



Performance Evaluation Report

Project Number: PPE: TIM 2010-62
Grant Numbers: 8181-TIM(TF) and 8198-TIM(TF)
December 2010

Democratic Republic of Timor-Leste: Emergency Infrastructure Rehabilitation Project, Phases 1 and 2

Independent Evaluation Department

Asian Development Bank

CURRENCY EQUIVALENTS

The currency of Timor-Leste is the US dollar.

ABBREVIATIONS

ADB	–	Asian Development Bank
APORTIL	–	Port Authority of Timor-Leste
DNE	–	Direcção Nacional de Estatística (National Statistics Directorate)
DRBFC	–	Directorate of Roads, Bridges, and Flood Control
EDTL	–	Electricidade de Timor-Leste
EIRR	–	economic internal rate of return
ETTA	–	East Timor Transitional Administration
GDP	–	gross domestic product
HDM 4	–	Highway Development and Management Tool
IED	–	Independent Evaluation Department
IEM	–	Independent Evaluation Mission
PCR	–	project completion report
PMU	–	project management unit
PPER	–	project performance evaluation report
RRP	–	report and recommendation of the President
RSIP	–	Road Sector Improvement Project
TA	–	technical assistance
TFET	–	Trust Fund for East Timor
UNTAET	–	United Nations Transitional Administration in East Timor
VMC	–	village management committee

WEIGHTS AND MEASURES

km	–	kilometer
kWh	–	kilowatt-hour
m	–	meter

NOTES

- (i) The fiscal year (FY) of the government is from 1 August to 31 July. “FY” before a calendar year denotes the year in which the fiscal year ends. For example, FY2004 begins on 1 August 2003 and ends on 31 July 2004. From 2007, the fiscal year of the government changed to commence on 1 January and end on 31 December.
- (ii) In this report, "\$" refers to US dollars.
- (iii) On 18 November 2002, the secretary of Asian Development Bank (ADB) changed the country name from East Timor to the Democratic Republic of Timor-Leste through Circular No. 51-02. Since the change in name occurred during project implementation, the report will use Timor-Leste as the country name. However, East Timor is also used when appropriate.

Key Words

timor-leste, adb, asian development bank, timor, infrastructure, performance evaluation, transport, infrastructure

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The guidelines formally adopted by the Independent Evaluation Department (IED) on avoiding conflict of interest in its independent evaluations were observed in the preparation of this report. E. de Sousa Piedade, J. Supangco, and J. Trindade were the consultants. Mr. E. de Sousa Piedade was associated with the implementation of one subproject of the Emergency Infrastructure Rehabilitation Project 2 as cost engineer. The international consultant, J. Supangco, and IED's Senior Evaluation Officer supervised the evaluation of that subproject. Besides this, to the knowledge of the management of IED, there were no conflicts of interest of the persons preparing, reviewing, or approving this report.

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BASIC DATA
Grants 8181-TIM and 8198-TIM:
Emergency Infrastructure Rehabilitation Project, Phases 1 and 2

Project Preparation and Institution Building

TA No.	TA Name	Type	Person-Months	Amount (\$'000)	Approval Date
3401-TIM	Transport Sector Restoration	ADTA	30	1,000	10 Feb 2000
3731-TIM	Transport Sector Improvement	ADTA	36	500	1 Oct 2001

Key Project Data (\$ million)	As per ADB	
	Loan Documents	Actual
Total Project Cost	38.77	38.75
Phase 1	29.77	29.76
Phase 2	9.00	8.99
TFET Amount and Utilization ^a	38.80	38.75
Phase 1	29.80	29.76
Phase 2	9.00	8.99
TFET Amount and Cancellation		0.05

Key Dates	Expected	Actual
Phase 1		
Appraisal		7–28 Feb 2000
Grant Negotiations		28–29 Mar 2000
Board Approval		13 Apr 2000
Grant Agreement		19 Apr 2000
Grant Effectiveness	18 Jul 2000	19 Apr 2000
First Disbursement		30 Aug 2000
Project Completion	31 May 2002	Dec 2004
Grant Closing	30 Nov 2002	25 Jul 2005
Months (effectiveness to completion)	22	56
Phase 2		
Appraisal		14–28 Feb 2001
Grant Negotiations		22–25 Jan 2002
Board Approval		18 May 2002
Grant Agreement		18 May 2002
Grant Effectiveness	16 Aug 2002	18 May 2002
First Disbursement		13 Mar 2003
Project Completion	31 Dec 2003	28 Feb 2007
Grant Closing	31 Dec 2003	17 Oct 2007
Months (effectiveness to completion)	17	57

Internal Rates of Return	Financial (%)			Economic (%)		
	Appraisal	PCR	PPER	Appraisal	PCR	PPER
Road Restoration	nc	nc	nc	nc	37.5	6.8
Cassa Bridge	nc	nc	nc	nc	41.6	20.8
Manatuto–Natarbora	nc	nc	nc	nc	17.4	0.0
Tibar–Maliana	nc	nc	nc	nc	13.2	2.3
Maliana–Zumalai	nc	nc	nc	nc	88.9	30.5
Baucau–Viqueque	nc	nc	nc	nc	51.4	(0.4)
Power Supply	nc	nc	nc	nc	nc	nc
Port Rehabilitation	nc	nc	18.4	nc	nc	12.3

() = negative, ADB = Asian Development Bank, ADTA = advisory technical assistance, na = not applicable, nc = not calculated, nr = not required, PCR = project completion report, PPER = project performance evaluation report, TA = technical assistance, TFET = Trust Fund for East Timor, TIM = Timor-Leste.

^a TFET was established by the International Bank for Reconstruction and Development and the International Development Association to finance an emergency reconstruction and recovery program in Timor-Leste.

Borrower Democratic Republic of Timor-Leste and United Nations Transitional Administration in East Timor

Executing Agency Ministry of Water and Public Works
(formerly Ministry of Transport and Communications and Public Works)

Mission Data

Type of Mission	Phase 1		Phase 2		Total	
	No. of Missions	No. of Person-Days	No. of Missions	No. of Person-Days	No. of Missions	No. of Person-Days
Appraisal	...	...	1	45	...	...
Project Administration	12	307	7	52	17	354
Inception	...	...	1	4	...	...
Consultation	...	...	1	1	...	...
Special Grant Review	1	3	1	1	2	4
Review	10	262	4	46	14	308
Midterm Review	1	42			1	42
Project Completion	1	34	1	37	2	71
Independent Evaluation	...	...	...	...	1	24

... = not available.

EXECUTIVE SUMMARY

Timor-Leste emerged from a series of conflicts that caused heavy destruction to the country's infrastructure. The Trust Fund for East Timor (TFET) was established in 1999 under the trusteeship of the International Development Association to assist in the provision of emergency assistance and to help expedite a return to normalcy. The Emergency Infrastructure Rehabilitation Project, Phase 1 and Phase 2 was financed by the TFET to contribute to the repair and rehabilitation of the roads, port, and power infrastructure. The Asian Development Bank (ADB) prepared the two phases and managed those following ADB procedures. Phase 1 was approved in April 2000 and completed in December 2004, and Phase 2 was approved in August 2002 and completed in February 2007. This project performance evaluation report by the Independent Evaluation Department assesses the development effectiveness of Phase 1 and Phase 2 allowing for sufficient time after project completion.

The main rationale of Phase 1 (grant amount \$29.8 million) and Phase 2 (grant amount \$9.0 million) was to support humanitarian assistance in Timor-Leste by improving infrastructure facilities and by creating a foundation for new institutions to be set up. The expected results comprised (i) long-term contributions to the future economic development of Timor-Leste; and, more significantly, (ii) contributions to expedite a return to normalcy toward the formation of a government. For the latter result, the immediate outcomes were to constitute (i) transport and power infrastructure, allowing access to humanitarian assistance, health care, and water supply; and (ii) a sustainable road transport system, promoting economic and social activities.

The outputs of Phase 1 were (i) road rehabilitation, including repair works on 1,249 kilometers of the core road network and construction of four regional road maintenance depots; (ii) port rehabilitation, including construction of a wharf extension, repairs to the slipway, and upgrading the container yard; and (iii) power rehabilitation, including installation of new power plants (i.e., diesel generators), transformers, subtransmission lines, low-voltage distribution lines, and consumer connections. These outputs were broadly achieved as planned. Phase 1 also included several sector studies intended to contribute to the development of new institutions in the country. Phase 2 achieved (i) road restoration, including civil works and drainage improvement over small sections of roads identified at appraisal; and (ii) addressing landslips by providing slope protection and bioengineering in mountainous areas. The component for the establishment of a routine maintenance regime was not implemented. Capacity development was limited to providing on-the-job training of selected personnel who were assigned as counterpart staff.

The phases are rated *relevant* since they were designed to address the post-conflict situation in the country by restoring basic infrastructure. However, the subprojects could have been more geographically focused to enable better implementation and use of resources. Phase 1 could be defended for covering the entire country since it was justified along emergency assistance lines. Phase 2, however, could have been better designed, taking into account the need to focus on road improvement from the subbase rather than patch-and-mend repair. The use of a multisector approach for Phase 1 was appropriate given the initial phase of the government. Phase 2 focused on reducing the roads subsector maintenance backlog but minimally contributed to improving the road pavement condition and quality. Both phases were designed as capital investment projects but lacked specific elements of a post-conflict dimension, such as encouraging cross-group stakeholder meetings and developing subprojects that enable stronger exchanges between conflicting communities.

Phase 1 and Phase 2 are rated *effective* since they provided immediate benefits by facilitating provision of humanitarian aid and movement of security forces. The power component of Phase 1 was effective in normalizing the electricity supply in some areas.

However, fuel supply and technical issues delayed restoration in other areas. The port component of Phase 1 was effective in improving port efficiency, but these benefits were accrued after they were urgently needed. Subsequently, the investment in Dili's port was effective in facilitating cargo as well as passenger movements.

Both Phase 1 and Phase 2 are rated *less efficient* because the expected benefits were delayed, and the economic analysis indicated a lower economic internal rate of return for the roads components, and a marginal return for the port component. The power component of Phase 1 is *less efficient* since most power plants were not operational at completion and all of them are currently operating at lower efficiency levels (i.e., 6 hours per day only). A detailed economic reevaluation of Phase 2 road projects showed an overall return of 10.6%.

The sustainability of Phase 1 and Phase 2 is rated *unlikely*, confirming the rating of the project completion report. The lack of technical equipment and management capacity with the roads and power utilities, combined with the low budgetary allocations, provide a strong reasoning for this rating. These factors also identify the development gaps that development partners need to fill in conjunction with the government. The current consumer tariff rates for electricity charged by Electricidade de Timor-Leste are not sustainable, since they are lower than the 2002 rates and necessitate heavy subsidy from the government. The port component, however, is *likely* to be sustainable since the financial revenues have increased to a level where they can cover the cost of port operations. Charges for Dili's port have not been changed since 2003, indicating that the port does not contribute sufficient revenues to the national economy.

The overall impacts of Phase 1 and Phase 2 are rated *moderate*. Given the nature of the emergency assistance, the phases were not designed to provide long-term economic and social impacts. Phase 1 included a subcomponent for roads that enabled provision of training by the project management unit advisors to contractors and public services staff in the regional offices to develop technical and contract management skills. This had *moderate* impact on institutional development. The socioeconomic impacts of the roads, power, and port interventions were *moderate*. The flow of goods and the supply of electricity had positive benefits in the rural areas.

ADB's performance is rated *satisfactory* in light of the difficult institutional and security situation in the country. ADB staff effectively supervised the two phases and maintained good relations with the government agencies. The performance could have been further improved if ADB's relations with the United Nations Transitional Administration in East Timor had been smoother during implementation. The borrower performance is rated *satisfactory* taking into consideration the transition nature of the administration and the post-conflict context. The related TA projects are both rated *successful*.

The combined overall rating of Phase 1 and Phase 2 is *partly successful*. This rating reflects the post-conflict nature of the country and the associated factors related to emergence from conflict, the lack of adequate planning measures at appraisal stage, institutional development, and provision of funding. It is not necessarily a reflection on the performance of the government and the development partners, both of which were under time and resource pressure to ensure economic and social recovery of Timor-Leste. However, it does provide an opportunity for all stakeholders to resolve the issues now that the country has entered into a relatively stable period.

The lessons from Phase 1 and Phase 2 that could be applied in other contexts are as follows:

- (i) Project designs could have included softer elements to complement parallel efforts, such as a development of a strategic menu of interventions that addressed post-

conflict tensions like encouraging cross-group stakeholder meetings, developing subprojects that enable stronger exchanges between conflicting communities, and encouraging contractors to include cross-community working groups for construction activities.

- (ii) During the transition phase immediately after independence, development partners had an opportunity to conduct policy dialogue with the emerging government on issues that create long-term sustainability, especially for infrastructure development, maintenance, and ensuring basic services in rural areas. This opportunity could have been better utilized.
- (iii) Post-conflict situations require flexibility to be built into the project design so that the project enables a series of interventions that are customized to the requirements rather than impose project designs from other countries. Such interventions need to take into account the sustainability of the outcomes.
- (iv) Capacity development in both the public sector as well as the private sector is important for ensuring development effectiveness.
- (v) Post-conflict situations require designing simpler and realistic projects with balanced expectations.
- (vi) In a post-conflict context, it is important to prioritize the areas of intervention so that funds are used judiciously. Phase 1 and Phase 2 are good examples of such prioritization.
- (vii) Phase 1 and Phase 2 showed that early and frequent supervision is crucial to ensuring efficient project implementation. Despite frequent review missions, there remained areas for improvement.
- (viii) The experience of Phase 1 shows that the village management committees were not effective in maintaining and operating the power plants, since these activities require technical resources and sufficient revenues.

Recommendations

Facilitate strategic capacity development (paras. 148–149). To ensure sustainability and development effectiveness in the infrastructure sector, ADB should coordinate with other development partners to create capacity-development programs for the public sector and where possible for the private sector, to address the deficiency in technical manpower resources.

Assist in impact-driven road rehabilitation (para. 150). Moving away from financing temporary patch-and-mend works, ADB should now provide assistance in Timor-Leste for rehabilitating roads from the subbase to contribute toward improving the country's rural economy in a more sustainable manner.

Conduct policy dialogue for rationalizing power and port tariffs (para. 151). ADB needs to engage in a policy dialogue with the government to rationalize the consumer tariffs for power and port utilities to bring them nearer to market rates.

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I. INTRODUCTION

A. Evaluation Purpose and Process

1. Timor-Leste (formerly known as East Timor) suffered heavy damage during the post-referendum conflict of 1999.¹ The conflict led to the destruction and deterioration of the country's basic infrastructure, including transport and power utilities. This created a major impediment in subsequent recovery efforts and hampered the flow of humanitarian aid and security cargo to districts outside of Dili, the capital city. The Trust Fund for East Timor (TFET)² was established in 1999 to assist in the provision of emergency assistance and to help expedite a return to normalcy. Following a referendum and the independence of Timor-Leste, the United Nations Transitional Administration in East Timor (UNTAET) was set up to govern the country.³ Most post-conflict development efforts were administered by UNTAET.

