducted in Bishkek and Osh cities on the database, could easily understand its operation mode; and that their comments have been taken into consideration to improve the database.

- **Contents of Discussion**

In reply to JICA's Representative, Ms. Maruyama's inquiry on the possibility of collaboration with the Ministry of Emergencies (MES) on distributing the hazard map via Internet (given that the MOTR has its website, and MES has a system to distribute disaster information), Mr. Jeldenov stated that MOTR directly cooperates with MES on the Bishkek-Osh road by jointly conducting artificial avalanche during winter season. He mentioned that a Plan of distribution of disaster information through the social networks will be developed after the hazard map is finalized and simplified for utilization by the users.

Ms. Milovatskaya, Road Management Department, MOTR, noting that a considerable work has been implemented since the beginning of the Project, addressed a question on how actively the MOTR staff has been involved in the project work. Project Team Leader, Mr. Mizota replied that 20-30 Counterparts are already trained on the preparation method of the Short and Long Lists, and expressed his hope in that these trained Master Trainers will then further transfer the knowledge to the remaining staff of MOTR on how to prepare road disaster prevention program including the Long/Short Lists for countermeasures.

In reply to JICA's Representative, Ms. Maruyama's inquiry on whether the MOTR plans to make this year a budgetary request on road disaster prevention for the next fiscal year, Ms. Sherimbekova informed that this year (given the increase in the expenses for disaster response due to the heavy rainfalls) RMD plans for 2017 to introduce a separate budgetary item on disaster prevention; and select one large-scale disaster section from each of the UAD/PLUAD for inclusion in the annual budget plan for the year 2017.

Mr. Mizota complemented that the ultimate goal of the Project is to prepare the budget for the countermeasures for road disaster prevention by recommending an adequate method suitable for this country to prepare the countermeasures. After that, it may become possible to request assistance from donor organizations, including the Japanese Government for the construction of necessary structures.

- **Closing remarks**

In the closing remarks, Chief Representative of JICA, Mr. Kikuchi, thanked participants of the meeting, and emphasized the importance of road disaster prevention for safety, and informed of other Projects planned by JICA aiming on road disaster prevention management. In conclusion, Mr. Kikuchi stated his appreciation of the Project's progress so far, and expressed his hope in that the Project will remain successful in the achievement of its goals.

СПИСОК УЧАСТНИКОВ ВСТРЕЧИ

LIST OF PARTICIPANTS

№	ФИО NAME	ДОЛЖНОСТЬ STATUS	ОРГАНИЗАЦИЯ ORGANIZATION
1	Seitbekov Istanbek	Head of RAMS	RAMS, RMD, MOTR KR
2	Mamaev K.A	IPIG Director	IPIG, MOTR KR
3	Milovatskaya N.A.	Head of Section	RMND, MOTR KR
4	Imankulov Shabdanbek	Deputy Director	RMD MOTR KR
5	Sherimbekova A.K	Leading specialist	RMD MOTR KR
6	Abdyrashym kyzy Aigerim	Specialist	RAMS,RMD MOTR KR
7	Jeldenov A.K	Leading specialist	RAMS, RMD MOTR KR
8	Kuluev N.	Leading specialist	GDAD Bishkek Osh
9	Rustanbekova Aijan	MES officer of International Cooperation Department	MES KR
10	Kikuchi Kazuhiko	Chief Representative	JICA
11	Moldosheva Nazgul	Development Programs Specialist	JICA
12	Tanaka Takuya	Expert	JICA
13	Hitomi Maruyama	Representative	JICA
14	Abdirahmanov T.	Chief, Production and Technical department	DEP 41
15	Kegenchiev T.A	Chief specialist	GDAD Bishkek Osh
16	Shalpykov Kaldarbek	Chief of Quality Control and Production department	GDAD Bishkek Osh
17	Isakov Erlan	Leading Specialist	GDAD Bishkek Osh
18	Aralbaev Zamirbek	Chief engineer	DEP 957
19	Bektemirov N.K	Chief engineer	DEP 32
20	Alimjanov O.A	Chief	DEP 34
21	Askarbek uulu Kurmanbek	Chief engineer	DEP 955
22	Abdrazakova Sabira	Assistant to Road Administration Advisor	JICA
23	Chengelov T.	Chief engineer	DEP 39
24	Abyshov T	Chief specialist PLUAD 1	PLUAD 1

