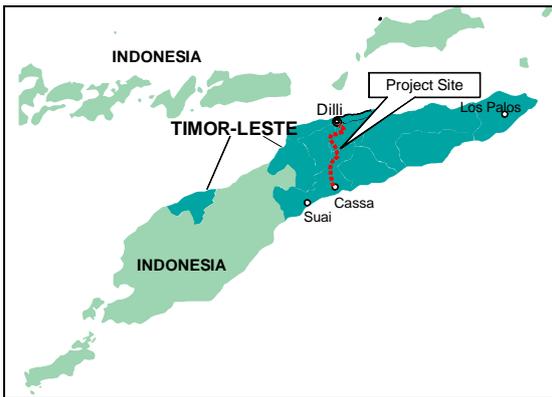


## Timor-Leste

### Ex-Post Evaluation of Japanese Grant Aid Project “The Project for Improvement of Roads between Dili and Cassa”

Akihiro Nakagome, Hisae Takahashi  
(Ernst & Young SN Global Solution Co., Ltd)

#### 1. Project Description



Project Location



Rehabilitated Dili - Cassa Road

#### 1.1 Background

70% of infrastructure in Timor-Leste was destroyed due to the civil war and destruction which occurred just after the direct balloting to decide on extension of self-rule, which was conducted by the Indonesian Government in August 1999. Operation & maintenance of infrastructure was discontinued before and after the ballot. Under the control of United Nations Transitional Administration in East Timor (UNTAET), economic conditions improved drastically, but the economic conditions have become worse again after the independence of the Democratic Republic of Timor-Leste in May 2002, due to the large reduction of foreign staff engaged in the aid projects. Under such circumstances, Timor-Leste set a goal of poverty-fighting through economic growth mainly implemented through human resource development, health care, improvement of agricultural productivity, administrative efficiency and infrastructure development.

In view of the condition mentioned above, the Government of Japan has assisted for road development for the Dili-Suai Road which starts at the capital Dili and ends at Suai, a major city for agricultural development in a southern district of country with emergency grant aid as well as Peace Keeping Force (PKF) activities. However, the road had frequently suffered from disasters caused heavy rainfall of more than 2,500 mm per year on average and torrential rain on steep slopes with fragile ground in mountain areas. The section between Aituto and Cassa

(especially in the mountain zone) has been seriously damaged; hence, it was reported that the passability of the road was becoming worse and it was an urgent need to rehabilitate the road and bridge in order to improve above mentioned roads.

## 1.2 Project Outline

The objective of this project is to ensure the safe and smooth transportation by improving the roads and bridge between Dili and Cassa.

Grant Limit / Actual Grant Amount	1,492 million yen / 1,483 million yen
Exchange of Note Date	May, 2004
Implementing Agency	Ministry of Transport, Communication and Public Works (Current: Ministry of Infrastructure)
Project Completion Date	February, 2006
Main Contractor	Tobishima Corporation
Main Consultants	Pacific Consultants International Nippon Koei Co., LTD.
Basic Design	“Basic Design Study on the Project for the Improvement of Roads and Bridges in Timor-Leste”, Pacific Consultants International and Nippon Koei Co., LTD. March-December, 2003
Detail Design	March-June, 2004
Related Project	The Project for the Capacity Building in Road Maintenance in the Democratic of Timor-Leste. (April, 2005 - March 2008)

## 2. Outline of the Evaluation Study

### 2.1 External Evaluator

Akihiro Nakagome, Hisae Takahashi (Ernst & Young SN Global Solution Co., Ltd)

### 2.2 Duration of Evaluation Study

Duration of the Study: October 2009 – August 2010

Duration of the Field Study: January 22 – February 1, 2010 and April 29 – May 9, 2010

## 3. Results of the Evaluation (Overall Rating: B)

### 3.1 Relevance (Rating: a)

#### 3.1.1 Relevance with the Development Plan of Timor-Leste

The national development policy in place at the time of planning, the National Development Plan (NDP) 2002/03-2006/07, sets the two national development goals of “poverty reduction” and “achieving equitable and sustainable economic growth”. Development strategies for eight areas, including transportation infrastructure improvements, have been established toward achievement of these goals, with the Program for the rehabilitation and operation and maintenance of roads and bridges in the road sector formulated with a focus on the following points:

- (1) Rehabilitation and maintenance of the core parts of the road network as well as rural road
- (2) Improvement of road alignment and rehabilitation and maintenance to counter slipping and scour
- (3) Planning for cooperation in urban and rural development through rehabilitation of road and street, etc.

