

1. Overview of Project	
Country name: Plurinational State of Bolivia	Project Name: The Project for Capacity Development of Road Disaster Prevention and Bridge Management and Maintenance
Sector: Transportation	Form of Aid: Technical cooperation project
Department with Jurisdiction: Transportation and ICT Division III, Transportation and ICT Group, Economic Infrastructure Department, JICA	Aid Amount (at time of evaluation):
Cooperation Period (R/D) March 2, 2009 – March 30, 2012	Related Organizations in Bolivia: <ul style="list-style-type: none"> • Implementing organization: Administradora Boliviana de Carreteras [Bolivian Road Administration] (ABC) • Supervising organization: Office of the Vice Minister of Transport, Ministry of Services and Public Works
	Company Commissioned with Implementation of Operations: Joint venture by Earth System Science Co., Ltd. and Central Consultant Inc.
	Related Projects: <ul style="list-style-type: none"> • JICA development study: Survey on Prevention of Disasters on Major National Highways and Roads, October 2005 – October 2007 • JICA grant aid cooperation: Preparatory Survey on Road Disaster Prevention for National Road No. 7, October 2011 – December 2012 (tentative)

1-1 Background and Overview of Cooperation

Bolivia has 60,000 km of roads, but less than 30% of national highways are paved and less than 1% for local roads. Maintenance and management is inadequate, so many of the roads are old and deteriorating. Moreover, Bolivia is a mountainous country with a harsh climate and rough terrain, and suffers substantial damage from the major landslides, falling rocks and washed-out bridges during its rainy season lasting from November through March. However, the technology to restore roads is inadequate even when stop-gap measures are taken, resulting in similar and repeated damage in the same area.

Given this situation, JICA carried out the development study titled Survey on Prevention of Disasters on Major National Highways and Roads from 2005 through 2007 to encourage drastic improvements in disaster prevention on Bolivia's national roads. As part of this, JICA proposed a Capacity Development (CD) plan that lays out the issues that Bolivia should address and the measures that should be taken to prevent disasters, and also recommends the establishment of an organizational structure to handle these measures. In response to this plan, Bolivia set up the Road Disaster Prevention Unit (UPD) in the Administradora Boliviana de Carreteras [Bolivian Road Administration] (ABC) and requested further technical cooperation from Japan to improve its capacity to maintain and manage roads and bridges independently.

JICA accepted this request and undertook the Project for Capacity Development of Road Disaster Prevention and Bridge Management and Maintenance, to run for the three years from March 2009 until March 2012, with ABC as the counterpart. The project will improve ABC's organizations for road disaster prevention and bridge maintenance and management and improve its capacity in order to achieve the Overall Goal of enabling constant travel on national roads.

1-2 Description of Cooperation¹

(1) Overall Goal

To enable constant travel on national roads

(2) Project Purpose

To improve ABC's capacity to prevent road disasters and maintain and manage bridges

(2) Output

- 1) Activity policies for the Road Disaster Prevention Unit (Unidad de Prevención de Desastre : UPD in Spanish) are established.
- 2) A road disaster prevention system is established.
- 3) The road disaster prevention management capacity within ABC is improved.
- 4) A bridge maintenance and management system is established.
- 5) Bridge maintenance and management capacity is improved.

(3) Input (Cumulative total at time of evaluation)

Japan side:

13 experts dispatched, 12 people accepted for training in Japan, 11,724,000 yen worth of equipment and materials donated,² US\$407,100 in local costs borne (cumulative total through October 2011)

¹ According to the PDM 4.0 revised and approved by JCC in February 2011.

² JICA's conversion rate in November 2011: 1 Bolivianos = 11.037 yen, US\$ 1.00= 75.84 yen.