Appendix 3

Project Design Matrix

Project Title: The Project for Capacity Development for Road Disaster Prevention Management in Kyrgyz Republic

Version 2

Dated 13 October, 2016

Implementing Agency: Ministry of Transport and Roads (MOTR)

Target Group: Staff members of MOTR's HQ, RMD, PLUAD/UAD, and DEP that are responsible for selected disaster prone areas

Period of Project: April 2016 - May 2019 (3 years)

Project Site: MOTR's offices and selected disaster prone areas

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption	Achievement	Remarks
Overall Goal					
Safety of the road traffic at the selected disaster prone areas is improved.	1. In reference to the Project experiences and Manuals produced by the Project, Short-Term Road Disaster Prevention Management Plan continues to be prepared by RMD of MOTR every year	1. Short-Term Road Disaster Prevention Management Plan(s)			
	2. Road disaster prevention work is implemented based on the Short-Term Road Disaster Prevention Management Plan prepared by RMD of MOTR	2. Implementation record of Short-Term Road Disaster Prevention Management Plan(s)			
Project Purpose					
The capacity of MOTR's relevant units in the Project (HQ, RMD, target PLUADs/UADs, and DEPs) is enhanced for management of road disaster prevention (including road disaster inspection, preparing of road disaster prevention management plan and planning of budget for road disaster prevention).	1. The management cycle (inspection, evaluation, selecting countermeasures and planning) for road disaster prevention, is implemented by MOTR's relevant units in the Project (HQ, RMD, target PLUADs/UADs, and DEPs).	1. Project Report, Training Report	* The Government of the Kyrgyz Republic allocates necessary budget and personnel for MOTR to continue activities		
	2. Draft budget document with breakdowns for road disaster prevention is prepared by RMD of MOTR by [September 2017 and September 2018].	2. MOTR's budget document for road disaster prevention	* The level and frequency of natural calamities that require MOTR's attention and countermeasures do not radically exceed what are premised in the Short-Term Road Disaster Prevention Management Plan		

	3. Data from the newly developed Road Disaster Database Management System is utilised for formulating budget by RMD for road disaster prevention by [September 2017 and September 2018].	3. Analysis of the quality of data for road disaster prevention, project report			
Outputs					
1. Responsibilities of MOTR on road disaster prevention, including specific duties to be performed by relevant units (HQ, RMD, PLUADs/UADs, DEPs) with necessary staffing in each, become clear.	1-1. Roles of MOTR HQ, RMD, target PLUADs/UADs and DEPs for road disaster prevention management are specified by MOTR.	1-1. MOTR documents for organization, project report	* Trained counterparts do not resign, or are transferred, too frequently. * Policies that pertain to road safety do not change radically.		
2. Capacity of target PLUADs/UADs and DEPs for inspection and analysis of road disaster is enhanced.	2-1. Road disaster hazard sections are determined with their feature and classification by target PLUADs/UADs and DEPs by [May 2017].	2-1. Project report, Training report			
	2-2. Inspection and Evaluation Manual for Road Disaster Prevention is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019].	2-1. Inspection Manual			
	2-3. Countermeasures Manual for Road Disaster Prevention is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019].	2-3. Countermeasures Manual			
	2-4. All the staff in target PLUADs/UADs and DEPs trained for inspection/evaluation and standard disaster prevention countermeasures based on the manuals pass the final exam prepared by the Project.	2-4. Pass rate of the final exam			

3 Capacity of RMD to operationalize Database Management System for road disaster prevention is developed.	3-1. A database format for information on road disaster prevention management planning (incl. costing for countermeasures) is prepared by RMD by [August 2016].	3-1. Database format				
	3-2. Practically usable Manual for Data Collection and Input is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019].	3-2. Manual for Data Collection and Input				
	3-3. Data collected and input by target PLUADs/UADs and DEPs are integrated to the database for prioritizing countermeasures and certified by RMD by [May 2017].	3-3. Data accumulation status				
	3-4. Staff of target PLUAD/UAD and DEPs trained for data collection and input based on the Manual pass the exam that evaluates their mastery in filling required information in database format.	3-4. Pass rate of the exam				
	3-5. Database Management System that contains information necessary for road disaster prevention management in the project area is developed for preparing budget by RMD by [May 2017].	3-5. Track record of periodical update of the Database, analysis of data, project report				
	3-6. Practically usable Manual for Database Operation is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019].	3-6. Databased operation manual				
4. Capacity of RMD for preparing road disaster prevention management plans of the target areas is enhanced.	4-1. Nation-wide management criteria for road disaster prevention is developed by RMD by [May 2017].	4-1. Note on criteria				