The current development policy, Strategic Development Plan (SDP) 2011 - 2030<sup>1</sup>, also addresses investment in human resources, investment in infrastructure, and sector development as key activity frameworks. Among these, roads are considered the starting point for investment in infrastructure, and this plan states clearly that paving of national roads will be completed by 2020. National Development Priorities (2010) also identifies road improvements as a continued focus, for example by considering the road sector, together with the water sector, to be one of the top priorities in national development.

### **3.1.2 Relevance with the Development Needs of Timor-Leste**

In Timor-Leste, which has weak infrastructure in air routes and railways, roads are an important part of the infrastructure. The Dili - Suai Road including the Dili – Cassa section covered by this project is a core artery linking the capital city of Dili with Suai, the main city in the south and a center for agricultural development. It also has been considered an important road to the national distribution network. However, road damage is severe due to the effects of poor soil and weather, and concerns have been pointed out that if such damage is left unrepaired, passage would become difficult and the road would cease to function as a thoroughfare. For this reason, the need for development on this road is considered high. Also, since the number of vehicles registered in the nation<sup>2</sup> and the volume of traffic in this section<sup>3</sup>

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<sup>1</sup> Government of Timor-Leste announced SDP 2011- 2030 as a draft in April 2010. It will soon be official announced with cabinet approval.

<sup>2</sup> While in the year 2004 the number of registered vehicles in the country was 6,590, as of 2009 this number had swelled to 11,525 (source: Ministry of Finance, “Timor Leste in Figures 2008,” “Quarterly Statistical Indicators: 1st Quarter 2010”).

<sup>3</sup> According to the survey results of Asian Development Bank (ADB), average traffic volume per day on the sections covered by this project has continued to increase since the time of planning the project (See “Table 2: Annual Average Daily Traffic” as for details).

have continued to increase in recent years, it is thought that the need for road improvements in this sector remains high.

### 3.1.3 Relevance with Japan’s ODA Policy

Based on the development plan from the fifth donors meeting, at the time of planning this project, the Japanese government declared the following three pillars of assistance policies:

- (1) Assistance for realization of a sustainable economic and social growth
- (2) Assistance for peace-building
- (3) Assistance for celebrating independence

This project belongs to (1) above as a project aiming for reestablishment and development of infrastructure. Furthermore, after formulation of the NDP the four key areas<sup>4</sup> were announced, and this project belongs to the areas of infrastructure development and rehabilitation and agricultural and rural development among these areas. Thus the consistency of the project with Japan’s ODA policy was sufficiently assured.

As can be seen from the above, this project has been highly relevant with the country’s development plan, development needs, as well as Japan’s ODA policy, therefore its relevance is high.

## 3.2 Efficiency (Rating: a)

### 3.2.1 Project Outputs

Plans and actual results of this project are as shown in Table 1 below. Figure 1 shows the road sections covered by this project and the locations of the reconstructed bridge.

Table 1: Comparison of the Plan at the Time of Planning and the Actual Output

Output	Planning (of Basic Design Study)	Actual
<Road>		
(1) Aituto - Cassa		
Asphalt pavement	23 km	23 km
Overlay	28 km	28 km
Drainage	Approx. 25 km	25 km
Slope reinforcement	Approx. 8 km	8 km

<sup>4</sup> The four main areas are: (1) Education, human resources development, system building; (2) infrastructure improvement and maintenance; (3) agricultural and rural development; and (4) ensuring a lasting peace.

