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**JICA has launched New Project of a Master Plan Study of Road Slope Management with DOR !**

**1. Background**

**1.1 Recent rapid road development and road slope failure**

Roads are major means of travel and transportation in the Kingdom of Bhutan (hereinafter referred to as “Bhutan”), and development of an efficient and safe road network is essential for Bhutan’s social and economic development based on the Road Sector Master Plan. However, because a large part of the country consists of steep mountain areas there are significant geological and topographic constraints on the construction of the majority of roads. There are few roads with sufficient road slope disaster management in place. Consequently, slope failures frequently occur and isolate areas from the capital or other areas of the country, disrupting travel and the transport of agricultural crops.



Sample of Road Slope Failure

**1.2 Road Slope Failure in Bhutan**

The road slope failure occurred in connection with road construction in Bhutan is the phenomenon in which the wide range and gentle slope move down under the influence of groundwater. Since slope failure occurs over a massive area, and a large amount of soil mass is moved in general, it can cause serious damages. In most cases, rainfall and condition of groundwater level cause landslide occurrence.



Aspect of Road Construction & Slope Failure

**2. Outline of the Project**

**2.1 Overall Goal**

The purpose of the Project is to introduce inspection techniques for road slope disaster management into Bhutan so that they can be used to implement slope disaster management. The Project identifies high-risk road slopes and will contribute to the development of a road slope management master plan (including survey, monitoring, and a management plan). The first Steering Committee (S/C) was held in DOR on 30 of July 2014 to confirm this overall goal among members involved.



The Minister (Ms. Dorji Choden) and JICA Members in DOR



First S/C for the Project kick-off on 30 July 2014

**2.2 Outputs and scoped tasks of the Project**

The Project focuses on achieving the following four (4) specific outputs. And, the involved parties on this Project is shown below.

Expected Outputs	
Output 1	A road slope disaster management, inspection and diagnosis manual will be created.
Output 2	Road slope disaster management inspections (field survey, survey) will be performed in selected sections, and a road slope inventory and slope kartes will be created.
Output 3	A road slope disaster management database that includes the slope kartes will be developed for the surveyed sections.
Output 4	The slope kartes will be used to give advice to DOR on one or two pilot sites where road slope disaster management is to be applied.

**[Project involved parties]**

1. **Counterpart organization:** DOR, Ministry of Works and Human Settlement.
2. **Direct beneficiary:** DOR
3. **Indirect beneficiary:** The public (road users) and other relevant

**\* Scoped tasks of the Project**

- 1.The tasks described in the Procedure for Implementation of the Project will be performed to achieve the Project’s purpose, with the need to produce survey reports in mind, in accordance with the Guidelines for Implementation of the Project.
- 2.The reports described in the Survey Report will be produced as the Project proceeds and will be submitted to the Government of Bhutan after presentation to the Government and discussion.
- 3.Technology will be transferred to the relevant counterparts of DOR (hereinafter referred to as “C/Ps”).

**2.3 Schedule of the Project**

The Project duration is **from August 2014 to July 2016 for 24 months.**

The schedule to implement the Project is fully shown in the figure on the right.



JICA study team office (1<sup>st</sup> floor, Room No.39)



Working aspect for members

Project Schedule																										
Japanese FY	2014												2015												2016	
Calendar month	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
Month number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Tasks in Japan																										
Tasks in Bhutan																										
	← Creation of inspection/diagnosis manual												← Review of inspection/diagnosis manual													
	← Slope disaster management inspection (desktop survey, field survey)												← Creation and use of slope data sheet													
	← Equipment procurement												← Development of slope disaster management database													
	← Planning of JICA training												← Advice to DOR on slope disaster management measures													
Report	▲IC/R						▲P/R						▲IT/R						DF/R▲F/R▲							
Steering Committee/technical transfer seminars	●SC						◎WS						●SC ◎WS						●SC ◎WS							

IC/R, inception report; P/R, progress report; IT/R, interim report  
 DF/R, draft final report; F/R, final report  
 SC, Steering Committee; WS, technology transfer workshop

**3. Project Implementation Agency**

JICA study team is working closely with Department of Road(DOR) in the Ministry of Works and Human Settlement (MoWHS) as the implementing agency, which is cooperating with the project activities of the study team members.

Members with DOR and JICA study team are shown below.



DOR Building, MoWHS in Thimphu

MEMBERS OF JICA STUDY TEAM					
	<b>KUWANO Takeshi</b> Team Leader / Slope Stability Management		<b>KOTOO Kimihiko</b> Vice Team Leader / Slope Inspection		<b>HARA Takashi</b> Slope Stability (Countermeasure)
	<b>TOZAWA Masanori</b> Investigation and Monitoring		<b>IWASAKI Tomoharu</b> Slope Failure Risk Analysis		<b>SAITO Takashi</b> Slope Stability Database System
	<b>SUGANUMA Yasuhisa</b> Road Maintenance		<b>YAMAMOTO Yosuke</b> Coordinator/ Assistant Slope Inspection/ Environmental & Social Consideration		

For more information, please contact us.



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