Bolivian side: Office for experts, assignment of eight counterparts, ³ US\$ 1,452,680 in local costs (cumulative total through October 2011)		
2. Overview of Evaluation Study Team		
General management	Yuuki Aratsu	Deputy Director General and Group Director for Transportation ICT, Economic Infrastructure Department, JICA
Aid planning	Aya Shimada	Transportation and ICT Division III, Transportation and ICT Group, Economic Infrastructure Department, JICA
Evaluation analysis	Hiroshi Osada	Senior Consultant, IC Net Limited
Study period	October 31 – November 16, 2011	
3. Overview of Evaluation Results		
3-1. Confirmation of Results		
(1) Extent of Achievement of Project Purpose		
<ul style="list-style-type: none"> • Project Purpose: The purpose of “improving ABC’s capacity to prevent road disasters and maintain and manage bridges” is intended to develop ABC’s comprehensive capacity in respect to systems, organizations and individuals, with Unidad de Prevención de Desastre (UPD) at the core. At the time of evaluation, an organization foundation for UPD’s capacity development was in the process of being built, technical tools at the organizational level had been introduced, and the technical capacity of employees of UPD and ABC’s local offices was improving through training, seminars and other activities for technology transfer. • The technical concept of disaster prevention is taking hold within ABC as a result of these outputs, and a technical foundation for the future implementation of projects based on this concept is being developed. As such, the Project Purpose is in the process of being achieved in line with the path originally intended. • That said, there have been delays in achieving the output for capacity development at all levels as a result of delays in carrying out activities due primarily to external factors (ABC’s organizational reforms and delays with these reforms). Accordingly, we expect that the Project Purpose will not be fully achieved. 		
The extent to which the Project Purpose has been achieved can be broken down by the system, organization and individual levels as follows.		
<ol style="list-style-type: none"> 1) Establishment of systems to improve capacity <ul style="list-style-type: none"> • UPD’s activity policies and activity plans have been nearly completed, and an organizational foundation enabling UPD to carry out road disaster prevention and bridge maintenance and management operations is being developed. As a result, a budget for UPD activities can now be secured, and technical cooperation with other ABC divisions can also be carried out (Indicator 1). 2) Establishment of technical foundation at organizational level <ul style="list-style-type: none"> • A database system for information on road disaster prevention, a data map for bridge work completion drawings, and various manuals and guides have been completed, and a foundation at the organizational level has been completed, enabling ABC, with UPC at the core, to carry out road disaster prevention and bridge maintenance and management work (Indicators 2, 3, 4, 5). 3) Capacity development at the individual level <ul style="list-style-type: none"> • The technology of UPD and the local ABC offices in four provinces are improving through training, seminars, OJT, technical support in regular operations and the issuance of technical guides (Indicator 7). 		
The issues that have not yet been achieved are as follows:		
<ol style="list-style-type: none"> 1) Establishment of system <ul style="list-style-type: none"> • Certification of completion in road disaster prevention and bridge maintenance and management technician training (Indicator 6) 2) Establishment of technical foundation at the organizational level <ul style="list-style-type: none"> • Operation of a database system of information on road disaster prevention and bridge maintenance and management (part of Indicator 3) 3) Capacity development at the individual level <ul style="list-style-type: none"> • Implementation of OJT in the four pilot construction projects (Indicator 8) • Implementation of training utilizing the results of the pilot construction projects (part of Indicator 7) 		
(2) Extent to which output have been achieved		
As described below, all the five outputs, with the exception of Output 4, are on course to being achieved, but they are not expected to be achieved during the project period.		
<ol style="list-style-type: none"> 1) Output 1: Establishment of UPD activity policies <ul style="list-style-type: none"> • UPD activity policies and project plans were formulated, and UPD was able to clearly lay out the basic policies for its organization and specific activities for its activities related to road disaster prevention and bridge maintenance and management. 2) Output 2: Establishment of system for road disaster maintenance operations <ul style="list-style-type: none"> • A system enabling information to be centrally managed at the ABC head office is being developed, thanks to the completion of the database system for road disaster prevention information. • Since various manuals and guides have been completed, the intellectual assets needed to spread the technology within ABC are now available. • Practice in the use of two of the modules comprising the database system for road disaster prevention information—the disaster 		

³ Eight people, namely the project director, project follow-up supervisor, project manager, UPD director, bridge inspector, bridge designer, geology manager, and hydraulics manager.

ledger and slope risk system—has not yet been completed, and the capacities for recording disaster information and selecting and assessing slope risk sites are not expected to be improved adequately.