(2) Dili - Aileu Asphalt pavement  Drainage Slope reinforcement	Partial paving and patching of damaged spots Approx. 30 km 11 locations (reinforcement using stonework and screening)	Damaged sections only 30 km 11 locations
<Bridge> (3) Reconstruction of Km60.3 Bridge Bridge length <sup>5</sup>	10.5 m	10.5 m
(4) Reconstruction of Mola Bridge Bridge length	239 m	Separated from this project and implemented as a separate aid project

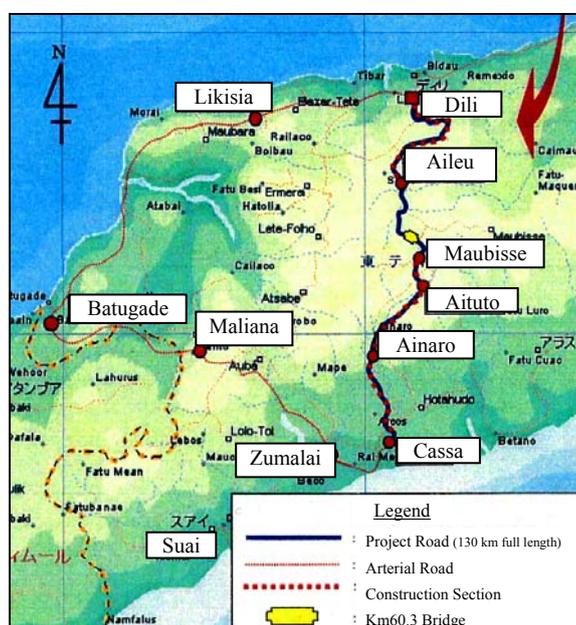


Figure 1: Locations of the Dili-Cassa Road and the Km60.3 Bridge

As a landslide occurred prior to the start of construction, the designs in road rehabilitation had to be reviewed and construction methods changed to secure the safety. However these were minor changes within the scope of the initial goals, and they had no impact on output. Reconstruction of the Km60.3 Bridge was carried out largely according to plan. While plans had called for reconstructing the Mola Bridge as a project for fiscal 2006 - 2008, separately from the Dili-Cassa Road, after the basic design, as a result of the detailed design process it was determined that sufficient project funding was not available due to rising prices of steel and other materials, and so the request for a Cabinet Meeting was cancelled.<sup>6</sup>

<sup>5</sup> Km.60.3 indicates the bridge which is located 60.3 km from Dili.

<sup>6</sup> Due to the worsening of the domestic security situation beginning later in May 2006, until the change of government in 2007 there were no plans for resumption of the reconstruction of Mola Bridge. In the end, after Japan decided to resume the project in September 2007 and a project study was conducted, an E/N was

Temporary repairs and rehabilitation following inspection of defects were completed smoothly over the period from 2006 through 2007 for the roads and bridges rehabilitated and improved under this project.



Reconstructed Bridge (Km60.3 Bridge)



Rehabilitated Dili-Cassa Road

### 3.2.2 Project Inputs

#### 3.2.2.1 Project Period<sup>7</sup>

The project period was mostly as planned. The planned project period for this project was 19.5 months. Since the detailed design period was 3.5 months from March through June 2004 and the construction period was 16 months from November 2004 through February 2006, in fact the actual total project period lasted 19.5 months, as planned.

#### 3.2.2.2 Project Cost

The project cost was mostly planned. The project cost was 1,483 million yen, within the limit of 1,492 million yen in the Exchange of Notes (E/N)<sup>8</sup> (99% of the planned cost). The difference between this E/N limit and the actual project cost was attributable to the difference between that limit and the bids from consultants and construction contractors.

Both project cost and project period were mostly as planned, therefore efficiency of the project is high.

### 3.3 Effectiveness (Rating: a)

#### 3.3.1 Quantitative Effects

##### 3.3.1.1 Results from Operation Indicators

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<sup>7</sup> concluded in May 2008, consultants and contractors were decided on in January 2010, and reconstruction are underway now as the Project for construction of Mola Bridge, a grant-aid project.

<sup>8</sup> The project period is defined as the period for detailed design plus the construction period.

The E/N limit amount of 1,492 million yen is the amount following removal of the Mora bridge reconstruction from this project. As such, it does not include the cost of construction to that bridge.

(1) Annual average daily traffic<sup>9</sup>

Table 2 below shows the current volume of traffic on the road rehabilitated under this project. Annual average daily traffic (AADT) of each section between Dili and Cassa except Dili – Aileu (actual figure) in 2005 increased from the actual figure at the time of the 2003 plans (Basic Design Study). For example, AADT figures between Aileu and Aituto, between Aituto and Ainaro, and between Ainaro and Cassa in 2005 reflect increases of approximately 88%, 77%, and 300%, respectively, over the actual figures at the time of the 2003 plan. In addition, the figure forecast for 2008 as estimated based on the actual fiscal 2005 figure also reflects an large increase in the volume of traffic in each section except Dili – Aileu, reaching ahead of schedule the level forecast for 2011 as estimated during planning.