	4-2. Short-Term Road Disaster Prevention Management Plan (urgent response plan) with cost estimation for road disaster prevention management of the target area is prepared by RMD by [September 2017 and September 2018]. 4-3. Preparation Manual for Short-Term and Medium-Term Road Disaster Preventinion Management Plans is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019].	4-2. A short-term plan for road disaster prevention 4-3. Preparation Manual for Short-Term Plans				

Activities	Inputs		Important Assumption
	The Japanese Side	The Kyrgyz side Side	
1-1. To review the present work sharing among relevant organizations. 1-2. To identify the most suitable MOTR section to each take charge of collection, input and analysis of data in the road disaster prevention Database Management System. 1-3. To identify the most suitable MOTR section to each take charge of inspection, evaluation, plan preparation, and implementation of road disaster prevention. 1-4. To draft the Decree on assigning responsibilities to relevant organization. 2-1.To analyze existing condition (including compilation of data inventory and) on the slope and snow hazards causing road disaster by RMD and PLUADs/UADs, DEPs. 2-2. To draft, review and finalize an Inspection Manual indicating check points for road disaster prevention by RMD. 2-3. To practice routine, periodic and emergency inspections and to conduct condition rating based on inspection manual by RMD and PLUADs/UADs, DEPs. 2-4. To discuss countermeasures for road disaster prevention by RMD, PLUADs/UADs and DEPs. 2-5. To draft, review and finalize a Countermeasures Manual for road disaster prevention including cost estimation to prepare budget plan by RMD, PLUADs/UADs and DEPs.	1. Experts 1) Team Leader / Road Maintenance Expert 2) Deputy Team Leader/Debris Flow Disaster Prevention/River Engineering Expert 3) Snow Disaster Prevention Expert (1) 4) Snow Disaster Prevention Expert (2) 5) Snow Disaster Prevention Expert (3) 6) Slope Disaster Prevention Expert 7) Database Expert 8) Disaster Prevention Countermeasures Expert 9) Geological Expert 10) Disaster Prevention Facilities Expert/Cost Estimator/ Construction Planner 11) Coordinator / Road Disaster Inspection Assistant 2. Equipment 1) Database Management System Program and Computer 2) Inspection/Observation Equipment (e.g. wind velocity and wind direction measurement equipment) 3. Trainings in Japan / third country 4. Inputs other than indicated here will be determined through mutual consultation between JICA and MOTR during the implementation of the Project, as necessary.	1. Counterparts for the project 1) Project Director: 2) Project Manager: 3) Counterparts: 2. Preparation Works for the installation of the equipment 3. Office for the Project with office furniture and utilities such as internet connectivity, telephone line, electricity, etc. 4. Running expenses necessary for the implementation of the Project	

2-6. To practice selecting countermeasures of road disaster prevention including cost estimation based on Countermeasures Manual by RMD and PLUADs/UADs, DEPs. 3-1. To create a Database Management System of the slope and snow hazards along the international and national roads by RMD. 3-2. To establish the procedure for data input and reporting by RMD. 3-3. To draft, review and finalize a manual for data input and database operation by RMD. 3-4. To implement trainings for staff members of RMD and PLUADs/UADs, DEPs for data collection and input, and database operation. 4-1. To establish priority criteria for road disaster prevention by RMD. 4-2. To implement training for staff of R MD for preparing a Short-Term plan for road disaster preventi on as a basic document for annual budget request 4-3. To prepare Short-Term Road Disaster Prevention Management Plan. 4-4. To implement training for staff of RMD for preparing Medium-Term Road Disaster Prevention Management Plan. 4-5. To prepare Preparation Manual for Short-Term and Medium-Term Road Disaster Prevention Management Plans by staff members of RMD.			