2. The Emergency Infrastructure Rehabilitation Project, Phases 1 and 2 was financed by TFET. The Asian Development Bank (ADB) prepared and managed these phases. The two projects formed 56% of ADB assistance between 2000 and 2010 in Timor-Leste, indicating their high significance.

3. The evaluation of both project phases was included in the 2010 work program of the Independent Evaluation Department (IED), owing to their significance in development effectiveness across the country—the two phases covered most parts of Timor-Leste and involved basic infrastructure development. As per IED's *Guidelines for Preparing Performance Evaluation Reports for Public Sector Operations*, projects that have at least 3-year operational histories can be selected for postevaluation.⁴ In this case, Phase 1 was completed in 2004, and Phase 2 was completed in 2007. This allowed sufficient time for the results to be visible. Moreover, the 2008 Phase 2 project completion report (PCR) recommended that the project performance evaluation report (PPER) be carried out in 1–2 years.⁵ Finally, the IED evaluation was conducted in parallel with a country program evaluation by the World Bank's Independent Evaluation Group to enable exchange of knowledge and evaluation findings.

4. The PPER is based on IED's *Guidelines for Preparing Performance Evaluation Reports for Public Sector Operations* and involved both desk reviews and fieldwork encompassing (i) interviews with ADB staff, officials of the Government of Timor-Leste, and other stakeholders who were privy to details on the project; and (ii) field inspections, comprising traffic counts on project roads, technical inspections, and socioeconomic assessments of a sample of Phase 1 and Phase 2 subprojects. The performance of the two related technical assistance (TA) projects was also assessed, mainly through desk reviews. An independent evaluation mission (IEM) was fielded in June 2010 to discuss the performance of the project and to conduct field visits. A copy

¹ In a democratic referendum on 30 August 1999, the people of Timor-Leste voted overwhelmingly for independence from Indonesia. This set off a campaign of destruction from pro-integration groups in the latter part of 1999 that destroyed most of the country's infrastructure such as power plants, transmission and distribution lines, water supply facilities, public buildings, and private homes.

² TFET was established by the International Bank for Reconstruction and Development and the International Development Association to finance the emergency reconstruction and recovery program in Timor-Leste.

³ UNTAET was created under a United Nations Security Council resolution with powers to (i) ensure stability; (ii) establish a transitional government; and (iii) establish the judiciary, laws, and policies. UNTAET administered Timor-Leste until a new government became operative on 20 May 2002. Management of the infrastructure sectors was the responsibility of the head of infrastructure, an UNTAET staff member under the public administration and governance section.

⁴ ADB. 2006. *Guidelines for Preparing Performance Evaluation Reports for Public Sector Operations*. Manila.

⁵ ADB. 2008. *Completion Report: Emergency Infrastructure Rehabilitation Project, Phase 2*. Manila (Grant 8198-TIM[TF], for \$9 million, approved on 18 May 2002).

of the draft PPER was shared with the Pacific Department of ADB and their comments have been incorporated where relevant. Copies of the draft PPER were forwarded to the Government of Timor-Leste on 22 October 2010 with a request that comments be provided within 2 weeks. Despite subsequent follow-up, no comments were received.

5. The PCR for Phase 1, which was finalized in November 2005, rated the phase *partly successful*.⁶ It rated the phase *relevant, effective, efficient*, but *unlikely* to be sustainable. Its attached TA grant was assessed *successful*. The PCR for Phase 2 was finalized in September 2008 and rated it *successful*. It rated the phase *highly relevant, effective, highly efficient*, but still *unlikely* to be sustainable. Two associated TA projects are linked to this grant—TA on Transport Sector Restoration⁷ and TA on Transport Sector Improvement.⁸ Both were rated *successful*. The PCR for Phase 2 was found to be optimistic in its efficiency ratings due to the assumptions used in the underlying economic analysis (para. 102).

B. Post-Conflict Context and Challenges

6. After weathering conflict in 1999, Timor-Leste found itself mired in conflict again in 2006 among ethnic groups. Since then, it has witnessed relative stability, enabling a focus on development. ADB has supported infrastructure development since the country's independence in 1999; however, the economy's post-conflict nature has contributed to the low development effectiveness of its assistance. Key challenges facing the country in a post-conflict scenario are below:

- (i) Timor-Leste is governed by an essentially unitary system with every aspect of the administration and fiscal system controlled from Dili. The lack of capacity at the district and local levels has discouraged decentralization. It has also led to lower levels of public expenditure in rural areas constraining rural development and growth of economic activities in rural areas.
- (ii) The 2006 conflict led to a disruption of development programs, causing rural development to lose momentum. Thus, rural poverty and economic stagnation remain major challenges in Timor-Leste.
- (iii) Lack of accountability has been a major hurdle for development effectiveness in the country. Although the government is in the process of establishing an administrative tax and audit court, other institutions exist that have overlapping functions, such as the Anticorruption Commission and the Office of the Inspector General. Such overlap creates tendencies to avoid difficult cases by passing responsibility to other institutions. In addition, the country has witnessed unilateral decisions that lack accountability to the parliament or similar body, such as the "referendum package" in 2009 in which the government approved \$70 million of rapid public works projects without parliamentary approval or an accountability mechanism.⁹
- (iv) Agriculture needs to be developed rapidly to ensure productivity of the farms sector and contribute to the overall economic growth. Subsistence farming is still common, indicating that effectiveness of rural development projects needs to be improved.

⁶ ADB. 2005. *Completion Report: Emergency Infrastructure Rehabilitation Project, Phase 1*. Manila (Grant 8181-TIM[TF], for \$29.8 million, approved on 13 April 2000).

⁷ ADB. 2005. *Technical Assistance Completion Report: Transport Sector Restoration in Timor-Leste*. Manila (TA 3401-TIM, for \$1 million, approved on 10 February 2000).

⁸ ADB. 2008. *Technical Assistance Completion Report: Transport Sector Improvement in Timor-Leste*. Manila (TA 3731-TIM, for \$500,000, approved on 1 October 2001).

⁹ United Nations Security Council. 2010. *Report of the Secretary General on the United Nations Integrated Mission in Timor-Leste (for the period from 24 September 2009 to 20 January 2010)*. New York.

- (v) Data from the Ministry of Finance indicate that those aged 19 years or younger comprise over 50% of the rural population.¹⁰ With a high degree of unemployment, this is a major issue facing Timor-Leste. Every year, the economy is expected to absorb about 15,000–16,000 new entrants into the formal labor market.¹¹ With a weak private sector, Timor-Leste does not have much to offer in terms of economic activities. Despite this pessimistic scenario, the country has the potential to improve its economic status with two key drivers—oil and coffee.
- (vi) Revenues to the petroleum fund were estimated to be \$502 million for 2010, with the aggregate fund value exceeding \$6 billion by the end of 2010.¹² This provides a strong source of revenue for the government. The issue is how these revenues are benefiting the country in terms of infrastructure development. The second driver, coffee, has been a traditional source of livelihood since colonial days. It is the largest cash crop, employing around 50,000 families.¹³ However, this subsector continues to face problems relating to crop quality and productivity.

C. Expected Results

7. **Impact and outcome.** The expected results from Phase 1 and Phase 2 comprised (i) long-term contributions to the future economic development of Timor-Leste (i.e., impact); and, more significantly, (ii) contributions to expedite a return to normalcy toward the formation of a government (i.e., outcome). For the outcome, the immediate outcomes of Phase 1 and Phase 2 were to develop (i) transport and power infrastructure, allowing access to humanitarian assistance, health care, and water supply; and (ii) a sustainable road transport system, promoting economic and social activities. A summary of project results for Phase 1 and Phase 2 is presented in Appendix 1.

8. To achieve its intended outcome of providing emergency assistance to enable humanitarian aid, Phase 1 was to restore transport and power infrastructure to facilitate peace and security and provide access to humanitarian aid.¹⁴ In addition, it was to support the long-term development of roads, ports, and power by strengthening the local contracting industry, instituting sustainable operation and maintenance systems, and providing capacity building for sector management. Phase 2 was to intensify and extend the objectives of Phase 1, focusing on restoring the road network to maintainable condition. In addition, it was intended to continue the programs initiated under Phase 1; establish a viable, efficient maintenance operation; and support the technical preparation of the country's maintenance service to carry out routine maintenance and to contract village groups for maintenance.

¹⁰ The 2004 national census estimated Timor-Leste's population at 925,000. The World Bank shows Timor-Leste's population in 2009 as 1,133,594 in 2009 (Source: <http://data.worldbank.org/country/timor-leste> accessed on 17 November 2010).

¹¹ Government of Timor-Leste. 2008. *Working Together to Build the Foundations for Peace and Stability and Improve Livelihoods of Timorese Citizens—2008 National Priorities*. Dili.

¹² Government of Timor-Leste, Ministry of Finance. 2008. *Final Abstract: Timor-Leste Survey at Statistical Living Standards 2007*. MOF Directory. Dili. The Petroleum Fund of Timor-Leste was set up by an enactment of the Petroleum Fund Law Number 9/2005 promulgated in August 2005. The Fund receives all the petroleum revenues and is a tool that contributes to sound fiscal policy.

¹³ Opening Remarks by H.E. Mr. Xanana Gusmão Prime Minister of the Democratic Republic of Timor-Leste to the First International Conference on Timor Coffee in Dili on 3 April 2009.

¹⁴ Phase 1 was to undertake emergency road repair works to facilitate efficient transport of humanitarian and security cargo and to revive economic activity, expand the capacity of port facilities to reduce congestion in the shortest time possible, and reinstate power supplies.

9. To support the road investment program, two TA projects were planned. Phase 1 had linked TA for transport sector restoration that intended to outline and initiate the establishment of institutions in the transport sector (footnote 7). Phase 2 had related TA for transport sector improvement, which was originally intended to support the establishment of sustainable operations, management, and administration of the transport sector (footnote 8). The scope of this TA was amended to focus on the preparation of a development strategy for the road system.

10. **Planned outputs.** The scope of Phase 1 comprised road rehabilitation, port rehabilitation, and power plant rehabilitation.¹⁵ Phase 2 was to support earthworks to reduce the backlog in periodic road maintenance.¹⁶ It also included bioengineering techniques, improved alignment, and slope stabilization works to improve the stability of slopes in mountainous areas.

11. The planned outputs of the TA for transport sector restoration were to (i) review the legal, regulatory, and policy frameworks for the transport sector; (ii) propose and establish immediate management and administrative structures; and (iii) outline specifications for immediate and long-term restoration needs and development for the sector. The TA intended to foster management contracts for airports and ports to integrate sector operations and cost recovery. It also hoped to prepare a road sector management system, integrating the strengthening and training activities under Phase 1 with long-term sector development needs (footnote 7).

12. The planned outputs of the TA for transport sector improvement were to assist legal and operational establishment of effective and appropriately sized operations for the ports, airports, and roads. For each of these subsectors, the principal outputs planned were (i) establishment of domestic counterpart regulations and performance indicators; (ii) development of legal frameworks, operation improvement plans, and business development plans; (iii) applications to the necessary international conventions; (iv) recommendations for cost-recovery measures; (v) a plan for ensuring maximum private sector involvement; and (vi) a time-bound plan for approving and implementing the legislation and operational proposals and supporting their implementation. Due to the potential overlap of these outputs with other similar interventions in the country, the government and ADB revised the scope of this TA (para. 55).

II. DESIGN AND IMPLEMENTATION

A. Formulation

13. Phase 1 was prepared by a World Bank-led multiagency joint assessment.¹⁷ The assistance, because of its emergency nature, was approved through shortened processing procedures. An appraisal mission was fielded in February 2000, the grant negotiations took place on 29 March 2000, and the ADB President approved the grant on 12 April 2000. Phase 1 was formulated as a quick response to the post-conflict needs of the country. Phase 2 was approved

¹⁵ ADB. 2000. *Report on a Project Grant from the Trust Fund for East Timor to the United Nations Transitional Administration in East Timor for the Emergency Infrastructure Rehabilitation Project*. Manila (Grant 8181-TIM[TF], for \$29.8 million, approved on 13 April). Road rehabilitation included road repair, equipment for road repair works, labor-based road and causeway reconstruction, and rehabilitation and reinstatement of bridges and depot facilities. Port rehabilitation included wharf extension at Dili's port; restoration of the landing craft slipway at Dili's port; restoration of the eastern container yard; provision of beach matting at Beacu, Betano, and Suai; port repairs; and equipment for landing of goods. Power plant rehabilitation included rehabilitation of 15 power stations, rehabilitation and reinstatement of distribution lines, restoration of communications between Dili and power stations, replacement of the destroyed Comoro power plant switchgear, and support for financial power sector management.

¹⁶ ADB. 2002. *Report on Supplementary Funding from the Trust Fund for East Timor for the Emergency Infrastructure Rehabilitation Project—Phase 2*. Manila (Grant 8198-TIM[TF], for \$9 million, approved on 25 July).

¹⁷ Doc. R74-00: Joint Management Arrangements for the Trust Fund for East Timor, approved by the Board on 23 March 2000.

as supplementary financing. It was formulated as a follow-on project to provide sustainable road works that would reduce annual emergency rehabilitation requirements and support establishment of a road maintenance regime. Because of the emergency nature of the assistance, detailed economic and financial analyses were not undertaken for Phase 1. Phase 2 contained economic analysis for the road projects covered.

14. Both Phase 1 and Phase 2 were formulated on the basis of allocating specific subprojects across various infrastructure sectors among major international aid agencies extending assistance to Timor-Leste.¹⁸ While the United Nations made direct provision for emergency humanitarian aid, ADB and the World Bank formally agreed to coordinate closely on TFET grant funds for assistance to other sectors. ADB was assigned the role of lead agency and made responsible for restoration of the infrastructure sector including transport, energy, telecommunications, and water supply and sanitation. The subproject sizes under Phase 1 and Phase 2 were determined primarily by the availability of TFET funding rather than from cost estimates. Flexibility was built into the project design to encourage optimal revision in scope as implementation progressed (e.g., the specific location and nature of the civil works).

B. Rationale

15. The rationale for Phase 1 and Phase 2 was to support the humanitarian assistance in Timor-Leste by improving the country's infrastructure facilities and to create the foundation for new institutions to be set up in the transport sector. The restoration of road access, decongestion of ports, and restoration of power were urgently required. To stop the continuing deterioration of roads due to lack of maintenance, Phase 2 was designed to supplement Phase 1 by further restoration works on selected roads to decrease the maintenance backlog.

16. Phase 1 and Phase 2 were part of a series of projects implemented by ADB in Timor-Leste, which included other sectors such as water supply and sanitation rehabilitation. With the country just barely recovering from pre- and post-independence referendum conflict and unrest in 2006, the new government needed support. Phase 1 and Phase 2 were designed to provide the new government a starting point for sustained recovery by normalizing the lives of the population and enabling them to pursue economic activities and to access social services.

17. The project design was generally in line with ADB's earlier policy for post-disaster emergency assistance as stated in the ADB Operations Manual.¹⁹ A key feature of ADB's earlier policy was restoring infrastructure to pre-conflict levels using the existing base expeditiously. The policy advocated 3-year activity focused on quick recovery and restoration of normal services. Other aspects of the policy comprised community participation, coordination with other development partners, and a sector approach to project design. The project was generally in line with this policy, although most subprojects had no community participation.