- 3) Output 3: Improvements in technology related to road disaster prevention within ABC
 - The technical strengths of employees at UPD and ABC offices in four prefectures are improving through training, seminars, OJT, technical support in regular operations and the issuance of technical guides. For example,
 - UPD’s knowledge and technology regarding road disaster prevention has improved to the point that UPD employees have even served as instructors in training held at local offices and prefectural offices.
 - According to a questionnaire given after training at local offices and prefectural offices, a substantial 149 of the 180 participants (about 83%) responded that they understood the training material.
 - A version of the main aspects of the road disaster prevention management technician certification system was prepared as a program for certifying ABC’s internal training participants. This laid the groundwork for a mechanism that would improve ABC employees’ motivation to strengthen their technical skills through training.
 - OJT could not be completed during the project period due to delays in the start of preparations for the two pilot construction projects in the road disaster prevention area.
 - The training completion certification for road disaster prevention management technicians is not expected to be completed during the project period.
 - The training, seminars and OJT that need to be held after the pilot construction projects are complete are not expected to be held.
- 4) Output 4: Establishment of bridge management and maintenance system
 - Since various manuals and guides have been completed, the intellectual assets needed to spread the technology within ABC are now available.
 - Data maps for bridge work completion drawings were completed and information tools needed to continue maintenance and management for approximately 800 bridges across the country were completed.
- 5) Output 5: Improvements in bridge management and maintenance capacity
 - The technical strengths of employees at UPD and ABC offices in four prefectures are improving through training, seminars, OJT, technical support in regular operations and the issuance of technical guides. For example,
 - UPD’s knowledge and technology regarding bridge maintenance and management has improved to the point that UPD employees have even served as instructors in training held at local offices and prefectural offices.
 - According to a questionnaire given after training at local offices and prefectural offices, a substantial 81 of the 90 participants (about 90%) responded that they understood the training material.
 - A version of the main aspects of the bridge maintenance and management technician certification system was prepared as a program for certifying ABC’s internal training participants. This laid the groundwork for a mechanism that would improve ABC employees’ motivation to strengthen their technical skills through training.
 - The OJT that was intended to be conducted in parallel with the pilot construction projects could not be completed during the project period due to delays in the start of preparations for the two pilot construction projects in the bridge maintenance and management area.
 - The training completion certification for bridge maintenance and management technicians is not expected to be completed during the project period.
 - The training, seminars and OJT that need to be held after the pilot construction projects are complete are not expected to be held.

3-2. Summary of Evaluation Results

(1) Relevance

Relevance was extremely high in the following respects:

- 1) Consistency with Bolivia’s National Development Plan 2006-2011
 - This project was started in 2009 to support distribution and other infrastructure development, part of the policy to strengthen productivity and competitiveness, which in turn represented “productivity enhancements,” one of the four development pillars⁴ in Bolivia’s National Development Plan 2006-2011. The Bolivian government has continued its national development policies since the project started, and there has been no change in the project’s high consistency with this plan.
- 2) Consistency with the Ministry of Services and Public Works’ development policies
 - The Office of the Vice Minister of Transport at the Ministry of Services and Public Works is currently devising policies for the transportation sector for socio-economic development 2012-2017. As part of this plan, transportation capacity by other means of transport⁵ would be strengthened, but the policy of upgrading national roads is expected to be continued. According to the Office of the Vice Minister of Transport, this project is recognized as part of this current policy, and is extremely important.
- 3) Consistency with ABC’s needs
 - Since December 2009, ABC has pursued organizational reforms based on devolving operations to outlying regions, and is currently in the midst of this process. As part of these reforms, the authority and responsibilities of three local offices will increase, and their capacity to resolve technical problems will have to be strengthened. This project supports the improvement of technical capacity in local offices in line with these organizational reforms.
- 4) Consistency with Japan’s aid policy for Bolivia
 - The Japanese Ministry of Foreign Affairs’ Bolivia Country Assistance Plan 2009 supports the “establishment of economic infrastructure” as part of “productivity enhancement,” one of the two pillars of its support for Bolivia.

⁴ 1) Productivity enhancement; 2) restoration of lifestyle with human dignity; 3) restoration of dignity in international relationships; and 4) democracy

⁵ In addition to roads, this would include marine transport, railways and air transport, among others.

- The Program to Upgrade the Transportation Network is being implemented as part of the JICA Country Assistance Implementation Policy 2011, designed to realize the Bolivia Country Assistance Plan 2009. This project is one of the four projects making up this program.
- 5) Relevance of project plan
- While donors such as the Andean Development Cooperation (CAD) and the Inter-American Development Bank supporting road construction primarily with loan assistance, this project provides aid to strengthen the technical capacity needed to supervise the construction work and designs that ABC needs to carry out these road construction projects, and provides the appropriate complementary relationships.