4-6. By referring to the Preparation Manual, to conduct trial preparation of Short-Term & Medium-Term Road Disaster Prevention Management Plans			Pre-Conditions * MOTR satisfies counterpart requirements for the Project * The Kyrgyz Republic is continuously safe enough for project implementation. ↓ <Issues and countermesures>

MINUTES OF MEETING
BETWEEN
MINISTRY OF TRANSPORT AND ROADS
OF THE KYRGYZ REPUBLIC
AND
JAPAN INTERNATIONAL COOPERATION AGENCY

ON THE THIRD JOINT COORDINATING COMMITTEE FOR

THE PROJECT FOR CAPACITY DEVELOPMENT

FOR ROAD DISASTER PREVENTION MANAGEMENT

IN THE KYRGYZ REPUBLIC

Bishkek April 6th, 2017

Kubanychbek Mamaev
Bridge and Structures Engineer
Design Institute "Kyrgyzdortransproject"

Kazuhiko Kikuchi
Chief Representative
Kyrgyz Republic Office
Japan International Cooperation Agency

Arstanbek Ibraev
Director
Road Maintenance Department
Ministry of Transport and Roads of the
Kyrgyz Republic

for

Yuzo Mizota
Leader of Expert Team
Japan International Cooperation Agency

The third Joint Coordinating Committee (hereinafter referred to as the "3rd JCC") between the Ministry of Transport and Roads of the Kyrgyz Republic (MOTR), Japan International Cooperation Agency (JICA) and the related organizations on the "Project for Capacity Development for Road Disaster Prevention Management in the Kyrgyz Republic" (hereinafter referred to as the "Project") was held on April 6th, 2017 at Conference Room on the 6th floor of the MOTR, located at 42 Isanov street.

Discussions and exchange of opinions were made on the issues listed in the Agenda. The 3rd JCC meeting was chaired by Mr. Djumash Sodombaev, Deputy Director on Production, RMD, MOTR.

MOTR and JICA agreed on the details of the Project work and on the main points of the discussion as described in the Appendix 1. The list of participants of the meeting is provided in Appendix 2. Approved PDM, Version 3 is attached as Appendix 3, which shows amendments in red color letter in the Activities section.

Appendix 1

MINUTES OF THE THIRD JOINT COORDINATION COMMITEE MEETING

Agenda	1. Presentations 2. Discussion

MEETING RESULTS

- Opening Remarks
- Presentation on the achievement of the Project
- Presentation on the Database Seminar
- Discussion
- Closing Remarks

1. Opening remarks

In the opening remarks, Deputy Director of the Road Maintenance Department (RMD), Mr. Sodombaev greeted the participants of the meeting on behalf of the RMD management. He emphasized the importance of the activities completed under the Project in view of the recent disaster situation on the roads of the country, especially on the Bishkek-Osh road where four workers of the MoTR were killed by the avalanche fall.

2. Presentation on the achievement of the Project

Ms. Adbrashym kyzy, Specialist of the Assets Management Department (AMS) under the RMD, briefly explained outline of the Project, and made a presentation on the achievement of the Project, amendment of the Project Design Matrix (PDM), and preparation of the manuals.

3. Presentation on the Database seminar

Mr. Pavlenko, Staff of the Project Team, summarized the schedule and activities of the seminars on the database system organized for the university students and instructors. He informed that the students of the Kyrgyz State University of Construction, Transport and Architecture (KSUCTA) and Bishkek Automobile Road College (BARC) participated in the lectures, and were able to re-create a simplified version of the database during the final exam taken to test the level of gained knowledge. Mr. Pavlenko also complemented that five instructors from the KSUCTA also took part in the lectures to further share knowledge by including seminar materials in the study process of the next academic year.

4. Contents of Discussion

During the discussion, Mr. Sodombaev addressed a question regarding the applicability of the manuals in practice to prevent natural disasters believing that these manuals were developed in consideration of conditions at site.

Mr. Mizota, Leader of the JICA Expert Team, replied that the manuals were prepared by the MOTR staff jointly with the JICA Expert Team. He expressed his hope in that the MOTR will utilize these manuals and amend as necessary.

Mr. Sodombaev continued stating that currently insufficient attention is being paid to the disaster prevention work due to the shortage of budget. He mentioned that disaster prevention works

currently being implemented under the MOTR include predominantly preventive works, while no active type of works (which consider construction of costly facilities such as snow shed, tunnel, etc.) can be afforded at the moment. In this regard, Mr. Sodombaev stated that the manuals need to be utilized in a way allowing to invite more investments. He also expressed his hope in that the construction of the snow shed at KM246 of the Bishkek-Osh road planned with the assistance from JICA, can be expedited, as three million cubic meters of snow are accumulated at the moment on top of the mountains at this section.