Table 2: Annual Average Daily Traffic

(Unit: vehicles/day)

Section	2003 plan <sup>Note 1</sup>	2005 actual traffic <sup>Note 2</sup>	2008 estimated traffic <sup>Note 3</sup>	2011 forecast traffic <sup>Note 4</sup>
Dili – Aileu	500	423	274 <sup>Note5</sup>	665 <sup>Note5</sup>
Aileu – Aituto	147	277	425	196
Aituto - Ainaro	75	133	154	100
Ainaro - Cassa	47	191	235	63

Note 1: From the Basic Design Study; calculated based on 12-hour traffic-volume survey conducted in Aituto and Ainaro (primary survey: two days) and 24-hour traffic-volume survey conducted in Aileu, Aituto, and Ainaro (secondary survey: two days)

Note 2: From ADB survey; calculated based on 12-hour traffic-volume survey conducted in Aileu and Aituto (three days) and 12-hour traffic-volume survey conducted in Ainaro (two days)

Note 3: From ADB survey; limited traffic-volume surveys conducted in 2008 - 2009 to update 2005 surveys; 2008 estimates based on 2005 figures and updated actual figures

Note 4: Forecast estimated by the study team at the time of planning of this project. Since calculation methods are not described, details are unclear.

Note 5: According to the interview survey of road office staff, they can not explain reasons that AADT only between Dili and Aileu has been decreased since this section is the starting point towards Aituto, Ainaro and Cassa.

Source: Asian Development Bank (ADB), “Preparing the Road Network Development Project-TA7100”

(2) Saving of transit times

Road rehabilitation carried out through this project have had the effect of saving transit times. Table 3 below compares today’s actual transit times with those from the time of planning the project. The time required to travel between Dili and Ainaro has been decreased to about 60% its previous level, while that between Ainaro and Cassa has been cut by roughly one-half.

<sup>9</sup> Since the MOI has not surveyed traffic volume, it was not possible to obtain actual figures for the most recent period. For this reason, as the second-best available data this Evaluation employs actual figures for 2005 from a survey by the ADB and estimated figures for 2008 based on those figures.

Table 3: Comparison of Transit Times During Project Planning and Now

Section	Planning	Actual <sup>10</sup>
Dili - Ainaro	5 - 6 hours	3 - 4 hours
Ainaro - Cassa	Approx. 2 hours	Approx. 1 hour

Source: Interviews with the MOI and local road offices

### 3.3.2 Qualitative Effects (Beneficiary Survey Results)

Beneficiaries in key markets along the road between Dili and Cassa covered in this project were surveyed and responses obtained from 101 persons. Beneficiaries were defined to be drivers using the rehabilitated road on a daily basis, users of markets along the road, agricultural workers, and community residents. As shown below, the results of this survey confirmed that carrying out this project has had results such as saving “transit time to access market as well as public services” and “resolving problems such as road deterioration and long transit times.” (See below for specific questions and responses.)



Checking conditions before and after the project with a driver



Beneficiary survey of market users

(a) Saving transit time

Do you think the transit time to access market as well as public services has been saved ?	Yes	No
	99 (98%)	2 (2%)

(b) Problems before the project

What kind of traffic problems did you have before the improvement of this road? (Multiple Answers)	Deterioration of road / bridge	Long transit time	Others
	92	38	4

<sup>10</sup> Largely similar results were apparent in field observation conducted during field study, which confirmed the result of saving transit times.

(c) Improvements on the above problems

Were those problems resolved or improved after the rehabilitation?	Yes	No	N/A
	90 (89%)	7 (7%)	4 (4%)

As mentioned above, this project has largely achieved its objectives, therefore its effectiveness is high.