18. ADB's Operations Manual was revised in 2004, with the current policy adopting a more comprehensive disaster management approach integrated within the national development process.²⁰ Besides a specific disaster prevention phase, the new policy stresses distinct phases involving short-term transitional assistance and medium- to long-term rehabilitation and reconstruction. In the case of the project, the road repairs, reinstatement of power supply, and

¹⁸ The formulation of Phase 1 and Phase 2 was done in (i) consultation with the UNTAET, which administered Timor-Leste until 19 May 2002; (ii) consultation with the government, which commenced its operations on 20 May 2002; and (iii) close coordination with development partners, particularly the World Bank.

¹⁹ ADB. 1995. Rehabilitation Assistance after Disasters. *Operations Manual*. Section 25. Manila; ADB. 1995. Use of Surplus Loan Funds. *Operations Manual*. Section 14. Manila.

²⁰ ADB. 2004. Disaster and Emergency Assistance. *Operations Manual*. OM D7/BP. Manila.

port rehabilitation were short-term transitional assistance that should have been followed up by long-term rehabilitation, which includes upgrading infrastructure to ensure sustainability. Such upgrading has yet to take place in Timor-Leste. ADB and the government are in the process of developing a new project that could be a step in this direction.

C. Cost, Financing, and Executing Arrangements

19. Appendix 2 provides the details of the estimated and actual costs of Phase 1 and Phase 2.

1. Phase 1

20. The actual cost of Phase 1 was \$29.76 million, compared with the appraisal estimate of \$29.77 million. The cost of the roads component at completion was \$0.18 million higher than the appraisal estimate of \$20.55 million (excluding contingencies). Specific subproject cost estimates were not prepared at appraisal as the overall project budget was derived from available TFET funds.

21. The actual cost of the port component was \$0.86 million lower than the appraisal estimate of \$2.06 million. Savings through the cancellation of cargo-handling equipment (\$0.73 million) and beach matting (\$0.09 million) was generated. The wharf extension and repairs to the slipway were executed as a single contract package for \$0.325 million, including design and supervision, lower than the appraisal estimate of \$0.440 million. An increase in the scope to refurbish the eastern container yard resulted in an actual cost of \$0.854 million (including design and supervision), higher by \$0.654 million than the appraisal estimate. The allocation of \$0.60 million for miscellaneous emergency repairs was used to fund the overrun.

22. The actual cost of the power component was \$5.45 million, higher than the appraisal estimate of \$2.77 million. This was due to the change from rehabilitation to a contract for the supply of new power plants, goods, installation, commissioning, and training for 13 new subdistrict and one district power stations. The contract was amended through three variation orders to include three more new power plants. This major cost overrun was covered by the net savings from roads, ports, and project management unit (PMU) components as well as by surplus physical and price contingencies.

23. The actual cost of the consulting services was \$2.376 million, which was about \$0.674 million lower than the appraisal estimate of \$3.050 million. Savings were accrued through the reduction of consultant inputs from the estimated 48.0 person-months to 31.8 person-months for road maintenance engineers and from the estimated 24 person-months to 7 person-months for the power specialist. The 24 person-months allocated for the ports engineer was not used. Additional savings were generated by direct recruitment of a financial advisor instead of recruitment through a firm. The person-months for the chief technical advisor increased from 6 to 20, with the incumbent also assuming responsibility for the port civil works. Additional specialist services for geotechnical advice, river training, road asset management, and financial management were procured under the PMU component and were covered from the savings generated.

2. Phase 2

24. The actual cost of Phase 2 was \$8.99 million, compared with an appraisal estimate of \$9.00 million. The actual cost of civil works was \$6.67 million, lower than the appraisal estimate of \$6.72 million (excluding contingencies). Compared with the appraisal cost estimates, the

actual backlog and earthworks cost was \$0.14 million higher, actual slip rehabilitation cost was \$0.64 million higher, and actual routine maintenance program cost was \$0.83 million lower. At appraisal, the subproject sites were not identified except for a tentative list of projects, which was preliminarily determined by ADB's June 2002 inception mission. In July 2003, the government requested minor changes, which had a minor impact on the implementation plan and allocated funds. Based on the detailed designs completed, nine contract packages were to be tendered, but due to funding limitations, seven were actually tendered.

25. The actual cost of consulting services was \$2.32 million, higher by \$0.97 million from the appraisal estimate of \$1.35 million. The actual project management and training component cost was \$1.96 million, higher than the \$1.02 million appraisal estimate. The actual cost of detailed engineering was \$0.36 million, which was higher than the \$0.33 million appraisal estimate. The minor cost overruns were attributed to the delays encountered at the beginning of project implementation. To finance this additional cost, the unallocated category and savings from some completed civil works contracts were used to cover the additional costs of the PMU staff and design and supervision consultants as approved by ADB.

26. Phase 1 and Phase 2 were funded from the TFET, which was established under the trusteeship of the International Development Association of the World Bank Group. The TFET did not include ADB's own resources.

27. At the start of Phase 1, there were no institutions in place. A PMU was set up in April 2000 to manage both phases. It was empowered to procure goods and services under the oversight of UNTAET and ADB. It was manned by both local staff and international experts, and the international experts were expected to train the local staff. The PCR for Phase 1 stated that the decision to empower the PMU with the authority of an executing agency was not appropriate since it created a conflict with UNTAET during implementation. During implementation, the PMU's role was reviewed when the government developed its own capability.

28. For Phase 2, the Ministry of Water and Public Works (now the Ministry of Infrastructure) was the executing agency. The PMU was moved to operate under the executing agency. To supervise the PMU, a steering committee was established, but this had limited effectiveness since the steering committee meetings were discontinued.

D. Procurement, Construction, and Scheduling

29. Table 1 shows the schedule of completion of the various components.

Table 1: Implementation Performance

Project Component	Planned Completion Date per RRP	Actual Completion Data per PCR	Delay (months)	Cause of Delay
Phase 1				
Road rehabilitation	31 May 2002	30 June 2002	1	Contractor problems
Port rehabilitation	31 December 2001	30 June 2002	6	Additional scope of work
Power rehabilitation	31 December 2001	31 December 2004	36	Additional scope of work and overly ambitious schedule
Phase 2	31 December 2003	28 February 2007	38	Start-up delays and overly ambitious schedule

PCR = project completion report, RRP = report and recommendation of the President.

Source: Asian Development Bank project management database.

1. Phase 1

30. The recruitment of consultants and procurement of civil works contracts under Phase 1 were carried out generally as per ADB Procurement Guidelines.²¹ The appointment of a management contractor for Electricidade de Timor-Leste (EDTL) was delayed. The government's evaluation committee endorsed a management contractor bid for ADB approval, and ADB's procurement committee approved awarding the contract. Subsequently, the government reversed its position and recommended the second-ranked bidder for the contract. ADB considered this to be a case of misprocurement and formally withdrew its responsibility from the management contractor component.

31. Besides procuring the management contractor, no other significant problems arose with consultant selection, packaging contracts, preparation of tender documents, and bid evaluations. The PMU worked closely with ADB and UNTAET to ensure that selection criteria and contract award recommendations were agreed on and in line with ADB procurement guidelines. However, given the transitory state of the country, it was unrealistic to assume that the phase could have been completed within 2 years.

32. During implementation for the roads component, there were difficulties in recruiting and establishing personnel in the regional offices as well as delays in refurbishing the depots. This delayed the start of maintenance activities, which resulted in the nondisbursement of funds in the rural areas to the extent anticipated. Some of the initial Phase 1 contracts were extended until the road maintenance and rehabilitation contracts began. All backlog and periodic maintenance contracts were to be completed by 31 December 2001, but due to the slow progress of the contractors, these were not completed. The port and power components also experienced delays due to quality problems and contractors' inefficiency.

33. For the port component, problems with the quality of materials delayed the operation of the wharf extension. The improvement of the eastern container yard and the rehabilitation of the slipway were completed as scheduled. The excessive dust generated by container-stacking equipment and activities became an environmental and safety concern, so a second phase was added to the subproject's original scope to pave the eastern hard stand. The second phase comprised paving the eastern container yard and procuring security fencing, floodlights, fire equipment, and refrigerated container power outlets, and was completed in 2002.

34. For the power component, the savings from the PMU, road, and port components were reallocated. This increased the rehabilitation activities to accommodate the increased scope of the component. Two consecutive severe rainy seasons adversely affected field activities, further aggravating delays already incurred. However, the component benefited from incremental funding and installed new power plants instead of merely rehabilitating older ones. The larger scope of the power component could not be realistically completed within the originally estimated time frame.

2. Phase 2

35. The procurement process for Phase 2 used international competitive bidding, local competitive bidding, and international shopping procedures in accordance with ADB procurement guidelines. It was originally considered that prequalified contractors in Phase 1 would be invited to bid for Phase 2. However, with significant changes in Timor-Leste's construction industry, ADB agreed to use the post-qualification procurement method.

²¹ ADB. 1999. *Guidelines for Procurement under Asian Development Bank Loans*. Manila.

36. The grant was approved on 18 May 2002 with the original closing date of 31 December 2003. It was closed on 17 October 2007 after three extension requests from the government, a cumulative delay of 46 months. Project activities started 8 months after the intended start date due to slow preparation of the civil works procurement plan, selection of the shortlist of qualified firms to be invited to submit proposals for detailed design consulting services, selection of regional engineers, and selection of the position of chief technical advisor for the PMU. Due to the civil unrest from April to July 2006, there were further delays in project implementation, since most of the international personnel left the country. The construction supervision consultants were remobilized on 23 June 2006 in the Baucau office and in the Maliana office on 17 July 2006. Two contractors (for Tibar–Ermera road and Ermera–Hatolia road) did not resume their work after the civil disorder. This delayed project completion, since this work had to be awarded to other contractors as variation orders.

37. Experience from both Phase 1 and Phase 2 shows that the project implementation schedules envisaged at appraisal were optimistic and difficult to achieve. Despite the experience of Phase 1, Phase 2 could have adopted a more realistic implementation schedule, taking into account the country's post-conflict situation.

E. Design Changes

38. Phase 1 involved many design changes. Subproject size depended on available TFET funds, and flexibility was built into the design to allow for revisions in scope as needed. After completion of road repairs, transport of goods by sea within the country was no longer required. Hence, the beach-matting component for Beacu, Betano, and Suai was canceled. The provision in 2002 of security fencing, lighting, fire equipment, and refrigerated container power outlets improved port efficiency.

39. Phase 1's power component had envisaged replacement of the Comoro power station switchgear. However, this was canceled and transferred to the Government of Japan for financing. Phase 2 envisaged providing technical support to establish a routine maintenance regime (i.e., a community-based road maintenance program and related technical capacity in field organization). This component was not implemented.

40. Funding limits resulted in the exclusion of the rehabilitation and reinstatement of the distribution lines subcomponent from the main turnkey contract for the power sector. This was reintroduced partly through variation orders. The utility financial management subcomponent provided \$0.80 million for consultancy in power sector financial management. The consulting firm failed to complete its work and abandoned the assignment, although it secured full payment of its contract. This is discussed in more detail in Appendix 3.

F. Outputs

1. Phase 1

41. Phase 1 was implemented as envisaged at appraisal. At the output level, it mostly met all appraisal targets for the roads, port, and power components. The outputs of Phase 1 were as follows.

42. **Roads.** The IEM confirmed the PCR observations that only repair works were actually carried out by Phase 1 on 1,249 kilometers (km) of the core road network (which included

600 km of key district and subdistrict roads). Four regional road maintenance depots (Baucau, Dili, Maliana, and Same) were provided with the necessary equipment for routine maintenance and minor road repairs.

43. Both Phase 1 and Phase 2 did not involve a complete rehabilitation of the road (i.e., they did not result in better quality of roads). They undertook mainly minor road repairs on various road sections to enable restoration of connectivity. It is acknowledged that they were designed as emergency assistance projects and not as road rehabilitation projects.

44. The objective to provide road repairs in various locations across the country resulted in stretching the limited emergency assistance thinly. There was, therefore, room for simpler and more focused interventions. This was true for both Phase 1 and Phase 2.

45. Most of the roads are currently in bad to poor condition, limiting average vehicle speeds to less than 30 km per hour. Roads, which are subjected to heavy rains, have not been maintained efficiently. Appendix 4 provides a summary of the current status of the roads.

46. **Port.** The construction of the 48.7-meter (m) by 12.1-m extension to the main wharf, repair of the slipway in the east hard stand area, and upgrade of the eastern container yard were successfully completed. Concrete quality problems delayed the wharf extension by 1 year. The upgrade of the eastern container yard was carried out in two phases—gravelling was provided to strengthen the area, which was then paved. Finally, Phase 1 provided security fencing, floodlights, fire equipment, and refrigerated container power outlets. Appendix 5 provides a summary of the current condition of the port investments.

47. **Power.** Phase 1 envisaged rehabilitation of 15 power plants. Instead, it installed (i) 16 new power plants (13 single generators, 1 with two generators, and 2 with three generators each of varying capacity); (ii) 10 step-up power transformers; (iii) 31 distribution transformers; (iv) 83 km of new and rehabilitated 20-kilovolt subtransmission lines; (v) 82 km of low-voltage distribution lines; (vi) 120 km of low-voltage home connection cables; (vii) 5,203 consumer connections; (viii) 1,000 single-phase and 300 three-phase meters for consumers with no or defective meters in mid-2001; and (ix) materials for generation and distribution rehabilitation works by the United States in Baucau, Manatuto, and Oecusse districts. Support for power sector financial management was provided, but the outputs were evaluated *unsatisfactory* when the consultant contracted to undertake the component abandoned the work in October 2001. At the request of the government, ADB assisted in the recruitment of a management contractor to take over EDTL. Since the selection process and the award of the management contract deviated from ADB procurement guidelines, ADB withdrew participation in the process. Appendix 4 provides the current status of the power rehabilitation works.

48. **Studies.** The PCR provided details of several studies conducted under Phase 1. However, the IEM could not validate the outputs and outcomes of these studies due to a lack of adequate records with the PMU. These studies were (i) a computerized road asset management inventory and routine maintenance planning system installed at the Department of Roads, (ii) an accounting system for roads, (iii) provision of tug and tow services for Dili's port, (iv) river stabilization studies for bridge sites, (v) preparation of procedures for labor-based road maintenance, (vi) preparation of a legal framework for selection and contracting of an EDTL management contractor, (vii) tariff and manpower review for EDTL, (viii) asset valuation for EDTL, (ix) a management review on power sector institutional reform and governance, and (x) review of broad technical and institutional needs of the subdistrict power stations. Appendix

3 provides an analysis of the power sector financial management consultant contract and the maintenance issues faced by village management committees (VMCs).

2. Phase 2

49. Phase 2 was also implemented as envisaged. It achieved three of four intended targets: (i) road restoration (where engineering solutions can be viably maintained over time), (ii) addressing landslips to facilitate access, and (iii) establishment of a routine maintenance regime. The objective of empowering the local contracting industry and developing a routine maintenance organization was only partly achieved.