Mr. Mizota replied by stating that in view of the limited budget, the Short-term and Medium-Term Budget Plans were prepared jointly by the Project Team and the RMD staff in order to enable the RMD to consider budget allocation (after discussion with the Ministry of Finance (MOF)) based on the prioritization of countermeasures. He stressed the importance of making efforts for RMD to prepare the budget plan. Also, Mr. Mizota complemented that the Short-term Plan was prepared for the bridges, too, whereby out of the proposed 10 bridges 2 were selected for inclusion in the Plan.

Ms. Maruyama, JICA's Representative, addressed a question to the RMD on the timeframe of the MOTR's plan to request budget from the MOF based on the disaster data collected and stored in the draft database management system since the 2nd JCC,.

Mr. Seyitaliev, Head of AMS, replied that the budget for the disaster prevention is considered under the 'Contingencies' item of the budget, and the related works can be implemented under the 'Routine repair' item, as only 3% of the total budget can be allocated for disaster prevention. Ms. Abdrashym kyzy added that a separate budgetary item for disaster prevention has not yet been approved, as previously this issue was communicated to the Deputy Minister of Transport and Roads, Mr. Osoev, who later resigned from his post.

In this regard, Mr. Mizota complemented that it is important to establish a constant regulation, which will allow uninterrupted continuation of the work despite the changes in the MOTR, and requested the RMD to regulate this issue by discussing with the MOF.

Mr. Sodombaev added that, prior to the involvement of the MOF, the RMD should consider and be consistent with the results of the previous JCC meetings while developing their plans, and stated that he will inform the RMD management accordingly.

Mr. Mizota requested the RMD to discuss with the Minister of Transport and Roads organization of the revision of manuals so that the manuals can be of comprehensive use and sufficient quality. He suggested to coordinate with the universities in case RMD does not have sufficient human resources.

Ms. Moldokulova, Program Officer of the JICA Kyrgyz Republic Office, informed on the JICA's support for the informative campaign on raising the public awareness of the emergencies in the country, organized by the alumnus of the JICA's educational program. In particular, she stated that JICA has provided financial assistance for printing of 500 copies of the book on the classification of and action during emergencies; and 400 posters on earthquakes and snow avalanche, which are to be distributed among the universities and schools of the republic. Ms. Moldokulova, added that a mobile application was developed for android systems on the action to be taken during the occurrence of various types natural disasters.

Ms. Maruyama shared information on the plans of the Ministry of Emergency Situations (MES) of the Kyrgyz Republic to conduct trainings for school teachers in August 2017, and invited the MOTR for cooperation in case interested.

5. Closing remarks

In the closing remarks, Chief Representative of JICA, Mr. Kikuchi, thanked participants of the meeting, and expressed his condolences in view of the tragic loss of the MOTR staff in the avalanche fall. He noted that it was a double-shock, given that during his first site trip along the Bishkek-Osh road earlier in January 2017, he personally met the Road Master, whose son was among the young people who passed away.

Mr. Kikuchi stated that, given the existing difficulties on the road that cause harm to human safety and economic activity, the role of the subject Project is immense, because within this Project the foundation of the mechanism of struggling with the natural disasters is being developed. This mechanism in the future will allow prevention of disasters in Kyrgyzstan thanks to proper monitoring, analysis and protection.

Taking the opportunity, Mr. Kikuchi shared news on signing of the Agreement on the Grant Project on Avalanche Protection on the Bishkek-Osh road by the President of JICA and the Minister of Foreign Affairs of the Kyrgyz Republic. In his words, after the ratification of the grant agreement, the project envisaging the construction of the snow shed on Km 246 of the Bishkek-Osh road is to be launched.

Revision on the Project Design Matrix (PDM):

The revised Project Design Matrix, Version 3, is shown in Appendix 3 and the revised contents are explained and agreed by both sides as follows:

Revision on the Activities

Activities in the PDM, vers.2	Revised Activities in the PDM, vers.3
2-2. To draft, review and finalize an Inspection Manual indicating check points for road disaster prevention by RMD.	2-2. To draft, review and finalize an Inspection Manual indicating check points for road disaster prevention in consideration with disaster types not only on target roads but also on local roads by RMD.
2-5. To draft, review and finalize a Countermeasures Manual for road disaster prevention including cost estimation to prepare budget plan by RMD, PLUADs/UADs and DEPs.	2-5. To draft, review and finalize a Countermeasures Manual for road disaster prevention including cost estimation to prepare budget plan in consideration with disaster types not only on target roads but also on local roads by RMD, PLUADs/UADs and DEPs.
3-2. To establish the procedure for data input and reporting by RMD.	3-2. To establish the procedure for data input and reporting while enhancing cooperativeness of existing databases by RMD.
4-1. To establish priority criteria for road disaster prevention by RMD.	4-1. To establish priority criteria for road disaster prevention in consideration with the balance of the overall budget plan for the road sector by RMD.