### 3.4 Impact

#### 3.4.1 Intended Impacts

##### 3.4.1.1 Benefits for the Target Regions and Beneficiaries

###### (1) Promotion of agriculture

As shown in Table 4 below, production of main agricultural products nationwide is in a generally increasing trend with the exception of cassava. In addition, in the main cities of Dili, Aileu, and Ainaro on the section of road covered by this project, production of the main agricultural products (rice, maize, and cassava) in 2008 also had increased when compared to the figures at the time of planning (see Table 5). Improvement of the road connecting the capital city of Dili with the main cities that are centers of agricultural development can be considered to have contributed to some degree to promoting agriculture in the areas around target road, through its effects such as facilitating transportation of agricultural produce and fertilizer (see the beneficiary survey) as well as increasing consumption by improving access to markets.

Table 4: Trends in Production of Main Agricultural Products Nationwide  
(Unit: 1,000 tons)

	2004	2005	2006	2007	2008
Paddy	35.0	58.9	55.4	60.4	80.3
Maize	82.2	92.2	119.0	71.5	100.2
Cassava	58.8	39.3	39.3	41.2	35.5
Vegetable	N/A	12.5	12.6	12.8	14.2

Source: Ministry of Finance, Timor-Leste in Figures 2003-2005”, “Timor - Leste in Figures 2008”.

Table 5: Production of Main Agricultural Products (Rice, Maize, Cassava) by Region  
(Unit: 1,000 tons)

	Planning	Actual
Dili	2.1	3.0
Aileu	3.3	4.6
Ainaro	3.1	6.8

Source: FAO/WFP(2003) “Special Report-FAO/WFP Crop & Food Supply Assessment Mission to Timor-Leste”, Ministry of Finance”, Timor-Leste in Figures,2008”.

Beneficiary surveys were conducted to examine matters such as changes from before this project to after its implementation. 94 % of respondents answered that rehabilitating the road had promoted agricultural activities in the region. More than one-half of these answered that this promotion of agricultural activities was a result of improving access to markets and saving transit times, while more than 30% answered that it was due to reducing damage during transportation. It can be confirmed from these results that the road improvements have had an impact on promoting agriculture in target region. (See below for details.)

Do you think the improvement of this road contributed to promoting agricultural activities in this area ?	Yes	No	N/A
	95 (94%)	3 (3%)	3 (3%)

How did the improvement of road contributed to agricultural activities? (Multiple Answers)	Transportation time saved	Access to market improved	Damaged crops in transit decreased
	48	40	29

## (2) Regional-level effects

Since it is not possible to obtain economic growth rates at the regional or district level in Timor-Leste, this Evaluation uses the result of beneficiary survey to examine improvement in the living standard of residents in surrounding regions. 89% of respondents answered that the road improvements had made access to markets or public services easier. Of these, the largest number of respondents answered that access to markets had become easier, followed by access to churches, education services and shops. Furthermore, 86% of the beneficiaries answered that easier access to markets had resulted in a change in their income, with 70% of these answering that their income had increased. (See below for details.)

Has the access to markets or public services become easier after 2005 owing to the improvement of the road?	Yes	No
	90 (89%)	11 (11%)

To which place has it become easier to get access? Please choose all that correspond. (Multiple Answers)	Market	Church	Education Services	Shops	Health Services	Others
	101	44	35	35	19	5

Have you experienced any changes in your income due to the improvement of the access to market or public services?	Yes	No
	87 (86%)	14 (14%)

Asked of the 87 respondents who answered “yes” to the above question:

How has your income changed after the rehabilitation of road & bridge?	Increased	Decreased	N/A
	61 (70%)	14 (16%)	12 (14%)

### (3) Securing safety

This project is intended to enable safe and smooth passage on the target section of road through rehabilitating the roads and bridge. It was confirmed through the field observations conducted for this Evaluation that the safety of the Km60.3 Bridge, for which problems such as the danger of bridge collapse due to deterioration of the bridge and scour had been pointed out prior to implementation of the project, is being maintained following reconstruction (replacement), which strengthened the bridge. On the other hand, on the road between Dili and Cassa the number of safety issues, such as vehicles driving at excessive speeds and trucks driving on the road with excessive weight loads, has increased with the improvement to road conditions. Also, in some cases there are no road signs on matters such as speed limits and weight limits, which is a problem that impedes efforts to keep the road safe. Since the MOI alone is unable to respond through means such as ensuring adherence to speed and weight limits through traffic rules and installation of road signs, to improve safety there will be a need in the future to carry out countermeasures in cooperation with the police and others. (Sources: interviews with the MOI and regional offices and field observation)