50. **Civil works.** The specific locations for the civil works were based on a tentative list of project roads, which was subsequently finalized after grant approval. The works undertaken covered (i) improvement of road conditions from the level of embankment to the base course and, on some sections, up to the surface works; (ii) new construction and rehabilitation of four critical bridges—Cassa, Gleno, Malushun, and Vikida; (iii) slope protection works and retaining walls with an approximate total volume of 29,443 cubic meters; (iv) drainage improvement works, which included 61 m of box culverts, 442 m of pipe culverts, and 3,582 m of surface drains; and (v) bioengineering works of 5,269 m. The cross- and side-drains at Laclubar on the Manatuto–Natarbora road were destroyed by a landslide in March 2008. Minor damage caused by erosion was visible on the subgrade of the road approaches to the Cassa and Vikida bridges. Appendix 4 describes the current conditions of these outputs.

51. Table 2 shows the extent of the actual length of road sections rehabilitated and of the other works completed. It shows Phase 2 carried out limited road rehabilitation and that the majority of the work was linked to drainage, slope protection, and bioengineering. Although the PCR stated that the most critical national roads were rehabilitated, the information made available to the IEM shows that the actual level of road rehabilitation was minimal.

Table 2: Actual Work Completed under Phase 2

Road Section	Length of the Road Section (km)	Actual Length of Rehabilitated Section (km)	Bridge Improved	Drainage Work (lm)	Slope Protection (m ³)	Bioengineering (lm)
A. Tibar–Ermera–Maliana	76.3	2.65	1	1,888.70	15,545.32	2,420
1. Tibar–Ermera	44.8	0.80	1	492.30	4,610.16	1,720
2. Ermera–Maliana	63.9	1.85	0	1,396.40	10,935.16	700
B. Maliana–Zumalai	51.5					
C. Oeleu–Lourba–Zumalai	36.0	0.51		441.00	1,306.75	565
D. Manatuto–Natarbora	80.9	1.96	2	1,578.75	5,115.73	787
E. Baucau–Viqueque	58.0	2.27		177.53	7,474.80	1,497
F. Cassa Bridge			1			
Total	266.7	7.39	4	4,085.98	29,442.60	5,269

km = kilometer, lm = linear meter, m³ = cubic meter.

Sources: Data from the Asian Development Bank project management database and the project management unit database.

52. **Establishment of routine maintenance regime.** During appraisal, Phase 2 aimed to provide technical support to establish a community-based maintenance program and related technical capacity in field organization. This component was not implemented.

53. **Training.** Phase 2 provided on-the-job training for selected personnel who were assigned as counterpart staff members to the supervising consultants during the implementation of civil works as envisaged at appraisal. The counterpart staff members were located in the Baucau and Maliana offices established under the project.

3. Technical Assistance

54. The TA on transport restoration assisted in the preparation of (i) user charges and management contracts for the port and airport; (ii) competitive, sustainable shipping services to Atauro Island and Oecusse District; (iii) an institutional organization and legislative framework for the transport sector; (iv) assessment of port and airport investment and restoration needs; and (v) a multimodal transport plan, which provided background and support documentation for the preparation of the national transport plan (footnote 7).

55. Related to Phase 2 was the TA on transport sector improvement, which was amended to focus on preparation of an updated comprehensive development strategy for the roads system. The updated outputs included (i) identification of optimal level of expenditure on road construction and maintenance, (ii) preparation of road investment program, (iii) development of a program to increase expenditure and management capability for sustainable road maintenance, (iv) recommendations on road user charges, and (v) preparation of basic information that will serve longer-term road planning and management needs of the government. The final TA reports were found to be useful and resulted in two ADB publications as knowledge products.²²

G. Consultants and Contractors

1. Phase 1

56. The performance of the international consultants for the roads component was satisfactory. The performance of civil works contractors was less than satisfactory owing to the delays in achieving the milestones. The contractors were mainly local firms with limited experience and capacities. The roads contract program made allowances for these factors by not strictly enforcing the completion time. As a result, extremely poor performance and lack of commitment resulted in replacement of the contractors.

57. The performance of the international contractors for the port component was satisfactory. They were able to execute all contracts, enforce time limits, and apply the liquidated damages for late completion of the wharf extension.

58. The performance of the international contractor for execution of the main scope of work for the power component was satisfactory, although liquidated damages were applied for late completion. The power component included a subcomponent for power sector financial management, and the consultant abandoned the work 4 months ahead of schedule. Appendix 3 discusses this case in more detail. In view of this, the performance of the power sector financial management consultant was unsatisfactory.

²² ADB. 2007. *Road Sector Investment Planning in the Pacific. An Example of Good Practices: Timor-Leste*. Pacific Studies Series. Manila; ADB. 2007. *Socially Inclusive and Gender-Responsive Transport Projects: A Case Study of the Timor-Leste Road Sector Improvement Project*. Pacific Studies Series. Manila.

59. In addition to the above component, Phase 1 included a component for developing financial management systems for the infrastructure departments. The performance of the consultant for this component was unsatisfactory since the consultant failed to coordinate with the appropriate authorities and reported too late for any comments or feedback to be made on the work. Implementation of intended recommendations was impossible, and the consultant's remuneration was reduced to reflect partial contract delivery.

2. Phase 2

60. At the start, the tender documents for Cassa Bridge did not conform to ADB standard documents. After revisions, ADB approved the bidding documents, and the same consultant was engaged for construction supervision of Cassa Bridge, where it performed satisfactorily.

61. The performance of the consultants for detailed design and construction supervision of the seven contract packages for roads was satisfactory. Due to security problems in 2006, the supervision consultants temporarily demobilized but resumed their tasks to complete all road works. Two contractors did not complete their work due to the civil unrest, and their contracts were awarded as variation orders to existing contractors as approved by ADB.²³

H. Grant Covenants

62. All 31 grant covenants of Phase 1 were complied with. For Phase 2, out of 29 covenants, 25 were fully complied with, 2 were partly complied with, 1 was not complied with, and 1 was not possible to comply with. The first covenant that was partly complied with related to an annual audit of accounts by independent auditors, reports of which were then to be submitted to ADB. The submissions of audited project accounts were repeatedly delayed, although the delays did not adversely affect project implementation. Another partly complied with covenant relates to the project steering committee, which was supposed to have met every 2 months to involve stakeholder representation. This was done initially but subsequently discontinued. The covenant that was not complied with related to the requirement of international bidding for contracts estimated to cost the equivalent of more than \$1 million each and to supply contracts for equipment or materials estimated to cost the equivalent of more than \$500,000. For Phase 2, all contracts, including those above \$1 million, were awarded using local competitive bidding. This was justified by the PCR, considering the small size of contracts and the country's security situation in the country, which discouraged international firms from participating. One covenant, relating to insurance for civil works, was not possible to comply with as no insurance companies exist in Timor-Leste. Bank guarantees for civil works were used in lieu thereof. Appendix 5 provides details of all the covenants.

I. Policy Framework

63. The country's first national development plan was prepared in 2002 after most administrative functions were transferred from UNTAET to a democratically elected government. For the roads subsector, the National Development Plan, 2002–2007²⁴ highlighted a strategy for road and bridge rehabilitation and maintenance, flood control, and erosion prevention. It identified several indicators for these programs but did not include any baselines to monitor. The government has been in the process of preparing an integrated transport policy that includes

²³ The contractors working on the Tibar–Ermera road section and the Ermera–Hatolia road section did not resume operations after the civil unrest of July 2006.

²⁴ Planning Commission, Democratic Republic of Timor-Leste. 2002. *National Development Plan 2002–2007*. Dili.

urban and land-use planning policies. This continues to be in a draft stage, although the idea had been rejected in the National Development Plan, 2002–2007. A transport sector development plan was prepared under the TA for transport sector rehabilitation, which is effectively guiding the transport sector.²⁵

64. The need for adequate road maintenance in Timor-Leste was recognized as early as 2001 during the implementation of Phase 1. However, the progress report on the TFET recognized that the country lacked adequate data to plan a road maintenance program.²⁶ Key policy issues faced by Timor-Leste in 2001 included (i) sustainability of road administration, which had been funded from the United Nations-assessed budget, TFET, and the Central Fund for East Timor; (ii) road maintenance, which had been significantly underfunded; (iii) underfunding of emergency monsoon repair needs, which implied annual occurrence of road closures; and (iv) no funding for the periodic maintenance program required to resolve specific pavement failures, resurfacing, and culvert and bridge repair, which would result in permanent road closing, road breakage, reduction in access, and mobility (footnote 26).

65. For the energy subsector, the National Development Plan, 2002–2007 noted the institutional, financial, and technical constraints to provision of reliable electricity in the country. It identified programs for development of an autonomous power authority, improved services, and enhancing existing service capabilities and training local staff. The latter two programs depended on external assistance.

66. Recognizing the limited local capacity to manage, operate, and maintain the country's electric utility, the government opted to contract out the management of EDTL to a private entity (para. 113). This has enabled the transfer of good practices.

67. The development of ports was domiciled under the sea transport policy of the National Development Plan, 2002–2007, which noted that the cargo portage and handling was entirely dependent on foreign shipping lines. It had programs similar to the transport and energy subsectors, focusing on institutional development, and improvement of infrastructure and services. The performance indicators of the sea transport division were relatively more specific and monitorable.

III. PERFORMANCE ASSESSMENT

A. Overall Assessment

68. Overall, the combined rating of Phase 1 and Phase 2 is *partly successful*. They are rated *relevant, effective, less efficient, and unlikely* to be sustainable. The results are summarized in Table 3. This rating reflects the post-conflict nature of the country and associated factors, such as emergence from conflict, the lack of adequate planning measures at appraisal stage, poor institutional development, and inadequate provision of funding. It is not necessarily a reflection on the performance of the government and development partners, both of which were under time and resource pressure to ensure economic and social recovery of Timor-Leste. However, it does provide an opportunity for all stakeholders to resolve the issues, now that the country has entered into a relatively stable phase.

²⁵ ADB. 2002. *Transport Sector Master Plan for East Timor*. Manila.

²⁶ ADB. 2001. *Second Progress Report on East Timor—ADB/UNTAET-Managed TFET Sectors/Projects and ADB's Technical Assistance Grant Projects*. Presented at Donor's Council Meeting 13–15 June, Canberra.

Table 3: Overall Performance Assessment

Criterion	Weight (%)	Score	Rating
Relevance	20	2.0	Relevant
Effectiveness	30	2.0	Effective
Efficiency	30	1.0	Less Efficient
Sustainability	20	0.0	Unlikely to be Sustainable
Overall Assessment		1.3	Partly Successful

Source: Independent evaluation mission.

B. Relevance

69. Phase 1 and Phase 2 are rated *relevant* based on the needs of the country at the time of appraisal, as well as on the design of the assistance. The project was designed to address the post-conflict situation in the country. The years of conflict had resulted in the deterioration of infrastructure, collapse of basic services, and cessation of construction or maintenance of infrastructure. Phase 1 was designed as part of the TFET to assist in the immediate restoration of basic infrastructure—roads, Dili’s port, and the power supply. It also supported several thematic studies, covering these sectors, which have helped formulate the government’s strategy for further infrastructure development.

70. Phase 1 could have been more geographically focused, taking into consideration the limited resources available to manage project implementation. It covered the entire country, and in the process, incurred higher transaction costs in terms of implementation delays, insufficient supervision, and contractor problems. If the same funds had been deployed in a more focused manner and designed to improve the quality of roads, development effectiveness could have been higher. However, it could be argued that given the constraints on the funds available and the need to provide immediate restoration of connectivity across the country, Phase 1 was appropriate at that time.

71. ADB and UNTAET had the opportunity to design Phase 2 in a more focused manner. However, Phase 2, approved in 2002, continued along the same lines as Phase 1, which diluted its relevance in terms of contributing to the post-conflict economic development. Phase 2 could have been more relevant if it had focused on a geographic area and upgraded the roads to a level at which they could be maintained in the long term. In other words, the project design of Phase 2 could have included road rehabilitation from the subbase rather than just patch-and-mend repair.

72. The use of a multi subsector approach was appropriate at the start, in the absence of a functional government structure. Issues in terms of coordination and internal conflict among the institutions appeared in the initial stage of the new government but were resolved. The new, democratically elected government in 2002 complained about decisions and procedures enacted under UNTAET, which it did not consider as binding. Further, some Phase 1 components, particularly those relating to institutional development in the roads subsector and power sector, could have benefited from a more participatory process. The inclusion of a steering committee in the project design was a positive step, but the discontinuation of its meetings reduced the relevance.

73. Phase 1 was implemented during a period of uncertainty, which was resolved once the new government was established. The country’s National Development Plan, 2002–2007 was completed by the Planning Commission in May 2002 and was to be presented to the new

Parliament after independence on 20 May 2002. Even though it was drafted after the start of the Phase 1 construction work, Phase 1 components were in line with its policies and strategies.

74. Phase 2 was supposed to focus on road backlog reduction and slip repairs to ensure that project roads remained in maintainable condition. However, Phase 2 concentrated on slope protection and embankments and drainage construction without improving pavement condition and quality. This meant that minimal road pavement improvements were made. Given TFET funding constraints, it was reasonable to expect that road sections would be prioritized based on use and the extent of damage. The design of Phase 2 was optimistic since it did not recognize the limitations of the funding available and the extent of work to be done. As a result, Phase 2 had to limit its interventions on road rehabilitation, although it achieved the other components of drainage improvement, slope stabilization, and bioengineering.

75. Moreover, Phase 2's implementation schedule could have been more realistic based on experience from Phase 1. Phase 1 was expected to be completed in 2 years and was already delayed when Phase 2 was appraised. Despite this, Phase 2 was scheduled to be completed in less than 2 years, which was unrealistic.

76. A key feature of the project was its flexible approach to emergency assistance, but this eventually devolved into stop-gap measures, resulting in the project undertaking small repairs and rehabilitations rather than upgrading. For the power component, the installation of new power plants was a step in the right direction in terms of using the flexibility positively. Similarly, for the port, the change in project design was appropriate. However, the geographical spread of roads and power interventions over many parts of the country, with already thin resources, resulted in the absence of a critical mass of interventions from which to draw any synergy in terms of clear impacts.

77. Although the power component was highly relevant at appraisal, the inclusion in the project design of a community-based power management structure diluted sustainability since it was not accompanied by full commitment of administrative, technical, and budgetary support from the government. In a post-conflict situation where security is a major issue, it is unrealistic to assume that the community can manage, operate, and maintain power utility equipment that is highly technical in nature.

78. The port component was highly relevant at appraisal and continues to be *highly relevant*, taking into consideration the needs of the country. The continued and extensive use of the facilities confirms the development rationale of the component in terms of meeting a major portion of the country's transport needs. It is now estimated that more than 95% of international cargo passes through Dili's port.

79. The PCRs for Phase 1 and Phase 2 stated that there was no evidence of any conflicts among the donor agencies in coordinating the assistance, apart from the differences mentioned in Appendix 3. However, a midterm review by the Government of Norway stated that there was a lack of communication regarding donor coordination.²⁷ Para. 126 mentions the differences between ADB and UNTAET. Taking into account the scale of donor activities in the country, the need for efficient donor coordination is important, and such instances could have been avoided.