4-3. To prepare Short-Term Road Disaster Prevention Management Plan.	4-3. To prepare Short-Term Road Disaster Prevention Management Plan in consideration with the balance of the overall budget plan for the road sector.

Appendix 2

LIST OF THE 3rd JOINT COORDINATING COMMITTEE (JCC) MEETING MEMBERS

#	Name	Position	Organization
JCC members			
1.	Sodombaev D.A.	Deputy Director for Production	RMD
2.	Seiitbekov Istanbek	Head of section	Asset Management Section, RMD
3.	Mr. Kikuchi Kazuhiko	Chief Representative	Japan International Cooperation Agency (JICA) in Kyrgyz Republic
4.	Ms. Maruyama Hitomi	Representative	Japan International Cooperation Agency (JICA) in Kyrgyz Republic
JCC Observers			
1.	Abdyrashim kyzy Aigerim	Leading Specialist	Asset Management Section, RMD
2.	Tuleyeva Gulzada	Leading Specialist	Financial Reporting and Accounting Section, RMD
3.	Tanaka Takuya	Advisor on road administration	Road administration Project (JICA)
4.	Moldokulova Nazgul	Program officer	Japan International Cooperation Agency (JICA) in Kyrgyz Republic
5.	Toktomushev Bolot	Chief Specialist	UAD BO
6.	Asanaliev Ruslan	Chief Specialist	Production Technical Section, UAD BO
7.	Ysyraylov Jumabek	Chief Engineer	DEP-30, UAD BO
8.	Isakov Erlan	Chief Specialist	UAD BO
9.	Kuluev Nurbek	Chief Specialist	UAD BO
10.	Mizota Yuzo	Team Leader	Project for Capacity Development for Road Disaster Prevention Management in the Kyrgyz Republic
11.	Tanaka Hirofumi	Deputy Team Leader	Project for Capacity Development for Road Disaster Prevention Management in the Kyrgyz Republic
12.	Sawada Kentaro	Expert	Project for Capacity Development for Road Disaster Prevention Management in the Kyrgyz Republic
13.	Diu Constantin	Coordinator	Project for Capacity Development for Road Disaster Prevention Management in the Kyrgyz Republic
14.	Pavlenko Pavel	Staff	Project for Capacity Development for Road Disaster Prevention Management in the Kyrgyz Republic

Project Design Matrix

Project Title: The Project for Capacity Development for Road Disaster Prevention Management in Kyrgyz Republic

Version 3

Implementing Agency: Ministry of Transport and Roads (MOTR)

Dated 6 April 2017

Target Group: Staff members of MOTR's HQ, RMD, PLUAD/UAD, and DEP that are responsible for selected disaster prone areas

Period of Project: April 2016 - May 2019 (3 years)

Project Site: MOTR's offices and selected disaster prone areas

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption	Achievement	Remarks
Overall Goal					
Safety of the road traffic at the selected disaster prone areas is improved.	1. In reference to the Project experiences and Manuals produced by the Project, Short-Term Road Disaster Prevention Management Plan continues to be prepared by RMD of MOTR every year	1. Short-Term Road Disaster Prevention Management Plan(s)			
	2. Road disaster prevention work is implemented based on the Short-Term Road Disaster Prevention Management Plan prepared by RMD of MOTR	2. Implementation record of Short-Term Road Disaster Prevention Management Plan(s)			
Project Purpose					
The capacity of MOTR's relevant units in the Project (HQ, RMD, target PLUADs/UADs, and DEPs) is enhanced for management of road disaster prevention (including road disaster inspection, preparing of road disaster prevention management plan and planning of budget for road disaster prevention).	1. The management cycle (inspection, evaluation, selecting countermeasures and planning) for road disaster prevention, is implemented by MOTR's relevant units in the Project (HQ, RMD, target PLUADs/UADs, and DEPs).	1. Project Report, Training Report	* The Government of the Kyrgyz Republic allocates necessary budget and personnel for MOTR to continue activities		
	2. Draft budget document with breakdowns for road disaster prevention is prepared by RMD of MOTR by [September 2017 and September 2018].	2. MOTR's budget document for road disaster prevention	* The level and frequency of natural calamities that require MOTR's attention and countermeasures do not radically exceed what are premised in the Short-Term Road Disaster Prevention Management Plan		
	3. Data from the newly developed Road Disaster Database Management System is utilised for formulating budget by RMD for road disaster prevention by [September 2017 and September 2018].	3. Analysis of the quality of data for road disaster prevention, project report			