### 3.4.2 Other Impacts

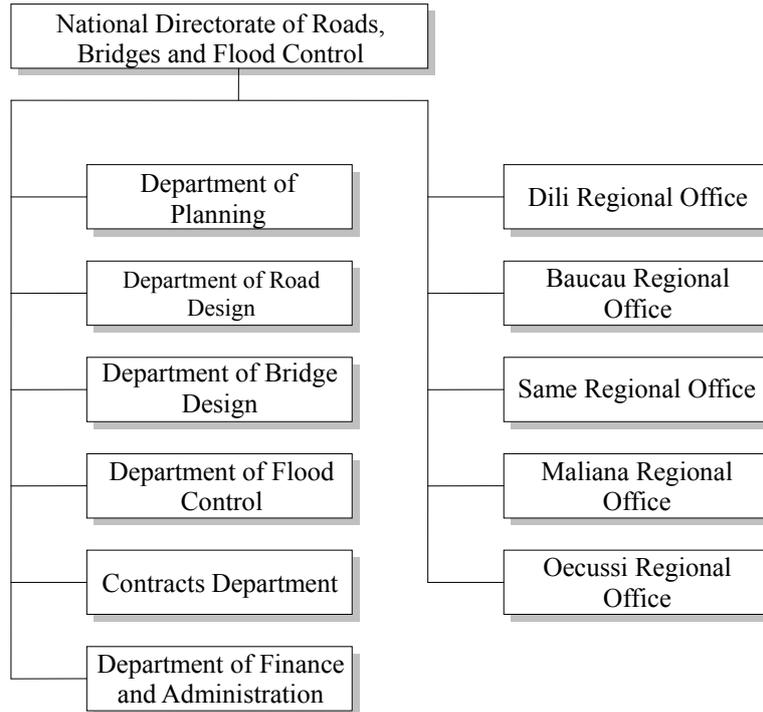
Since this project involved rehabilitation of roads and bridges already in existence, it has been expected since the time of planning that it would have almost no effect on the environment and that there would be little need for land acquisition and resettlement of residents. When the implementing agency and affiliated institutions were interviewed in the Ex-Post Evaluation, it was confirmed that no issues had arisen in connection with land acquisition and resettlement of residents, and no serious environmental impact was confirmed during field observation.

As outlined above, while some concerns remain regarding securing safety in the target sections, results such as increased agricultural production, improved access to public services, and increased income for residents have been confirmed in the target region. Based on these results, this project can be considered to have contributed to some degree to impacts such as promotion of agriculture in the target region and improving the living standard of residents.

### 3.5 Sustainability (Rating: c)

#### 3.5.1 Structural Aspects of Operation and Maintenance

The National Directorate of Roads, Bridges and Flood Control (DRBFC) of the MOI<sup>11</sup> is in charge of projects related to roads and bridges in Timor-Leste. DRBFC consists of its headquarters organization and five regional offices, and maintenance of the roads rehabilitated by this project is under the responsibility of the Dili and Same regional offices.



Source: JICA (2009), Study Report on Information Gathering of Infrastructure Development Projects in Timor-Leste (Draft)

Figure 6: The organization of the National Directorate of Roads, Bridges and Flood Control Services (DRBFC)

At present, the Dili and Same regional offices have about seven technical staff members (supervisors and engineers) respectively. Roads administered by each regional office are categorized as shown below.

<sup>11</sup> On October 17, 2005, the name of the implementing agency changed from the Ministry of Transportation, Communications, and Public Works to the Ministry of Public Works. Then, that ministry was subdivided into the Ministry of Public Works, the Ministry of Transportation, and the Ministry of Natural Resources and Energy in a 2006 governmental reorganization. However, in 2008 these again were combined into a single ministry, under the name of the Ministry of Infrastructure (MOI).