(2) Effectiveness

The quality of the achievement of the Project Purpose is high because it is in the process of being achieved in line with the original course, but some of the goals are not expected to be achieved. In addition, some aspects of Project Design Matrix (PDM) indicator setting still need to be improved.

- An organizational foundation for UPD to strengthen capacity is being built, technical tools at the organizational level are being provided, and activities for technology transfer such as training and seminars are improving the technical capacity of UPD and ABC local office employees. The technical concept of disaster prevention is taking hold within ABC as a result of these outputs, and a technical foundation for the future implementation of projects based on this concept is being developed. As such, the Project Purpose is in the process of being achieved in line with the path originally intended.
- That said, there have been delays in achieving the output (Outputs 1, 2, 3 and 5) for capacity development at the system, organization and individual levels as a result of delays in carrying out activities due primarily to external factors (ABC's organizational reforms and delays with these reforms). Accordingly, we expect that the Project Purpose will not be fully achieved.
- The eight indicators for the Project Purpose and the indicators for the five outputs are of a similar nature (expressed in different words), with the issues at the various output levels reorganized into eight indicators and five indicators, respectively. There are no problems with the causal relationship between the Project Purpose and the five outputs, but indicators for the Project Purpose should have been set so that they express behavior modifications for individuals and organizations and changes in results (outcome) caused by the achievement of the output. In addition, target levels for the indicators should have been set.

(3) Efficiency

The quality of the inputs was high, and the inputs were completed as planned, but the activities were not completed and some of the outputs were not achieved. Accordingly, there are problems with the efficiency.

- The main inputs, such as the Japanese experts, materials and equipment, and training in Japan, were completed as planned. The quality of the training in Japan, the technical expertise of the Japanese experts, the quality of the materials and equipment and the quality of the counterparts were all high and were appropriate.
- The technology transferred in the project was utilized, and the results of the organization are improving and generating outcomes.
- At the same time, although all but Output 4 of the five outputs are on the way to being achieved, they are not expected to be completely achieved during the project period. This is because of delays in carrying out some project activities as a result of the impact of ABC's organizational reforms and the retirement of one of the five counterparts in May 2011 without any replacement as of yet.
- Moreover, the expertise of the Japanese experts and the quantity of the input were not sufficient for a system check of the capacity development of the counterparts. As a result, monitoring of the technology transfer was inadequate.⁶

(4) Impact

The impact was extremely significant. The impact derived from this project as already been confirmed, as described below, and the Overall Goal is in the process of being achieved. There have not been any negative impacts not initially expected. Data on indicators⁷ to take quantitative measurements of the Overall Goal should be compiled to serve as the baseline for ex-post evaluations.

Primary impact of the project	Causal relationship with project	Secondary impact expected
1) Work to preserve the TJ03 section (Tarija) of National Road 1 using government funds	<ul style="list-style-type: none"> • The opinions of UPD and a team of experts on the construction work at the risk site between Tarija and Bermejo were incorporated. 	<ul style="list-style-type: none"> • If this work is completed, it would reduce road closures along this section of the road.
2) Work to repair and stabilize road on Cochabamba side of National Road 4 using government funds	<ul style="list-style-type: none"> • UPD and a team of experts provided assistance with the countermeasure work (landslides, bridge scouring) in the risk sites between Corani and Villa Tunari 	<ul style="list-style-type: none"> • If this work is completed, it would reduce road closures along this section of the road.
3) Work to improve Route 7 in Santa Cruz prefecture using Corporación Andina de Fomento (CAF) disaster recovery funds	<ul style="list-style-type: none"> • Project recommendations and advice were used in planning routes circumventing landslide areas and areas prone to avalanches of earth and rock (construction work is currently under way). 	<ul style="list-style-type: none"> • If this work is completed, it would completely eliminate road closures along this section of the road.

⁶ The project monitoring primarily consisted of the management of progress in activities by Japanese experts, but monitoring to identify changes in the counterparts' understanding and actions and changes in the achievements of UPD and ABC was inadequate.

⁷ Data identifying changes in the number and duration of road closures along trunk roads.