Outputs					
1. Responsibilities of MOTR on road disaster prevention, including specific duties to be performed by relevant units (HQ, RMD, PLUADs/UADs, DEPs) with necessary staffing in each, become clear.	1-1. Roles of MOTR HQ, RMD, target PLUADs/UADs and DEPs for road disaster prevention management are specified by MOTR.	1-1. MOTR documents for organization, project report	* Trained counterparts do not resign, or are transferred, too frequently. * Policies that pertain to road safety do not change radically.	Roles of related organizations for road disaster prevention management is being prepared.	
2. Capacity of target PLUADs/UADs and DEPs for inspection and analysis of road disaster is enhanced.	2-1. Road disaster hazard sections are determined with their feature and classification by target PLUADs/UADs and DEPs by [May 2017].	2-1. Project report, Training report		Long and short lists of road disaster hazard including countermeasures were prepared. Road disaster hazard sections were drafted in the long list.	
	2-2. Inspection and Evaluation Manual for Road Disaster Prevention is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019].	2-1. Inspection Manual		Required inspection and evaluation sheets on road disaster prevention were drafted. Inspection and evaluation manual for road disaster prevention is being prepared based on the materials for preparing long and short lists of road disaster hazard. Materials for landslide monitoring along the BO Road (85.5 – 86km) were installed into the manual to study the movement of landslide and countermeasures for road management including road disaster prevention.	
	2-3. Countermeasures Manual for Road Disaster Prevention is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019].	2-3. Countermeasures Manual		Countermeasures manual for road disaster prevention is being prepared based on the materials for preparing long and short lists of road disaster hazard.	
	2-4. All the staff in target PLUADs/UADs and DEPs trained for inspection/evaluation and standard disaster prevention countermeasures based on the manuals pass the final exam prepared by the Project.	2-4. Pass rate of the final exam		31 staff of PLUADs/UADs and DEPs were trained through the preparation of long and short lists of road disaster hazard.	
3 Capacity of RMD to operationalize Database Management System for road disaster prevention is developed.	3-1. A database format for information on road disaster prevention management planning (incl. costing for countermeasures) is prepared by RMD by [August 2016].	3-1. Database format		Database draft formats for information on road disaster prevention management planning, which are Disaster List, Inspection List, Countermeasure List and Priority List, have	

	3-2. Practically usable Manual for Data Collection and Input is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019]	3-2. Manual for Data Collection and Input		Draft manual for data collection and input was prepared by RMD.	
	3-3. Data collected and input by target PLUADs/UADs and DEPs are integrated to the database for prioritizing countermeasures and certified by RMD by [May 2017]	3-3. Data accumulation status		Data collection and input of disaster pronearea by using the tablet are started by target PLUADs/UADs and DEPs.	
	3-4. Staff of target PLUAD/UAD and DEPs trained for data collection and input based on the Manual pass the exam that evaluates their mastery in filling required information in database format	3-4. Pass rate of the exam		20 staff of each target PLUAD/UAD and DEPs were trained for data collection and input in the site training by JICA expert, and they passed the exam for data collection and input.	
	3-5. Database Management System that contains information necessary for road disaster prevention management in the project area is developed for preparing budget by RMD by [May 2017].	3-5. Track record of periodical update of the Database, analysis of data, project report		Database management system of draft version is developed by RMD.	
	3-6. Practically usable Manual for Database Operation is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019].	3-6. Databased operation manual		Draft manual for database operation is being prepared by RMD.	
4. Capacity of RMD for preparing road disaster prevention management plans of the target areas is enhanced.	4-1. Nation-wide management criteria for road disaster prevention is developed by RMD by [May 2017].	4-1. Note on criteria		Nation-wide management criteria for road disaster prevention is being prepared.	
	4-2. Short-Term Road Disaster Prevention Management Plan (urgent response plan) with cost estimation for road disaster prevention management of the target area is prepared by RMD by [September 2017 and September 2018]	4-2. A short-term plan for road disaster prevention		Short-term road disaster prevention management plan is being prepared.	
	4-3. Preparation Manual for Short-Term and Medium-Term Road Disaster Preventnion Management Plans is drafted by RMD by [May 2017], reviewed by RMD by [May 2018] and finalized by RMD by [March 2019].	4-3. Preparation Manual for Short-Term Plans		Manual for short-term and medium-term road disaster prevention management plans is being prepared.	