Table 7: Categorization of Roads Managed by Regional Offices (km)

Regional office	National roads	District roads	Urban roads	Rural roads	Total
Dili	293	157	316	709	1,475
Same	246	206	97	655	1,204

Source: JICA (2009), Study Report on Information Gathering of Infrastructure Development Projects in Timor-Leste (Draft)

There are five regional offices at present. Each regional office has about seven technical staff members (there are three at Oecussi), for a total of approximately 30. They are in charge of roads in 13 districts. However, according to interviews with the Dili and Same regional offices, to maintain the roads appropriately it would be desirable to assign at least the same number (seven or so) of technical staff members to each district instead of each regional office.

For this reason, the number of technical staff under the current system cannot be said to be sufficient even for maintaining national roads, and both the Dili and Same regional offices are hoping for increases the number of staff.

### 3.5.2 Technical Aspects of Operation and Maintenance

According to the interview survey to technical staffs in the Dili regional office, it was confirmed that there are no technical problems at present because the staff members have sufficient capacity as needed for road maintenance. However, when a local consultant (engineer) who accompanied the interview team questioned the technical staff to confirm their knowledge concerning areas thought to require large-scale maintenance, they had not ascertained correctly matters such as road conditions and technical measures. For this reason, it is thought that there is a need for future improvements in capabilities of technical staffs and systems.

In addition, since training is conducted depends on whether budgeting is available, periodic training and related tasks concerning maintenance is not conducted at the MOI or the regional offices at present. Furthermore, since even when training is conducted, it mainly takes places in Dili and is intended mainly for supervisors, therefore opportunities to undergo training are limited at regional offices other than Dili.

On the other hand, “The Project for the Capacity Building of Road Maintenance in the Democratic Republic of Timor-Leste” was conducted from 2005 to 2008 with the support of JICA as technical assistance to the DRBFC and the MOI’s Public Institute of Equipment Management (IGE) for conducting appropriate and safe maintenance. Since under current conditions Timor-Leste’s technical staffs require continual support in order to utilize and maintain the results of that training, implementation of Phase II of this project is planned to start soon.

### 3.5.3 Financial Aspects of Operation and Maintenance

As shown in Table 8, the MOI's budget is in an increasing trend in recent years. However, the amount budgeted for roads and bridges in 2009 under the social infrastructure improvement plan are \$14.8 million (see Table 9)<sup>12</sup>. In comparison with the amount of \$90.8 million accumulated as necessary for maintenance of national roads in the master plan study prepared with the support of the ADB, there is a clear budgetary shortfall when it comes to maintenance costs.

Table 8: Budget of MOI

(Unit: Mn\$)

Year	2008	2009	2010*	2011*
Budget	67.7	129.6	193.8	150.6

Note: \* prediction  
Source: Ministry of Finance

Table 9: Budget for Road and Bridges in Social Infrastructure Investment Plan

(Unit: Mn\$)

Year	2009	2010*	2011*	2012*	Total
Budget	14.8	11.1	10.3	11.9	48.1

Note: \* prediction  
Source: Ministry of Finance

In addition, in the interviews with regional offices it was reported that there was insufficient funding for maintenance costs. According to the estimates of technical staff at regional offices, about \$10,000 per kilometer can be considered to be required for maintenance of national roads. For this reason, about \$1.3 million can be considered to be necessary for the 130 km section from Dili to Cassa covered by this project. On the other hand, in 2009 \$1.3 million in total was distributed evenly among the five regional offices for maintenance of roads nationwide. As a result, it can be said that sufficient funding has not been secured for maintenance of the nation's roads.

### 3.5.4 Current Status of Operation and Maintenance

Road maintenance in Timor-Leste is conducted through daily maintenance conducted by the community and period inspections conducted several times a year. However, due to the budgetary and personnel shortages at regional offices, the section of road covered by this project cannot be said to be in a sufficiently maintained state. During field observation, problems were observed occasionally such as cracking and damage in road surfaces, shoulder

<sup>12</sup> ADB (2009), "Preparing the Road Network Development Project-TA7100".

damage, and road widths narrowed by roughly one-half, due to damage from landslides. In many cases, damage affecting road safety was confirmed.

In addition to damage to the road itself, there are spots where road visibility is impeded due to the absence of maintenance for trees and other plants, clogged side ditches, cracks in the road surface where water pipes run beneath the road asphalt, road passages narrowed by large trees that have fallen and been left there, and other problems. Some of these can be considered to represent the effects of daily maintenance by local residents, which had been conducted in the past, not being implemented due to the new procurement and budget rules after 2006. In light of conditions in Timor-Leste such as its natural environment characterized by repeated torrential rains and continually increasing traffic volume, it is expected that road conditions would continue to worsen in the future under current maintenance conditions.