²⁷ A. Dahlen and P. Gjerde. 2008. *Midterm Review of Assistance in Developing the Electricity Sector in Timor-Leste*. Commissioned by Norwegian Agency for Development Cooperation (NORAD) on behalf of the Royal Norwegian Embassy. Dili. NORAD provided funding for the electricity sector in Timor-Leste to expand the power production capacity, metering and billing, rehabilitation of the electricity grid, and development of hydropower projects.

80. From the above analysis of relevance of Phase 1 and Phase 2, it is clear that ADB had strategically positioned itself to provide assistance for the “harder” sectors (i.e., for infrastructure capital investment projects). These projects were designed appropriately to assist in recovery, but there was no post-conflict dimension. The project design could be applicable in any other emergency assistance context. This highlights the need for “softer” elements in the project design, such as encouraging cross-group stakeholder meetings and developing subprojects that enable stronger exchanges between conflicting communities. Such elements were successfully adopted in Sri Lanka to enable post-conflict peace and economic development.²⁸

C. Effectiveness

81. Phase 1 and Phase 2 are rated *effective* based on the achievement of the targeted outcomes. Phase 1 was designed to enable access to the humanitarian relief and to facilitate peace and security. At completion, Phase 1’s transport components were expected to provide immediate benefits by facilitating provision of food supplies to famine-stricken areas, provision of agricultural supplies to enable cultivation, resettlement of internally displaced persons and refugees, and movement of United Nations peacekeeping forces. The power component of Phase 1 was expected to reinstate the power supply, making possible provision of essential services such as water supply, hospitals, schools, commercial establishments, and industries.

82. Phase 1 is credited with achieving most of these outcomes, especially those related to enabling movement of security vehicles and reinstatement of power supply. However, Phase 1’s outcomes were diluted due to the absence of sustainable forms of post-subsistence agriculture and the lack of essential services such as hospitals and schools in most rural areas. Phase 1’s interventions for road repairs, replacement of power plants, and port capacity expansion contributed to the return to normalcy for Timor-Leste in its post-conflict period. It also supported institutional development in the power sector and capacity building in the roads subsector in anticipation of a new government.

83. Phase 2 is credited with achieving substantial progress on improving access to rural areas and facilitating humanitarian aid programs and security conditions. However, the other outcomes—inducing agricultural cultivation and reducing urbanization trends—continue to remain unachieved. Phase 2’s main outputs were slope protection and embankments and drainage construction. While these served as countermeasures for landslides and road slips, no contiguous road rehabilitation was undertaken. In the areas where the works were located, the IEM observed that the structures had prevented road closure. Landslides and road slips occurred in other areas along the project roads. This could be attributed to the lack of funds since Phase 2 could not cover all the critical sites identified.

84. The PCR for Phase 2 stated that most critical national roads were rehabilitated. This could be misconstrued to imply that Phase 2 was instrumental in improving the quality of the national roads, which was not the case. The PCR could have provided a clearer description of the outputs.

85. The roads components in both Phase 1 and Phase 2 were justified in the respective reports and recommendation of the President (RRPs) on the basis that the TFET would be used for road rehabilitation (Phase 1) and for preventive civil works and periodic maintenance (Phase 2) (footnotes 15 and 16). However, the IEM also found that no contiguous road rehabilitation was actually undertaken as originally envisaged under the RRP. Phase 1 just opened up road

²⁸ World Bank. 2006. *Post-Conflict Fund and LICUS Trust Fund—Annual Report*. Washington, DC.

access (i.e., debris clearing, road patching, and drain clearing and unclogging) as was intended. This, by itself, resulted in a normalized flow of vehicular traffic, which was crucial in the delivery of humanitarian goods, providing security to rural communities, and assuring the communities can avail of various social services. However, these benefits were short-lived, because heavy rainfall and landslides disrupt access to rural areas on a regular basis.

86. The countermeasures incorporated in Phase 2 for improving drainage, embankments, and bioengineering were effective in protecting against road closures and preventing further deterioration of the roads. These achieved the reduction in road maintenance costs for project areas as the civil works prevented substantial deterioration of the roads in those areas. However, the basic condition of the roads were not improved under Phase 2.

87. The road conditions at the time of the IEM were bad to poor. Only the Baucau–Lautem–Los Palos road was found to be in fair to good condition. A summary of road roughness conditions on selected project roads (including roads under Phase 2) visited by the IEM are provided in Appendix 4. The vehicular traffic on most of the roads was found to be light and typical for rural roads. While motorcycles are the dominant mode of mobility, freight is also transported mainly on two-axle trucks. Passenger mobility was also achieved through microlets (i.e., minibuses), minibuses, and cars.

88. Phase 1 equipped five regional depots with equipment for routine road maintenance and minor road repairs. The IEM found most of the equipment in Baucau, Dili, and Maliana nonoperational—either repairable but not useable, junk, or lost. The nonoperational but repairable equipment was in storage due to a lack of budget for repair or was found to be no longer economical to repair.

89. Phase 1 effectively supplied new power plants to assist in the normalization of basic services. Yet this output did not provide sufficient immediate benefits as expected. An April 2005 progress report stated that only about 4 out of a total 35 recently installed subdistrict rural power stations were producing power on a regular, daily basis.²⁹ Diesel generator sets were installed through Phase 1 and programs supported by the governments of Japan and Portugal. However, most plants were not operating because the villages lacked funds to buy diesel and, in some cases, lacked distribution lines (e.g., Fatululik and Fatumean). Although a VMC structure was set up for each village, it was not effective in collecting fees from users and organizing fuel purchases. Discussions with the Manitoba Hydro International, the current management contractor of EDTL, indicated that EDTL had taken back the power plants from the VMCs to operate them through a centralized structure.

90. Most power plants visited by the IEM in 2010 catered mainly to households and operated for 6 hours per day, from 6:00 p.m. to 12 midnight. A few operated for 12 hours or from 6:00 p.m. to 6:00 a.m.³⁰ A number of the subdistrict power plants show substantial wear and tear and poor maintenance.³¹ Several units are either nonoperational, under repair, or operate

²⁹ ADB. 2005. *Ninth Progress Report on Timor-Leste ADB TFET Projects and Other Operations*. Presented at Development Partners Meeting 25–26 April. Dili.

³⁰ Since most villages have, on average, 6 hours of power per day, EDTL is working on increasing the service hours step by step, from 6 hours to 12 hours, then to 18 hours, and finally to 24 hours. Some district towns like Maliana have already upgraded from 6 hours per day to 12 hours per day.

³¹ The IEM discussions with villagers indicated that the project power plants are poorly maintained. Power regularly goes off, sometimes for up to 3 months. When a power plant actually breaks down, it takes weeks before technicians from Dili arrive to repair the generator. In addition, when available, the quality of electricity service is poor and can cause damage to electrical equipment.

below rated capacity. Some power plants seem well maintained and continue to operate despite their deficiencies. The power plant operators received little training and learned mostly from hands-on experience. Thus, the power sector in Timor-Leste needs to strengthen EDTL institutional capacity, enhance financial sustainability, and increase rural electrification.³²

91. Among all the infrastructure investments of Phase 1 and Phase 2, the port component had relatively higher effectiveness but is rated *effective* due to the timing of the benefits and current issues. The rehabilitation of the port provided benefits in terms of improving port efficiency. However, from the viewpoint of emergency assistance, operations of Phase 1's wharf extension missed the peak port traffic (from build-up of stocks for humanitarian assistance and security-related cargo) of 2001, since the construction work had not yet been completed. After completion, the extended wharf, as well as the upgraded east container yard, was effective in handling containers and other freight. The extra capacity did not generate the expected level of economic benefits due to declining port traffic, since inventory levels of humanitarian aid had already flowed in before the completion of the port rehabilitation.

92. In 2010, the project-constructed berth was found to be in limited operating condition and is currently used only by general cargo vessels and not by container ships. This is due to questionable structural integrity and its capacity to handle containerized traffic. Discussions with Port Authority officials indicated that the foundation of the wharf is wearing out. The project-paved container yard is about 10,000 square meters in area and is still being used in the movement of container traffic. It has suffered some damage because of drainage issues, and remedial measures have been employed. However, it remains a major asset of the port and is an important facility. The project-rehabilitated slipway located adjacent to the container yard area is one of two at Dili's port. It is regularly used by the government-owned Nakroma roro vessel that serves Timor-Leste's Oecusse District in West Timor and Atauro Island.

93. At the time of the IEM, Dili's port was operating at near-capacity levels. Continued expansion in port operations will eventually require more space beyond the capacity at the existing location. Shipping economics will also require a deep-sea port to accommodate large vessels, which are slowly replacing smaller vessels. A deep-sea port could be developed outside of Dili. Further, field interviews by the IEM with several shipping agents indicate areas for improvement in terms of efficiency. For example, the SDV Logistics pointed out that processing documents with immigration and the Port Authority still takes some time, which affects overall port efficiency. Other problems, which were identified by the Crocodile Agency, include a poor port maintenance system and general port management. Presently, Dili's port is undergoing rehabilitation in which space allocated for containers is used for construction equipment and storage, adversely affecting port efficiency. As a result, more time is consumed in getting containers out of the port.

D. Efficiency

94. Phase 1 and Phase 2 are rated *less efficient* based on the use of resources in achieving the outcome. A separate evaluation conducted by the European Commission also rated its

³² Given the increasing demand for electricity in the districts and rural areas, EDTL is preparing a plan to rationalize the positioning of ADB-provided power plants. New and higher-capacity power generators are being acquired, replacing the old power generators, which were rehabilitated. These are then relocated to areas of most need or to complement existing capacities to provide longer service time to the communities. This prolongs the service life and utility of the provided power generators.

projects less efficient owing to similar findings as this PPER.³³ The efficiency of the Phase 1 and Phase 2 projects has been rated low owing to the fact that although both phases were designed as emergency assistance and least-cost methods were incorporated, the outputs did not provide all the benefits targeted. No economic evaluation was performed at appraisal because of the projects' emergency nature and because the economic internal rate of return (EIRR) calculations may not be possible or practical. This is supported by ADB's Operations Manual, which states that it may not be feasible for emergency assistance projects to calculate rates of return (footnote 20). Moreover, the PPER's efficiency rating was also affected by the delayed implementation of both phases.

95. Phase 1 did not undertake economic analysis at appraisal or at completion. The roads component may have generated vehicle operating cost savings as well as travel time savings. However, the traffic counts carried out on Phase 2 roads show that the traffic growth has not been significant, indicating that the economic benefits of the road repairs have not yet been fully captured. These traffic counts are indicative of the economic returns for Phase 1 also since some repair work carried out under Phase 1 was on the Phase 2 routes. However, Phase 1 activities were spread over a larger area; thus, the difference in terms of economic analysis between Phase 1 and Phase 2 relates to the measurement of benefits of both phases. Taking into account the emergency nature of the project, Phase 1 is credited with delivering the targetted economic benefits. In view of this, the PCR's rating of *efficient* is validated. In the absence of a specific economic analysis at postevaluation, the rating for the roads component of Phase 1 is *efficient*, but on the lower side. This rating is also indicative of the implementation efficiency since the roads component did not face significantly long delays (only 1 month) and was completed with no cost overruns.

96. The port component of Phase 1 is rated *efficient* using an economic analysis carried out by the IEM. Net benefit flows were estimated as the difference between vessel waiting time with and without the additional berth. Dili's port had two operational berths and was assumed to require an additional berth to relieve port congestion. Based on an economic life of 15 years for the additional berth, this PPER estimated the EIRR at 12.3%, with a net present value of \$0.142 million.³⁴ Appendix 6 provides details of the economic analysis.

97. The power component of Phase 1 is rated *less efficient*, confirming the rating given by the PCR. At project completion, most of the project power plants were not operational due to the inability of local communities to generate revenues sufficient to sustain operation (i.e., diesel fuel, repair and maintenance, and spare parts). Power supply was restored only when the government subsidized the operation of the power plants and funded the fuel supply. This continues to date. Moreover, since most of the power plants operate for only 6 hours at night, they provide limited benefits in terms of growth of economic activities or in terms of improving the security in the areas covered. Further, this component was delayed by 36 months due to a change in project scope and to unrealistic scheduling at the approval stage. Because of the emergency nature of the component and the related lack of data, the RRP, PCR, and this PPER did not estimate its economic internal rate of return (EIRR).

98. The IEM carried out an economic analysis of the port component based on available data on port operations. The estimated EIRR was based on quantified benefits from savings in vessel waiting time due to the additional berth that was constructed. Phase 1 was rationalized to

³³ NIRAS and Aide à la Décision Économique.2009. Final Evaluation of Timor-Leste Rural Development Programme. EU Ref. 2009/208596 (SDC 294). Brussels. Draft. The study was financed by the European Commission, Timor-Leste.

³⁴ The RRP and the PCR did not estimate the EIRR for the port component.

reduce port congestion since the ship waiting at appraisal was 9–12 days. Taking into account the post-conflict situation in the country, the humanitarian and military cargo traffic was substantial. The wharf extension and the other port components were designed to address this need. The benefits were quantified in terms of savings in vessel waiting. The EIRR of 12.3% estimated by this PPER is marginal (i.e., just above the benchmark of 12.0%). It also indicates that the relative growth in traffic attributable to Phase 1 components has been slow. However, the port served the need of reducing congestion of the ship traffic.

99. Phase 2 is rated *less efficient*. No economic evaluation was done on the project roads during appraisal. At project completion, Phase 2 was rated *highly efficient*. This is based on the economic evaluations of the Cassa Bridge and specific roads: (i) Baucau–Viqueque, (ii) Tibar–Ermera–Hatolia–Maliana, (iii) Manatuto–Natarbora, and (iv) Maliana–Zumalai. The PCR's economic analysis was based on traffic counts conducted on these roads. The implementation performance of Phase 2 was less efficient as demonstrated by a completion delay of 38 months.

100. It must be noted that the project works involved mostly slope protection, embankment, drain construction, and road slip repair to protect against project road closures. There was minimal improvement of the road pavement that would have generated major benefits in terms of lower vehicle operating costs and shorter travel times. Appendix 5 provides the differences in the assumptions underlying the economic analysis between the PCR and PPER.

101. Table 4 provides the results of the reestimation of the EIRR for the PPER and a comparison with the EIRR estimated by the PCR. Details of the computations are given in Appendix 6.

Table 4: Summary of Phase 2 Economic Internal Rates of Return

Road Section	PCR EIRR (%)	PPER EIRR (%)
Tibar–Gleno–Ermera–Maliana	13.2	2.3
Manatuto–Natarbora	17.4	0.0
Baucau–Viqueque	51.4	11.2
Maliana–Zumalai	88.9	30.5
Cassa Bridge	41.6	20.8
Whole Project	37.5	10.6

() = negative, EIRR = economic internal rate of return, PCR = project completion report, PPER = project performance evaluation report.

Source: Independent evaluation mission estimates.