Activities	Inputs		Important Assumption
	The Japanese Side	The Kyrgyz side Side	
1-1. To review the present work sharing among relevant organizations. 1-2. To identify the most suitable MOTR section to each take charge of collection, input and analysis of data in the road disaster prevention Database Management System. 1-3. To identify the most suitable MOTR section to each take charge of inspection, evaluation, plan preparation, and implementation of road disaster prevention. 1-4. To draft the Decree on assigning responsibilities to relevant organization. 2-1.To analyze existing condition (including compilation of data inventory and) on the slope and snow hazards causing road disaster by RMD and PLUADs/UADs, DEPs. 2-2. To draft, review and finalize an Inspection Manual indicating check points for road disaster prevention in consideration with disaster types not only on target roads but also on local roads by RMD. 2-3. To practice routine, periodic and emergency inspections and to conduct condition rating based on inspection manual by RMD and PLUADs/UADs, DEPs. 2-4. To discuss countermeasures for road disaster prevention by RMD, PLUADs/UADs and DEPs. 2-5. To draft, review and finalize a Countermeasures Manual for road disaster prevention including cost estimation to prepare budget plan in consideration with disaster types not only on target roads but also on local roads by RMD, PLUADs/UADs and DEPs. 2-6. To practice selecting countermeasures of road disaster prevention including cost estimation based on Countermeasures Manual by RMD and PLUADs/UADs, DEPs.	1. Experts 1) Team Leader / Road Maintenance Expert 2) Deputy Team Leader/Debris Flow Disaster Prevention/River Engineering Expert 3) Snow Disaster Prevention Expert (1) 4) Snow Disaster Prevention Expert (2) 5) Snow Disaster Prevention Expert (3) 6) Slope Disaster Prevention Expert 7) Database Expert 8) Disaster Prevention Countermeasures Expert 9) Geological Expert 10) Disaster Prevention Facilities Expert/Cost Estimator/ Construction Planner 11) Coordinator / Road Disaster Inspection Assistant 2. Equipment 1) Database Management System Program and Computer 2) Inspection/Observation Equipment (e.g. wind velocity and wind direction measurement equipment) 3. Trainings in Japan / third country 4. Inputs other than indicated here will be determined through mutual consultation between JICA and MOTR during the implementation of the Project, as necessary.	1. Counterparts for the project 1) Project Director: 2) Project Manager: 3) Counterparts: 2. Preparation Works for the installation of the equipment 3. Office for the Project with office furniture and utilities such as internet connectivity, telephone line, electricity, etc. 4. Running expenses necessary for the implementation of the Project	

3-1. To create a Database Management System of the slope and snow hazards along the international and national roads by RMD.

3-2. To establish the procedure for data input and reporting while enhancing cooperativeness of existing databases by RMD.

3-3. To draft, review and finalize a manual for data input and database operation by RMD.

3-4. To implement trainings for staff members of RMD and PLUADs/UADs, DEPs for data collection and input, and database operation.

4-1. To establish priority criteria for road disaster prevention in consideration with the balance of the overall budget plan for the road sector by RMD.

4-2
To implement training for staff of RMD for preparing a Short-Term plan for road disaster prevention as a basic document for annual budget request.

4-3. To prepare Short-Term Road Disaster Prevention Management Plan in consideration with the balance of the overall budget plan for the road sector.

4-4. To implement training for staff of RMD for preparing Medium-Term Road Disaster Prevention Management Plan.

4-5. To prepare Preparation Manual for Short-Term and Medium-Term Road Disaster Prevention Management Plans by staff members of RMD.

4-6. By referring to the Preparation Manual, to conduct trial preparation of Short-Term & Medium-Term Road Disaster Prevention Management Plans

Pre-Conditions

* MOTR satisfies counterpart requirements for the Project
* The Kyrgyz Republic is continuously safe enough for project implementation.

<Issues and countermesures>