4)	Work to prevent slope disasters on Route 7 in Santa Cruz prefecture using JICA grant aid support JICA	<ul style="list-style-type: none"> UPD selected the construction site based on a diagnosis of the slope risk carried out by the project, and the Japanese government was asked for loan assistance (currently, a preparatory survey is being carried out). 	<ul style="list-style-type: none"> If this work is completed, it would dramatically reduce road closures along this section of the road.
5)	Work to stop traffic in advance near the Ichilo River in Santa Cruz prefecture along Route 4	<ul style="list-style-type: none"> Using the manual prepared by the project and a rain-gauge network, disasters can be predicted, and ABC stopped traffic in advance for the first time in February and October 2011. 	<ul style="list-style-type: none"> Road disasters would decrease with the expansion of such measures to other regions.
6)	An agreement to share data on rain volume with Servicio Nacional de Meteorología y Hidrología (SENAMHI) is being prepared.	<ul style="list-style-type: none"> By providing data on rain volume to SENAMI using the project's rain-gauge network, data can be mutually provided. 	<ul style="list-style-type: none"> Using the nationwide rain volume data provided by SENAMI will enable more accurate work supervision on ABC construction projects. SENAMI's data can be used by ABC in stopping traffic in advance and in designing road disaster prevention projects.
7)	Conclusion of agreement on joint research between the ABC Cochabamba office and the Universidad Mayor de San Simón's Hydraulics Research Institute on river channel erosion and scouring (October 2011)	<ul style="list-style-type: none"> The local training and technical support provided in regular operations gave the ABC Cochabamba office technicians a deep awareness of the importance of disaster prevention, and measures expected to have a greater impact have been prepared. 	<ul style="list-style-type: none"> By conducting joint research with the university's research institute on the mechanisms behind river channel erosion and scouring, effective measures for road disaster prevention and bridge maintenance and management can be implemented.

(5) Sustainability

Organization and systems:

- As a result of the project's output, UPD's organizational foundation is being established within ABC. Thus the institutional sustainability is high.
- Going forward, since ABC's organizational reforms are expected to devolve operations to local governments, UPD will manage the entire country's road disaster prevention information in a centralized manner while providing technical support to the local offices and prefectural offices, giving UPD an increasingly important role within ABC. Accordingly, the knowledge and technique acquired by UPD in this project will very likely be used in ABC road disaster prevention and bridge maintenance and management work going forward.

Personnel:

- Personnel mobility is relatively low and personnel are stable. In addition, a system to secure high-quality personnel is being developed. Accordingly, sustainability of personnel is relatively high.
- Up until this point, one UPD section manager retired, but the other four members were not transferred. Thus personnel have been stable. ABC's road disaster prevention and bridge maintenance and management work will be carried out primarily by the four UPD employees to whom technology was transferred even after the project is over.
- The implementation of training completion certification, which was initiated in this project, is expected to make it easier to hire personnel with the appropriate expertise at UPD.
- At the same time, the lack of a functioning system to ensure personnel hiring⁸ is something that ABC will have to address going forward.

Financial:

- Since UPD's organizational foundation is being established within ABC, UPD's own budget has been consistently secured since the project began.
- Moreover, since ABC is allocating more of its budget to disaster prevention work than disaster recovery, financial sustainability to sustain the project's effects is high.

Technical:

- The technical capacity of UPD employees has increased through the project, and individual employees also have the technical capacity needed to become core employees able to spread bridge maintenance and management techniques.
- Since technical tools such as the road disaster prevention database system, data map for bridge work completion drawings, and various manuals and guides are expected to be completed, the intellectual assets and technical infrastructure at the organizational level needed for ABC (with UPD in the central role) to carry out its road disaster prevention and bridge maintenance and management work are being put together.
- As such, the technical sustainability is high since the systems sustaining the project's effects are being completed.

3-3. Factors Contributing to Realization of Effect

(1) Factors related to plan content

- Realization of items agreed on in R/D: It was agreed that five full-time UPD employees would be assigned as exclusive project

⁸ ABC implemented the Plan Estratégico de Reforma Institucional (PERI) in 2000 under its former guise as the SNC (National Road Services) and established a system intended to preserve personnel employment. However, interviews with other donors confirmed that employees continue to be fired and hired for political reasons, so that this system is not in fact functioning.

counterparts as a condition for the start of this project. The project began once this had been satisfied. As a result, a cooperative system between the Japanese experts and counterparts was secured when the project started.