102. The major difference in the EIRRs between the PCR and PPER could be attributed to two main assumptions. First, the traffic forecast figures were different. The PCR used limited traffic counts, including 2005 traffic count results. The IEM had the additional knowledge resource of 2005, 2008, and 2010 traffic count results, which provided more specific traffic growth rates split into various vehicle types. The second assumption for different EIRR is the PCR's assumption of road closure during rainy season, which created unnaturally high benefits attributed to the project. Appendix 6 provides further details on the differences. If these assumptions are modified, the EIRR for Phase 2 could increase. The project EIRR is also low due to the benefits not being sustained because of lack of maintenance. In summary, Phase 2 is rated *less efficient* owing to the low EIRR as well as the implementation delay.

E. Sustainability

1. Phase 1

103. Overall, Phase 1 is rated *unlikely* to be sustainable. This validates the PCR rating. Only the port component is *likely* to be sustainable. In recognition of the post-conflict nature of the situation during the formulation of Phase 1 and Phase 2, ADB and development partners could have provided assistance for improving the sustainability of the roads and power sector assets.

104. **Roads.** The benefits from the roads component are *unlikely* to be sustainable. The IEM generally observed a lack of even basic maintenance on the project roads (i.e., vegetation control, drain clearing, repair of embankments, and slope protection works). Fallen trees and large rocks still partly block sections of the roads. There is strong emphasis on road rehabilitation or capital expenditures by the government, but maintenance does not seem to be a priority currently.³⁵ While the quality of road construction before 2002 was satisfactory, the project roads were not maintained after independence and are in poor to very poor condition. Some of the road sections, covered under the ADB-funded Road Sector Improvement Project (RSIP),³⁶ are the same as those covered by Phase 1. The Manatuto–Natarbora road was included under the routine maintenance component of the RSIP, while the Oeleu–Zumalai (Maliana–Zumalai) road was included in its road rehabilitation component.

105. The IEM also noted a lack of technical equipment and management capacity, especially at the regional level for road maintenance. A highly centralized structure for road maintenance exists, with regional offices responsible for the preparation of road maintenance programs, but implementation is contracted out by the central office. The regional offices merely supervise the projects contracted to private contractors. However, the regional offices do not have sufficient technical staff to monitor road maintenance requirements and to supervise road works. There is a substantial lack of roads engineers in the country; even the central office of Directorate of Roads, Bridges, and Flood Control (DRBFC) has only 12 engineers.

106. Based on the road inventory conducted under TA for road network development, only 9% of national roads (122 km) were in good condition, 26% of national roads (351 km) and 4% of district roads (9 km) were in poor condition, and 65% of national roads (879 km) and 96% of district roads (249 km) were in very poor condition.

107. The poor road conditions in Timor-Leste are attributed to the low budget given to road maintenance as compared with road capital expenditures.³⁷ While the capital budget for roads has increased by 66.9% annually from 2004 to 2010, road maintenance allocation has decreased by 6.5% annually for the same period (Table 5). As a percentage of the total road budget, the share of road maintenance declined from 40.6% in 2004 to only 2.1% by 2010. In 2010, the capital expenditure for roads is budgeted at \$71.13 million, while road maintenance budget for the same period is only \$1.5 million.

³⁵ Although the National Development Plan, 2002–2007 reflects the importance of road maintenance, this has not translated into sufficient budgetary allocations for funding maintenance activities.

³⁶ ADB. 2005. *Road Sector Improvement Project*. Manila (Grant 0017-TIM, for \$10 million, approved on 27 September).

³⁷ Based on estimates prepared under TA for road network development, without any road investments, the required annual maintenance expenditure per km depending on the existing road condition ranges from \$4,400 per km to as high as \$20,800 per km. ADB. 2008. *Technical Assistance to Timor-Leste for Preparing the Road Network Development*. Manila (TA 7100-TIM, for \$800,000, approved on 23 July).

Table 5: Road Maintenance Allocation
(\$)

Year	Network Improvement Actual Allocation	Road Maintenance Actual Allocation	Road Maintenance Allocation as % of Total Allocation
2004	3,287,000	2,249,000	40.6
2005	4,945,000	1,086,000	18.0
2006	6,495,000	1,357,000	17.3
2007	27,301,000	2,002,000	6.8
2008	24,569,000	3,253,000	11.7
2009	17,177,000	1,100,000	6.0
2010	71,130,000	1,500,000	2.1
Average Annual Change (%)	66.9	(6.5)	

() = negative.

Source: Directorate of Roads, Bridges, and Flood Control, Ministry of Infrastructure, 2010.

108. **Port.** Benefits from this component are *likely* to be sustainable. Financial revenues from port operations (i.e., navigation fee, dockage fee, wharfage fee, and storage fee for more than 3 days) are expected to cover the cost of port operations. The Port Authority (APORTIL) provided the port revenue and operating cost data as well as statistics on port operations to validate these observations. The growth of vessel and cargo traffic has resulted in increasing revenues, despite the absence of any upward adjustment in port charges since October 2003 (Appendix 5). The IEM calculated the financial internal rate of return for the port component at 18.4%. Details of the computations are given in Appendix 6.

109. In recognition of its strategic importance as a key transport hub and main port of entry, Dili's port has attracted more donor assistance following investments by Phase 1. More recently, Dili's port has received TA from the governments of Japan and Germany for physical improvements and staff capacity building. The Government of Japan has supported Dili's port in terms of provision of navigation aids, rehabilitation of the west container yard, and rehabilitation of the pier including new structures and pilings.

110. For the port sector, APORTIL manages the port as a public corporation. While it generates revenues, these go to the government treasury, and it, in turn, is given an annual budget for its operations, maintenance, and capital expenditures. Even with the tariff rate structure at status quo, APORTIL continues to show increases in revenue collections attributable to growth in vessel and incoming cargo volumes. This indicates likelihood of the sustainability of Phase 1 outcomes.

111. **Power.** The power component is *less likely* to be sustainable. At the completion of Phase 1, the majority of the power plants were reportedly nonoperational, because the PMU stopped providing diesel fuel. The communities did not have the capacity to operate the power plants or to pay for the fuel. Field interviews of the power plants' local operators indicated that the collection from villagers is minimal compared with the cost of providing the service. Revenues from collections in the power plant's service area are insufficient. However, EDTL has assumed responsibility for the power plants, thereby ensuring continued operations. The government, through EDTL, has provided a subsidy by absorbing fuel, supplies, spare parts, equipment, repair costs, and operators' salaries.

112. However, EDTL lacks qualified technical staff to keep pace with the maintenance and repair requirements of the power plants under its responsibility, including those supplied by Phase 1. It has only two mechanics to conduct repairs of all power plants in the districts and/or subdistricts. Major repair works are scheduled and undertaken in Dili by EDTL, so replacement equipment of the same or higher capacity must first be provided to avoid absence of electricity service. Further, the power plants are seldom visited by EDTL personnel. Several interviews

with local operations personnel indicated that some of the power plants were not visited by EDTL staff for 3–4 years.

113. The government outsourced the management of EDTL to a private contractor. The first contract was awarded to the management contractor in 2003. At the end of the contract period in 2007, the power utility operations were in no better shape. In September 2007, a Canadian company, Manitoba Hydro International, took over the management of EDTL operations. However, the current condition of the assets and the lack of adequate revenues are likely to continue, constraining the performance of the management contractor.

114. The revenue collections have been grossly insufficient and do not cover even the salaries of operators much less the fuel, maintenance, and spare part requirements. The inadequate revenues stem from consumers' inability to pay market rates for electricity. Taking into account the post-conflict nature of the rural economy, it would be difficult to levy market rates since the average consumer would not be able to afford them. The management, operations, and maintenance of some of the project-supplied power plants were intended to be undertaken by VMCs. The IEM was informed that these VMCs either did not exist or existed only for a short period of time (or until the fuel subsidy by the PMU ended).³⁸ The failure of the VMCs was attributed to (i) inability to collect and manage collections from electric fees, which were insufficient in the first place to cover all recurrent expenses; and (ii) lack of technical capacity to operate and maintain the facilities since operators were not trained. Appendix 4 provides further details.

115. Finally, the current consumer rates charged by EDTL are not sustainable. An average flat rate of \$0.12 per kilowatt-hour (kWh) is charged across the country for all establishments. The actual operating cost of the EDTL (through Manitoba Hydro International) is \$0.40 per kWh. In fact, the current tariff rates are lower than 2002 rates of \$0.16 per kWh for residential and \$0.20 per kWh for commercial users. This indicates a financially unviable utility that will continue to require heavy subsidy from the government.

2. Phase 2

116. Phase 2 is rated *unlikely* to be sustainable for the same reasons attributed to Phase 1. Given the inadequacy of funds allocated for road maintenance as previously explained, the existing national road system has shown continuing deterioration. The maintenance backlog can no longer be resolved by routine maintenance or road repairs alone and requires expensive capital investment in road rehabilitation, improvement, or new construction. Based on the IEM field observations, some drainage, slope stabilization measures, and embankments exhibit visible damage and lack of maintenance, even though these have been effective countermeasures against floods and landslides.

IV. OTHER ASSESSMENTS

A. Impacts

117. The overall impacts of Phase 1 and Phase 2 are rated *moderate*. The short-term impacts of the two projects have been moderate but there have been no long-term impacts visible.

³⁸ The PMU provided the diesel fuel to keep the new power plants operating, which it was not supposed to do (this was a change in the scope of work of the PMU). Operating requirements for the power plants were supposed to be provided by the rural management boards that were responsible for operating the facilities. When Phase 1 ended, the power plants all ceased to operate. They resumed operations when the government, through EDTL, started to supply the fuel and staff requirements for the plants.

Given the nature of the emergency assistance, the phases were not designed to provide long-term economic and social impacts. They were intended to complement the international efforts toward initially enabling humanitarian assistance access to remote areas and subsequently developing a maintainable road network. Although the initial efforts of enabling access were largely successful, the subsequent one of developing a road network has yet to be achieved.

118. **Impact on institutions.** Since recovery, both Phase 1 and Phase 2 were designed as mainly capital investment projects, and did encompass institutional development components. Phase 2 had a component on establishment of routine maintenance regime, but this component was not implemented as envisaged. The institutional development outcomes were designed as part of associated TA on transport sector restoration (footnote 7) and transport sector improvement (footnote 8).

119. The setting up of a PMU at the start of Phase 1 aimed to contribute to the institutional development of the government, since it was intended to be absorbed into the government at the end of project implementation. However, this did not take place, because the PMU has remained a separate entity that continues to implement ADB-funded projects. Although close cooperation continues between the PMU and the Ministry of Infrastructure, there has been *moderate* impact on the Ministry of Infrastructure's institutional development.

120. Phase 1 included a subcomponent that enabled provision of training by the PMU advisors to contractors and public services staff members in the regional offices to develop technical and contract management skills. This had a *moderate* impact on institutional development.

121. **Socioeconomic impact.** The impacts of the roads component are mainly *moderate*, although there have been cases where the road repairs have achieved higher impacts. Road restoration has had direct impacts in creating temporary employment, ensuring the flow of goods and fuel, and enhancing security for vulnerable rural communities. For the power sector, impacts were *moderate*. The power plants provided electricity even if only at night. In addition to quality of life benefits to households, this added a sense of security to the beneficiary communities. However, the provision of new power plants was not sufficient to trigger economic activities in rural areas. The impacts from the port component were *significant*. Although the expansion of the port capacity had become operational 2 years after the peak traffic period, it contributed to the flow of humanitarian goods into the country. Appendix 7 provides an assessment of the socioeconomic impacts of Phase 1 and Phase 2.

122. During project implementation, the construction activities of Phase 1 and Phase 2 provided communities with employment opportunities, albeit for the short term. Income levels have remained relatively unchanged, as the unemployment rate has continued to rise. While no new agricultural products have been introduced to increase rural incomes, access to markets was restored, and the beneficiaries were able to resume their social and marketing activities. Although the roads components in Phase 1 and Phase 2 led to improved access from and to rural areas, the impact in terms of enabling access to basic services such as hospitals and schools has been *moderate*, since these services have yet to be established in several rural areas. This is part of the post-conflict development that is currently ongoing. Most social services are located at the district centers, and some health services are currently being made available to the communities. This indicates that rural development has been lacking, especially at the village level, which has constrained the growth of economic activities in rural areas.

123. **Environmental impact.** Phase 1 and Phase 2 did not appear to have any negative environmental impacts, since the road repairs did not involve any change in road alignment.

Likewise, the power plants were located on the same spot as the earlier damaged power plants, and the port expansion and improvement were within the confines of Dili's port. While the container-stacking area generated a lot of dust during operations, which engulfed the areas adjacent to the port, this was solved by paving the area. For Phase 2, the initial environmental examination conducted for the entire project area indicated no significant adverse environmental impacts, as the subcomponents were within the same alignment as the project roads.

124. **Road safety.** The IEM field interviews showed that in the district and/or rural areas, the growth in the number of motor vehicles had negligible impact on road safety since the number of traffic accidents as well as their intensity remained largely unchanged in the last 4 years.

125. **Gender impact.** Both Phase 1 and Phase 2 were not designed to have differential impact on gender. The IEM assessment did not yield any specific impacts on gender, although it could be hypothesized that the provision of electricity in the evening improved security for women.

B. ADB Performance

126. ADB's performance is rated *satisfactory*, as ADB headquarters staff in Manila, as well as in Dili, effectively supervised the two phases and maintained good relations with the government agencies. The performance could have been further improved if ADB relations with UNTAET had been smoother during implementation (Appendix 3 provides an example of issues between ADB and UNTAET). For Phase 1, ADB's appropriate supervision is demonstrated by the fielding of review missions approximately every 3 months. Approvals of contract documentation and contract awards were generally received in a timely manner. ADB adjusted to the evolving institutional changes during project implementation—from UNTAET to the East Timor Transitional Administration (ETTA) to a democratically elected government. Overall, ADB performance in providing support and advice to the PMU and grant recipient was *satisfactory*. However, the payments to the consultant for power sector financial management component (Table A3) indicate the need for closer supervision.

127. For Phase 2, ADB provided support and assistance in monitoring project implementation. ADB conducted an inception mission, a consultation mission, a special grant review mission, and four review missions, which included visits to the project sites and to the executing agency and PMU headquarters in Dili. Coordination meetings were held, and ADB had a total of three project officers involved during project implementation. The ADB Special Office in Timor-Leste maintained regular meetings with the executing agency and the PMU and carried out field visits to civil works during project implementation. The role performed by ADB missions in providing advice on technical issues, preparing and evaluating bid documents, and administering the loan was recognized by the executing agency and PMU. The PCR was candid in admitting that delays in the early phase of project implementation could have been reduced or avoided if corrective measures had been undertaken on time. It recommended more frequent and closer monitoring of such projects in the future.

128. The formulation of both Phase 1 and Phase 2 indicates that ADB could have benefited from the use of post-conflict specialists with skills in designing and implementing projects that are cognizant of the context. Designing the projects as mainly civil works had limited impacts. In the future, ADB should consider using post-conflict specialists for emergency assistance projects.