A road with surface damage



A road damaged by installation of water pipes

Furthermore, the MOI, regional offices, and engineers have pointed out problems as of planning stage including road strength. In interviews with related parties (the MOI, regional offices, and AusAid), concerns were pointed out that the roadbed should have been made stronger through more careful detailed study of local conditions and consideration of shrinking the scope of the project or the scope of initial investment during design. While information from interviews and results of field observations alone are not sufficient to conclude that there was a problem with planning during design since this project focused mainly on rehabilitation of existing roads and installation of drainage facilities and did not cover full-fledged asphalt and concrete paving, at the very least it can be considered that there was a need for more care at the design stage concerning investment, medium-term results, and costs related to maintenance needed for securing sustainability.

Major problems have been observed in terms of the structure, technology, and financial situation in the maintenance of this project, therefore sustainability of the project is low.

## **4. Conclusion, Lessons Learned and Recommendations**

### **4.1 Conclusion**

In light of the above, this project is evaluated to be (B) satisfactory. While there are issues that should be resolved in the future concerning sustainability, the project has contributed to smoother transportation in the target section, through rehabilitating roads and bridges connecting the capital city of Dili with main cities serving as bases for agricultural development. Furthermore, it has achieved most of its goals, including increasing income of residents of the region (improving the living standard of community residents) and increasing agricultural production in the target region (promotion of agriculture).

### **4.2 Recommendations**

#### **4.2.1 Recommendations to Implementing Agency**

- (1) In observation of the road between Dili and Cassa, cases of road damage resulting from installation of pipes to draw water and conditions in which excessive driving speeds impeded traffic safety were confirmed. For this reason, it is recommended that future planning should be conducted in order to maintain the roads comprehensively in the future. The DRBFC should play a central role in such planning, in cooperation with the Department of Water and Sanitation (a part of the MOI in charge of water and sewer pipes), the police (in charge of traffic controls), and other agencies,
- (2) The regional offices in charge of operation and maintenance of road are under conditions of severe staffing shortages, and face the difficulties to conduct appropriate operation and maintenance. For this reason, damage during the rainy season is severe, and it is thought that conditions will worsen if things remain unchanged. To improve the road conditions in the future, there is a need to consider the following points on budgeting and staffing.

**Budgeting:** Budget allocations to the MOI are in an increasing trend. However, there is a strong tendency for much of this budget to be directed toward new road construction, and awareness of maintenance is low. First of all, there is a need to recognize the necessity of road maintenance and to review future budgeting priorities.

**Staffing:** Since the SDP has called for paving 3,000 km of national and district roads, it is expected that the conditions of staffing shortages at the regional offices in charge of operation and maintenance of these roads will worsen as the amount of road under the charge of each staff member increases. To carry out required

maintenance in the future, together with reviewing appropriate numbers of technical and other staff members involved in maintenance, the employment of local residents needs to resume in the areas of daily inspection and simple maintenance, in order to alleviate the current staffing shortage at regional offices. (Implementation of such employment currently is being deferred.)

### **4.3 Lessons Learned**

- (1) In evaluation of this project, it was not possible to obtain sufficient information at the implementing agency on project effects and impacts, forcing reliance on information from parties such as international agencies and related agencies providing support for road sectors in the field. It is conceivable that when implementing a project in a country with weak governance such as Timor-Leste, the subjects reviewed during project formulation need to include giving advice on methods of maintaining project data along with project implementation.
  
- (2) In this project, the content of planning was developed based on anticipated traffic volumes and weather conditions and on current road conditions with a limited budget. However, since it was difficult to forecast weather conditions and due to the effects of traffic volume increased more than expected and problems of insufficient maintenance for roads, at present some parts of the road in the section covered by this project show signs of weakness or safety problems. For this reason, it can be said that in considering the content of future plans there is a need to take care to ensure that the content of such plans takes into consideration the balance between project costs and effects that can be realized over the medium to long term, based on more careful detailed study of conditions in the field and on ascertaining the maintenance capabilities of the implementing agency in connection with persistence effects.