- Revisions to the PDM: The PDM was revised three times after the project began based on survey results and counterparts' needs. As a result, output and activities that better fit actual conditions could be designed.
- (2) Factors related to implementation process
- Use of JCC: Japanese experts exchange information closely with the ABC director, the project director, in conformity with ABC's decision-making mechanism, which has a strong top-down tendency. In addition, the JCC met frequently⁹ in an effort to adequately share information related to project operations with all of the stakeholders. As a result, mutual understanding between the related parties was facilitated, as was the development of trusting relationships between the stakeholders.

3-4. Problems and Factors Causing Problems

(1) Factors related to plan content

- Vagueness of PDM indicators: In PDM4, which had gone through three revisions, the eight indicators for the Project Purpose and the five indicators for the outputs had issues at the respective output levels that were very similar (worded differently) to each other and had simply been reorganized into eight and five indicators, respectively. The Project Purpose had essentially become the same as the outputs, and there were no numerical targets. As a result, the outcome that should be achieved as the Project Purpose (behavior modifications in individuals and organizations and changes in results) was not clear.

(2) Factors related to implementation process

- ABC's organizational reforms: ABC began organizational reforms based on devolution of operations to local offices around December 2009, and is currently in the midst of this process. As a result of these reforms, project activities have been delayed and outputs 1, 2, 3 and 5 have not been fully achieved.
- Retirement of UPD section manager: This post has been vacant since May 2005. This has slowed down activities for Outputs 1, 3 and 5, which involve system design in dialogue with supervisors.
- Bolivia's understanding of JICA's technical cooperation projects: When the project initially began, ABC's understanding of the implementation methods for JICA's technical cooperation projects and the roles of Japanese experts and counterparts was not adequate. ABC assumed that the team of experts would carry out all activities and UPD members would monitor the team's activities, so the experts could not transfer technology to the counterparts.¹⁰ This problem was brought up in the JCC and the Japanese members explained the situation to ABC managers and UPD members, while JICA Bolivia office managers used examples to explain the concept of a JICA technical cooperation project. As a result, ABC managers and UPD gained an understanding of JICA's methods and the problem was resolved.

3-5. Conclusion

- This project contributed to the establishment of the concept of road disaster prevention in Bolivia. Road disasters occur frequently in Bolivia and the country's budget for road maintenance is limited, but reliance on roads as a means of transportation is very high. Accordingly, the need for road disaster prevention is high, and Bolivian stakeholders are recognizing the high relevance and significance of this project. This is demonstrated by tendencies in ABC's budget allocation, namely the increase in budgeting for road disaster prevention and the decrease in stopgap measures since the project started.
- Moreover, as a result of ABC's strong commitment during the project implementation period to secure a budget for the pilot construction work (about US\$2 million), activities to improve the capacity needed for road disaster prevention and bridge maintenance and management were actively pursued. Although there were delays in activities resulting from external factors such as ABC's organizational reforms, progress with inputs was as initially planned. Although there are still issues with efficiency, as described above the technical concept of disaster prevention is taking hold within ABC, and a technical foundation for the future implementation of projects based on this concept is being developed, so the Project Purpose is in the process of being achieved.
- Moreover, ABC has begun several road disaster prevention construction projects and activities and is forming ties with other organizations, so the impact has already been realized. There is a good chance that ABC will continue to make efforts independently based on the project outputs and that the Project Purpose will be achieved in the future.

3-6. Recommendations

(1) Recommendations for the project

- 1) Since the ex-post evaluation to be carried out three to five years after the project's completion will be able to ascertain the extent to which the indicator (decrease in number and duration of road closures on trunk roads) for the Overall Goal of the PDM has been achieved, compilation of the data that will serve as the baseline for the ex-post evaluation should begin soon.
- 2) The indicators for the PDM's Project Purpose are simply a rewording of the five outputs. To accurately measure the extent to which the Project Purpose has been achieved and to determine the sustainability of the Project Purpose when the ex-post evaluation is carried out, the Project Purpose indicators should be revised to indicators (indicators expressing outcomes) that can accurately identify the extent to which the capacity development the project was aiming for has been achieved.
- 3) Some of the self-recording rain gauges installed at 19 sites around the country were not being maintained and managed appropriately when the terminal evaluation was conducted.¹¹ A person responsible for managing the self-recording rain gauges

⁹ Seven JCC have been held, including the JCC for this terminal evaluation.