C. Borrower Performance

129. The borrower performance is rated *satisfactory*, taking into consideration the transitional nature of the administration and the post-conflict context. For Phase 1, UNTAET was initially the

recipient of the grant proceeds until 2001, when ETTA took over after its establishment. The elected Government of Timor-Leste became the recipient when it assumed office in May 2002. It is not surprising that with such changes in the grant recipient, delays and implementation issues occurred. Despite these changes, the contractor payments were fairly efficient, although the initial procurement process was delayed. The support provided to the PMU indicated the strong ownership within the government to implement the projects.

130. The issues between ADB and UNTAET could have been avoided during the implementation of the power sector TA (Appendix 3). UNTAET's unilateral stance on instructing the consultants to not discuss project matters with ADB missions indicates a lack of harmony among the development partners. Such differences led to a loss for the country, since the TA outputs could not be used effectively.

131. For Phase 2, the Government of Timor-Leste was the recipient of the grant and performed satisfactorily. The PMU had room for improvement since the chief technical advisor changed three times at the start of the implementation. No specific reason has been provided for the changes in the PMU team and is a reflection on the performance of the consulting firm managing the PMU at that time.

D. Related Technical Assistance

132. There were two related TA projects to support Phase 1 and Phase 2. Both TA projects are rated *successful*, confirming the ratings by the TA completion reports. To support the development of the public administration system of the infrastructure sectors, these contributed to the institutional development, capacity building, formulation of processes and procedures, preparation of short- and medium-term investment programs for transport and energy, private sector participation, and setting of user charges for ports and airports. The scheduling of the TA projects was appropriate given the needs of the country.

133. Discussions with officials of the Ministry of Infrastructure and development personnel in Timor-Leste indicated various gaps in capacity development. In the sectors covered by Phase 1 and Phase 2, capacity is falling short in specific areas such as project management at central and district levels; economic, social, and environmental impact assessment; procurement; indigenous peoples impact assessment, monitoring, and identification of mitigation measures; rural road network expansion; and maintenance funding. An ongoing infrastructure project management TA is providing support for technical capacity building, which is a step in the right direction.³⁹ However, this TA is limited to the public sector only. For the economy to rally, private sector capacities need to be developed. For example, private contractors must be trained in the areas mentioned above. Expecting them to learn on the job or from other contractors could be stretching their resources thin. ADB could consider providing assistance for training of such contractors through the local educational institutions as is being done under the Infrastructure Project Management TA, but with an appropriate training fee.

³⁹ ADB. 2007. *Technical Assistance to Timor-Leste for Infrastructure Project Management*. Manila (TA 4942-TIM, for \$15 million, approved on 21 June).

V. ISSUES, LESSONS, AND FOLLOW-UP ACTIONS

A. Issues for the Future

134. Development partners must continue to work with the government to address Timor-Leste's development challenges. Specifically for sectors targeted by Phase 1 and Phase 2, sustainability has emerged as a key issue affecting both roads and power.

- (i) **Roads.** While the intent was to turn over a road system to the incoming government that only required maintenance, the government could not undertake required routine and periodic road maintenance and repairs. The roads continued to deteriorate, as road maintenance was not a priority in terms of budget allocation, and DRBFC did not have a sufficient number of capable technical staff members to supervise or undertake road maintenance. While this project and another (footnote 36) have trained contractors on labor-based road maintenance, there was no continuity in using the lessons after project completion.
- (ii) **Power.** Local rural communities cannot afford to pay the already subsidized rates that were being charged by the government for power. Collection efficiency is quite poor, as rural communities have other priorities (e.g., food and shelter). In fact, the electricity rate for the whole country was being subsidized by the government's budget. This seems to be a government policy, as it seems unwilling to further burden its constituents with paying for electricity when unemployment rates are high and employment opportunities limited. This is similar for water services, where collection does not happen, since the government does not have sufficient personnel or a system to bill and collect fees from consumers.

B. Lessons Identified

135. The evaluation of Phase 1 and Phase 2 indicates that Timor-Leste emerged from a conflict period that was characterized by factors specific to the country. It might not be possible for all of the lessons from Timor-Leste to be applied in other countries since conflicts differ and require customized solutions that will depend on the length of the conflict, intensity of the damage, political and administrative situation, and potential for reemergence of conflict. The lessons identified below provide an insight into possible lessons that could be applied in other similar contexts.

136. **Post-conflict intervention designs.** The interventions funded by the TFET were focused on infrastructure development, which was useful and appropriate for the economic recovery process. However, peace in the country must continue. While parallel efforts by the United Nations and other partners are ongoing, ADB project designs could have included softer elements to complement these parallel efforts. Such elements include development of a strategic menu of interventions such as encouraging cross-group stakeholder meetings, developing subprojects that enable stronger exchanges between conflicting communities, and encouraging contractors to include cross-community working groups for construction activities.

137. **Policy dialogue.** Timor-Leste has experienced a series of conflicts since it became independent in 1999. The setting up of a governing administration took time, which is typical for a post-conflict country. During this transition, development partners had a unique opportunity to conduct policy dialogue with the emerging government on issues that create long-term sustainability, especially on infrastructure development, maintenance, and ensuring basic services in rural areas. However, there was insufficient policy dialogue during the initial years even after the

democratically elected government was in place. Timor-Leste could have benefited from such a dialogue covering wide range of economic policies and management decisions, such as road maintenance, power tariffs, and port tariffs. These are macroeconomic issues that require continuous policy dialogue throughout project implementation.

138. In a post-conflict situation, generally governance suffers. It is admittedly more difficult to implement policies. This leads to issues such as lack of accountability. In the absence of a sound administrative structure, setting up an accountability mechanism can be difficult. This was apparent during the early years immediately after independence of Timor-Leste. However, the need for good governance and for ensuring accountability in all decisions needs to be highlighted during policy dialogues between development partners and the government. The government is in the process of setting up the High Audit Court, which is a step in the right direction. The outcomes of this step will need to be assessed after it has been fully effective.

139. **Flexibility in project design.** In a post-conflict scenario, there is no certainty of the accuracy of field data, specific nature of requirements, or institutional arrangements before the start of the construction activity. This requires flexibility to be built into the project design, resulting in a project that enables a series of interventions that are customized to the requirements. Such flexibility could be in the form of nature of civil works as well as the scope of rehabilitation activities. Phase 2 is a good example of such flexibility wherein supplementary funding was provided to continue the emergency repair activities. Although the design of Phase 2 could have been improved, the rationale was sound in that it aimed to continue the support for economic recovery.

140. In the case of Timor-Leste, the flexibility in assistance during Phase 2 could have rehabilitated the roads by upgrading them from the currently unmaintainable condition and setting up a road maintenance planning and implementation system. Similarly, in the power sector, the power plants need to be upgraded and interconnected through a grid. Unless a system of regular maintenance of these power plants is put in place and implemented, the power plants will not be able to improve their service levels.

141. **Capacity development.** Developing institutional capacity is crucial for development effectiveness in Timor-Leste. One area where the project had only partial value addition was in developing institutional capacity through continued training of project staff. Although there were several studies undertaken to develop new institutions, Phase 1 did not have any specific capacity-development component and could not be expected to do so since there were no institutions in place at appraisal. Phase 2 had on-the-job training, which was a step in the right direction but not sufficient enough. The PMU provided some training but relied mainly on consultants and continues to do so. Separate capacity-building efforts have been undertaken in Timor-Leste by ADB through separate TA as well as by other development partners, but the country continues to lack skills in project management and technical aspects of infrastructure development.

142. ADB has provided the TA for infrastructure project management (footnote 39) for capacity development within the government. Expanding the scope of such TA projects to cover private sector contractors could help build the local industry and enable better implementation of projects. Such capacity development for private road contractors is being undertaken in other countries, such as the Lao People's Democratic Republic, to strengthen their project implementation capabilities.

143. **Design simpler and realistic projects.** Emergency assistance projects, especially post-conflict ones, need to be designed in a way that the outputs can be achieved expeditiously.

This requires simpler and more realistic designs. The design of Phase 1 could be seen as complex since it covered three different sectors. Yet given the need for immediate restoration, this could be rationalized as appropriate. Phase 2 was relatively simple and focused on roads only. However, Phase 1 covered the entire country, resulting in high transaction costs. Such transactions costs could have been saved during Phase 2 if the latter had focused on one or two road sections in a specific geographical area and had assisted in complete rehabilitation and upgrading of the road from the subbase. This conclusion is in line with that of a recent evaluation study by the European Commission (footnote 33), which recommended that packaging of disparate projects into a program should be avoided.

144. This highlights an important lesson for designing realistic projects with balanced expectations. Post-conflict rehabilitation is a complex process covering all sectors simultaneously. Although there are good intentions to fit in lot of different components in a project due to its emergency nature, the implementation has been found to be difficult—time- and resource-intensive.

145. **Prioritize the areas of interventions.** In a post-conflict context, it is important to prioritize the areas of intervention so that funds are used judiciously. For Phase 1, the areas of interventions were appropriate—roads, power, and port. These are high-priority areas, and the joint assessment mission correctly chose these sectors for funding through the TFET.

146. **Frequent and closer monitoring of project implementation.** Both Phase 1 and Phase 2 showed that early and frequent supervision by ADB is crucial to ensuring efficient project implementation. In a post-conflict situation, the government lacks adequate resources, and ADB's value addition in this area could deliver better results. Para. 126 shows that despite frequent review missions there remained areas for improvement in ADB's supervision of the project.

147. **Village management committees for power sector.** The experience of Phase 1 shows that the VMCs were not effective in maintaining and operating the power plants because (i) they did not have sufficient ability to ensure consistent collections, (ii) they did not have sufficient revenues to pay for the fuel to operate the diesel generator sets, and (iii) they lacked the technical expertise to operate and maintain these sets. The TFET water sector projects had similar conclusions, indicating that this structure needs to be improved.⁴⁰

C. Recommendations from Two Key Projects in the Infrastructure Sector

148. **Facilitate strategic capacity development.** This thematic area is crucial for sustainability and development effectiveness across all sectors in Timor-Leste. ADB should provide specific assistance for capacity development in areas such as project management at central and district levels; economic, social, and environmental impact assessment; procurement; indigenous peoples impact assessment, monitoring, and identification of mitigation measures; rural road network expansion; and maintenance funding. Besides developing capacity within the Ministry of Infrastructure, ADB could also consider extending the capacity-development program to cover the local contracting industry in line with the current activity of the Infrastructure Project Management TA (footnote 39). Such capacity development program for the private sector could carry a fee.

⁴⁰ ADB. 2004. *Project Performance Audit Report: Water Supply and Sanitation Rehabilitation Projects in Timor-Leste*. Manila.

149. Many international development agencies are assisting the government in institutional development and capacity building. Rather than duplicate the efforts being taken, improved coordination between these agencies in the areas mentioned above should be encouraged and assistance rationalized to maximize the benefits that would be generated. Within ADB TA being provided to Timor-Leste, several simultaneous efforts in capacity building exist that are being undertaken for the Ministry of Infrastructure alone, not counting assistance being provided by the European Union and Japan International Cooperation Agency. The Ministry of Infrastructure is currently deficient in technical manpower resources in all sectors, and ADB should coordinate with the other donors to design an appropriate capacity development program.

150. **Assist in impact-driven road rehabilitation.** ADB has recently approved a new grant for funding the Road Network Development Project, which is intended to be developed along the lines of sector assistance.⁴¹ It is unclear whether the approach would be similar to that taken in Phase 2 or the Road Sector Improvement Project, wherein only short road sections are improved. Past project interventions have not produced significant impacts in terms of generating economic activities in rural areas, because these projects were basically designed as temporary patch-and-mend works. Now that the country has emerged from the post-conflict emergency stage, development assistance should be focused on fully rehabilitating specific routes that contribute to rural development. ADB should work closely in conjunction with the government to identify priority road sections that can be rehabilitated from the subbase and are designed to improve Timor-Leste's rural economy. In other words, ADB assistance should cover major road rehabilitation and not just minor road repairs.

151. **Rationalize power and port tariffs.** The power sector is undergoing a change, with the government identifying alternative sources of power generation, which will improve the supply side. This is a step in the right direction but needs to be supported by improved sustainability in the form of revenues from the power sector. For the ports, the tariffs have not been revised since 2003. ADB needs to engage in a policy dialogue with the government to rationalize user tariffs to bring them nearer to market rates for both power and ports.

⁴¹ ADB. 2009. *Report and Recommendation of the President to the Board of Directors: Proposed Asian Development Fund Grant for the Road Network Development Sector Project in Timor-Leste*. Manila (Grant 0180-TIM, for \$46 million, approved on 20 November).

ASSESSMENT OF PROJECT RESULTS

Item	Performance Indicators and/or Targets	Achievements	
		Phase 1	Phase 2
Outcomes			
Enable transport and power infrastructure to allow access to humanitarian assistance, health care, and water supply	Humanitarian assistance to population centers facilitated	<i>Achieved.</i> Restoration of road access allowed humanitarian and reconstruction activities to proceed thereby assisting in normalization of economic and social conditions.	
	Road sector viability to induce revival of economic activity ensured	<i>Partly achieved.</i> Land access restored with repair and clearing of main roads, resulting in the flow of economic activity. While the intent was actually a road system that only required maintenance, the government, for a number of reasons, could not undertake the required routine and periodic road maintenance and repairs that were required. The roads continued to deteriorate, as road maintenance was not a priority in terms of budget allocation, and the government did not have a sufficient number of capable technical staff members to supervise or undertake road maintenance. While the Emergency Infrastructure Rehabilitation Project have trained contractors on labor-based road maintenance, there was no continuity in using the lessons after project completion. ^a The road maintenance system developed by JICA consultants was also not utilized.	
	Port congestion urgently reduced to enable effective and economical logistics for humanitarian goods	<i>Partly achieved.</i> Extension of the wharf missed the peak of port traffic in 2001. However, port traffic has slowly grown. This has optimized use of the wharf extension, especially with the limited utilization of the other berths due to rehabilitation works.	
	Power supply to revive basic services in communities restored	<i>Partly achieved.</i> The power plants installed were new, and no rehabilitation of existing power plants took place (which was the original intention as described in the RRP). At completion, most of the power plants were not operational since the PMU discontinued the supply of diesel fuel. Operation was restored with EDTL takeover of the power plants. The IEM found power plant operation limited to 6–12 hours per night. A number of the power plants also show substantial wear and tear and poor maintenance.	
	Employ local labor and skills to initiate income generation for local population.	<i>Achieved.</i> Local labor employed, and income generated. Contracts were given.	
Outputs			
Repair road works (emergency)	Main arteries repaired.	<i>Largely achieved.</i> Selected roads restored. Except for the Dili–Cassa road, contract works carried out on about 600 km of key district and subdistrict capital feeder roads selected for repair.	
	Equipment for empowering local contracting industry procured.	<i>Achieved.</i> Four regional depots refurbished in Baucau, Dili, Maliana, and Same. All depots were equipped with basic equipment for routine maintenance and medium road repairs. Most of the equipment in Baucau, Dili, and Maliana nonoperational—either reparable but not useable, junk, or lost.	
	Labor-based causeway and bailey bridges constructed.	<i>Achieved.</i> Priority causeways and bridges constructed. Labor-based construction was implemented.	