¹⁰ Since there are many cases in Bolivia's government organizations in which consultants employed with the donor's loan assistance work as technical staff under employees, it was mistakenly assumed that this project's experts were in the same case.

¹¹ The self-recording rain gauge at Lima Tambo site in Cochabamba, observed by the terminal evaluation team, was not regularly cleaned as necessary for accurate operation, and data was not recorded as a result.

should be selected by the time the project is completed and a management system should be developed.

- 4) The road disaster prevention and bridge management and maintenance manuals and guides (10 types altogether) prepared in the project have not been adequately distributed to the local offices. The content of the manuals and guides should be finalized¹² as soon as possible and distributed to the local offices. We recommend that, when these materials are distributed, techniques for improving understanding of any sections that participants did not understand well when training is held in local offices should be devised, and measures to encourage use in operations at local offices should be taken. Moreover, similar measures should be taken as regards the road disaster prevention technique guidebook and the bridge maintenance and management technique guidebook, which are to be published in the time remaining until the project is complete.
- (2) Recommendations for ABC
- 1) ABC should revise UPD's activity guidelines and project plans as necessary when the organization is finalized since ABC will continue with its organizational reforms.
 - 2) ABC should use the disaster prevention information database system, manuals and guides developed in this project and begin initiatives to spread technology to local offices and prefectural offices and strengthen capacity as soon as possible.
 - 3) ABC should ensure that a management system for the self-recording rain gauges mentioned above in "(1) Recommendations for the project" is thoroughly implemented after the project is over, based on the management system developed before the project is complete. In conjunction with this, ABC should appropriately maintain and manage the other materials and equipment provided during the project, and use them effectively in road disaster prevention and bridge maintenance and management.

(3) Recommendations for JICA

Of the activities that are unlikely to be completed by the time the project is complete, JICA should consider extending the project period to address those activities that can be expected to achieve the initially anticipated output with additional input (PDM Activity 2-1 "update disaster prevention information and operate system," Activity 2-2 "compile information on rain volume, set up and administer landslide observation equipment," Activity 3-2 "carry out research in the unit," Activity 3-3 "carry out OJT for construction work for which UPD is in charge," Activity 5-2 "carry out research in the unit," and Activity 5-3 "carry out OJT for construction work for which UPD is in charge.")

3-7. Lessons Learned

- 1) The ABC organizational reforms that were officially decided one year after the project began were intended to achieve more rationalized operation management by devolving operations to local governments, and was a positive development needed to strengthen ABC's operations implementation system. At the same time, progress with these organizational reforms had a negative impact on the project's activities, and a better management response could have been taken in the JCC to address these issues. External factors such as the organizational reforms of the C/P organization that could have a significant impact on the implementation and progress of the project should be identified by stakeholders in the JCC. Based on the status of the factors, the implementation system and activity plans should be revised. Revisions should be made flexibly as needed.
- 2) Since UPD's understanding of the system for technical cooperation projects and the role of Japanese experts was not adequate during the first year of the project, there were conflicts in the understanding of UPD and the experts. Since JICA's technical cooperation projects are unique schemes even compared to other donors' cooperation, the scheme should be explained so that the stakeholders share the same awareness and the counterparts are committed to the project.
- 3) In this project, as a result of the circumstances described above in 2), the frequent exchange of information between the counterpart organization and experts and the JCC beginning in the second year of the project helped to build good relationships and ensure close communication between the two parties. The JCC met regularly (once every quarter) in order to ensure good communication and secure the commitment of the host country's related organizations, including the counterpart organization. This was an effective tool for daily collaboration.
- 4) As indicated in the project name, this project was intended to develop the capacity of the C/P organization. However, the targets for improving the capacity of counterparts were not clear, and much of the experts' time when working on site was devoted to preparing training materials, as pointed out by counterparts in the terminal evaluation, so there were not enough activities to raise capacity. As such, it is important that the stakeholders first share an understanding of the concept of capacity development (the specific aim) and then consider a framework for a human resource development project and examine the input¹³ necessary for its implementation

3-8. Follow-up Status

JICA will consider the recommendations to extend the project period internally based on the above Recommendation (3).

¹² According to UPD counterparts, this was because the manual was reviewed internally at UPD.

¹³ For example, the assignment of an expert with substantial knowledge about and experience in human resource development, not just an expert with technical expertise.