Item	Performance Indicators and/or Targets	Achievements	
		Phase 1	Phase 2
	Roads restored where engineering solutions can be viably maintained over time.		<p><i>Fully achieved.</i></p> <ul style="list-style-type: none"> • Critical sections were identified, and engineering solutions implemented. • Rehabilitation earthworks were carried out, including realignment of minor road sections. • The most critical sections on national roads (incurring annual failures) also cleared and repaired. • Some small realignments in some sections, i.e., bridge and approach ramps.
	All landslips to facilitate access addressed.		<p><i>Achieved.</i></p> <ul style="list-style-type: none"> • Slips repaired on identified critical road sections. • Bioengineering introduced to stabilize slopes.
	Local contracting industry empowered and routine maintenance organization developed.		<p><i>Partly achieved.</i></p> <ul style="list-style-type: none"> • Local contractors used during implementation. These received on-the-job training in technical skills. • Capacity building in the established field depots to build an indigenous field maintenance administration not met. • The planned community-based maintenance program not achieved but will be undertaken under the Road Sector Improvement Project.^b
	An effective contracting regime developed.		<p><i>Achieved.</i> The PMU developed procurement and contracting procedures used in project implementation.</p>
Rehabilitate and expand port facilities (emergency)	Port facilities expanded.	<p><i>Fully achieved.</i> Third berth completed and operationalized. Wharf extension and restoration of landing craft spillway at Dili's port completed.</p>	
	Cargo-handling capacity improved.	<p><i>Fully achieved.</i> Cargo-handling capacity provided through the improvement and paving of the container stacking area.</p>	
		<p>Cargo-handling equipment omitted from the project since private contractor provided equipment. Upgrading of eastern container yards carried out. Provision for cargo-handling equipment (i.e., heavy fork lift) was canceled.</p>	
	Beach matting	<p><i>Not achieved.</i> Beach matting component canceled.</p>	

Item	Performance Indicators and/or Targets	Achievements	
		Phase 1	Phase 2
Restore power supply	15 power stations rehabilitated, distribution line rehabilitated, power station water treatment and cooling system rehabilitated.	<i>Fully achieved.</i> Exceeded the original scope of work with savings, enabling the project to restore 18 rural power systems and to include some rehabilitation and expansion of related distribution systems that were initially dropped from main contract due to funding constraints. New power plants provided to district and subdistrict power station. EDTL took over management, operation, and repair and maintenance of units.	
	Tools, instruments, equipment, radio and repeater system installed.	<i>Canceled.</i> Restoration of communications between Dili and power stations dropped and financed by another development partner.	
	Comoro power station switchgear replaced.	<i>Canceled.</i> Component dropped and financed by another development partner.	
	Utility financial management developed	<i>Not achieved.</i> <ul style="list-style-type: none"> TA outputs from ADB-financed TA for Power Sector Development Plan–Phase 1 found unsatisfactory.^c Consultants abandoned their work after completing only 60% of the terms of reference. 	
Establish employment programs	Local contractors for skilled and unskilled labor used.	<i>Achieved.</i> Contracts provided.	
Project management	Works planned, and planning capacity established for the Ministry of Infrastructure.		<i>Achieved.</i> This was undertaken under the TA for transport sector improvement. ^d TA rated <i>successful</i> .
	Road asset management planning instrument, complete with inventory, delivered.		<i>Canceled.</i> This was taken over by JICA.
	Effective project management.		<i>Achieved.</i> On-the-job training carried out with PMU and counterpart staff by international consultants. PMU now effectively manages projects.

ADB = Asian Development Bank, EDTL = Electricidade de Timor-Leste, IEM = independent evaluation mission, JICA = Japan International Cooperation Agency, km = kilometer, PMU = project management unit, RRP = report and recommendation of the President, TA = technical assistance.

^a ADB. 2000. *Report on a Project Grant from the Trust Fund for East Timor to the United Nations Transitional Administration in East Timor for the Emergency Infrastructure Rehabilitation Project*. Manila (Grant 8181-TIM[TF], for \$29.8 million, approved on 13 April); ADB. 2002. *Report on Supplementary Funding from the Trust Fund for East Timor for the Emergency Infrastructure Rehabilitation Project—Phase 2*. Manila (Grant 8198-TIM[TF], for \$9 million, approved on 25 July).

^b ADB. 2005. *Road Sector Improvement Project*. Manila (Grant 0017-TIM, for \$10 million, approved on 27 September).

^c ADB. 2001. *Technical Assistance to Timor-Leste for Preparing the Power Sector Development Plan – Phase 1*. Manila (TA 3748-TIM, for \$400,000, approved on 22 October).

^d Asian Development Bank (ADB). 2001. *Technical Assistance to Timor-Leste for Transport Sector Improvement*. Manila (TA 3731-TIM, for \$500,000, approved on 1 October).

Source: Independent evaluation mission.

PROJECT COST AND FINANCING

Table A2.1: Comparison of Appraisal and Actual Cost for Phase 1 and Phase 2

Item	Appraisal			Actual			Total Percentage Change
	Phase 1	Phase 2	Total	Phase 1	Phase 2	Total	
A. Base Cost							
Roads	20.55	6.72	27.27	20.73	6.67	27.40	3.69
Ports	2.06	0.00	2.06	1.20	0.00	1.20	(41.70)
Power	2.77	0.00	2.77	5.45	0.00	5.45	96.75
PMU	3.05	1.35	4.40	2.38	2.32	4.70	6.82
Subtotal A	28.43	8.07	36.50	29.76	8.99	38.75	6.16
B. Contingencies							
Physical	1.18	0.77	1.95	0.00	0.00	0.00	
Price	0.16	0.16	0.32	0.00	0.00	0.00	
Subtotal B	1.34	0.93	2.27	0.00	0.00	0.00	
Total (A + B)	29.77	9.00	38.77	29.76	8.99	28.75	26.18

() = negative, PMU = project management unit.

Source: Asian Development Bank. 2005. *Completion Report: Emergency Infrastructure Rehabilitation Project, Phase 1*. Manila (Grant 8181-TIM[TF], for \$29.8 million, approved on 13 April 2000); Asian Development Bank. 2008. *Completion Report: Emergency Infrastructure Rehabilitation Project, Phase 2*. Manila (Grant 8198-TIM[TF], for \$9 million, approved on 18 May 2002).

Table A2.2: Variations in Contract Costs under Emergency Infrastructure Rehabilitation Project, Phase 2

Description	Package No.	Procurement Mode	Engineer's Estimate	Original Contract Amount	Total Cost Inclusive of Variations	Cost of Variations against Original Contract Cost	Difference between Total Cost and Engineer's Estimate
A. Civil Works							
Completion of Cassa Bridge		LCB	1,262,080	887,999	831,898	(56,101)	(430,182)
Baucau–Viqueque Road	BV 1-1	LCB	2,282,543	1,649,000	2,498,520	849,520	215,977
Tibar–Ermera Road	TE 2-1	LCB	1,296,267	843,202	314,586	(528,616)	(981,681)
Ermera–Hatolia Road	EH 2-2	LCB	1,269,598	898,926	571,713	(327,213)	(697,885)
Hatolia–Maliana Road	HM 2-3	LCB	693,607	514,900	848,729	333,829	155,122
Manatuto–Natarbora Road 1	MN 3-1	LCB	981,681	663,191	589,883	(73,308)	(391,798)
Manatuto–Natarbora Road 2	MN 3-2	LCB	633,483	509,064	447,612	(61,452)	(185,871)
Maliana–Zumalai Road	MZ 5-1	LCB	788,782	609,543	576,703	(32,840)	(212,079)
Subtotal (A)			9,208,041	6,575,825	6,679,644	103,819	(2,528,397)
B. Consulting Services							
Detailed Engineering							
Detailed Engineering of Cassa Bridge		DN		19,000	18,854	(146)	
Detailed Engineering of Road Program		QCBS		308,365	342,279	33,914	
Construction Supervision							
Supervision of Cassa Bridge		DN		75,185	75,185	0	
Supervision of Road Program		DN		490,882	613,144	122,262	
On-the-Job Training				31,226	31,238	12	
Project Management Unit				1,237,630	1,237,630	0	
Subtotal (B)				2,162,288	2,318,330	156,042	
Total				8,738,113	8,997,974	259,861	

() = negative, DN = direct negotiation, LCB = local competitive bidding, QCBS = quality and cost-based selection.

Source: Asian Development Bank project management database.

POWER SECTOR ISSUES

A. Introduction

1. There were two aspects of the power component that did not produce the desired outputs: (i) the power sector financial management subcomponent; and (ii) the modality for managing, operating, and maintaining the power plants. The following descriptions are mainly drawn from the project completion report (PCR) of the Asian Development Bank's (ADB) Emergency Infrastructure Rehabilitation Project Phase 1.¹ The independent evaluation mission in 2010 faced difficulties in obtaining specific records relating to the power sector financial management consultant contract.

B. Power Sector Financial Management Consultant Contract

2. Phase 1 provided \$800,000 for the power sector financial management subcomponent. An ADB technical assistance (TA) prepared the terms of reference for this subcomponent in 2000 for restructuring the power sector and establishing financial management of the power entity.² Institutional consulting companies submitted bids in December 2000, and the proposals were evaluated and ranked in accordance with ADB's guidelines.³ The three main aspects of the TA were corporate restructuring, establishment of a consumer database, and establishment of financial management capacity.

3. A consulting firm from New Zealand ranked first in the evaluation. Its representatives were called for negotiations with the project management unit (PMU) in Dili in February 2001. However, negotiations broke down when that firm was unable to commit to the proposed workload within the available person-month budget. When these negotiations collapsed, the second-ranked consulting firm from Australia was called. A consulting contract was concluded with the second-ranked firm in early April 2001, and the firm began field work in April 2001 and is referred to as the power sector financial management consultant in this document. The negotiated schedule called for completion of the works by February 2002.

4. Reporting arrangements for the consulting contract had not been clearly established. The PMU oversaw the power sector financial management consultant and reported to the director general at the Department of Infrastructure of the United Nations Transitional Administration in East Timor (UNTAET). The recipient of the project grant was UNTAET. While all aspects of the power sector financial management consultant's contract administration were expected to be bound by ADB guidelines, UNTAET did not give ADB any direct effective supervisory role once the consultants were fielded. Relations with the UNTAET director general were difficult. At one point, the director general had instructed PMU staff and all project consultants, including the power sector financial management consultant, not to meet or discuss any project matters with ADB missions. ADB was to be kept informed only through formal reports.

5. Initially, the power sector financial management consultant's progress was reported as satisfactory, although the consultants clearly faced a number of difficulties, including the government's issue with delays in nominating and mobilizing a steering committee (as provided

¹ ADB. 2005. *Completion Report: Emergency Infrastructure Rehabilitation Project Phase I (Grant 8181-TIM[TF]) in the Democratic Republic of Timor-Leste*. Manila (Appendix 6).

² ADB. 2001. *Technical Assistance to Timor-Leste for Preparing the Power Sector Development Plan – Phase 1*. Manila (TA 3748-TIM, for \$400,000, approved on 22 October).

³ ADB. 1998. *Guidelines on the Use of Consultants by Asian Development Bank and its Borrowers*. Manila.

for in the consulting contract). The power sector financial management consultant's other difficulties included getting counterpart staff assigned to the project, obtaining data from an earlier institutional study undertaken by Electricidade de Portugal, and obtaining consumer data for the estimated 14,700 electricity consumers in Dili. As the work progressed, the power sector financial management consultant fell far behind schedule. It concentrated initially on finalizing a consumer database in Dili, preparing Microsoft Access software for the Electricidade de Timor-Leste (EDTL) billing system, and designing collection and revenue accounting systems using the Make Your Own Software.

6. According to the PCR, as the power sector financial management consultant fell further behind on many aspects of the terms of reference, ADB became increasingly concerned. From its fieldwork, the power sector financial management consultant submitted an inception report; a scoping report; and initial monthly reports for May, June, and July 2001, as well as a combined report for September and October 2001. It did not submit subsequent monthly reports, a draft final report, nor any other report. Although it was asked many times for updated time schedules for project completion, these were not provided. In its September–October 2001 report, the power sector financial management consultant proposed a dramatic reduction in the scope of its original terms of reference. ADB did not agree to this reduction. The consultants also proposed a considerable increase in person-months to complete its services, which ADB also declined.⁴

7. The power sector financial management consultant's international team terminated its work, leaving the field sometime in October 2001 without informing ADB. Before departing, the consultants placed a hidden password in the billing system software, which rendered it inoperative. The firm advised that the password would be divulged only when UNTAET released the full contract amount to the power sector financial management consultant. Without the authority of ADB, UNTAET released all remaining contract funds shortly thereafter to the power sector financial management consultant, which then provided the password. EDTL's billing and collection operations resumed. ADB's subsequent attempts to negotiate a settlement with the power sector financial management consultant failed.

8. According to the PCR, in February 2002, ADB retained a staff consultant to review the power sector financial management consultant case. The review report comprehensively laid out (i) terms of reference accomplished, (ii) terms of reference not accomplished, and (iii) immediate requirements to be addressed urgently. In summary, the report determined that \$320,741 of the total power sector financial management consultant's negotiated contract of \$799,132 (which was ultimately paid in full to the power sector financial management consultant for the release of the password) reflected payment for contracted work not accomplished, as well as equipment that was contractually required but never procured or delivered. This amount was calculated by assessing the percentage of work completed under each item of the terms of reference, and prorating it over the total contracted amount. In July 2003, the matter was referred to then Integrity Division of the Office of the Auditor General (OAGI), which conducted an investigation. However, in the absence of original documents, OAGI could not substantiate the allegations. A post-project special audit was conducted separately by a consultant appointed by ADB in 2004, which found discrepancies in the contract variations.

⁴ ADB procurement guidelines normally do not allow increases of consulting budgets to enable consultants to complete scopes of work to which they are already committed under negotiated contracts. ADB was not inclined to allow such an increase in this case, because the first-ranked consultant had declined to enter into a contract arising from the same concerns.

9. The independent evaluation mission interviewed relevant persons who had knowledge regarding the power sector financial management consultant's contract to determine the current status of its partial outputs. The following were the determinants.

10. The billing system software, which was developed by the power sector financial management consultant and used by EDTL for a short period only, was subsequently scrapped by the management contractor. Since the management contractor was an established utility operator, it already had its own functional software, which was easily adapted to EDTL requirements.

11. The majority of payments made to the power sector financial management consultant were based only on invoices issued and was not supported by any documents and outputs attesting to the completion of the activities for which payment was being requested. Discussion with the PMU revealed that the payments were authorized by the then-UNTAET director general. The total amount paid was \$790,002 out of a contracted amount of \$799,132. The summary of the payments made is given in Table A3 and shows the unclear nature of the release of the majority of the payments made.

Table A3: Payment History of the Power Sector Financial Management Consultant

Payment No.	Invoice Amount (\$)	Invoice Date	Payment Date	Details	Supporting Documents
1.	48,103.00	1 May 01	8 May 01	Mobilization payment.	Notice to proceed
2.	48,103.00	28 May 01	6 Jun 01	Completion of Phase 2, scoping report.	None
3.	112,707.00	7 Jun 01	Jul 01	Completion of Phase 3, inception report and out-of-pocket expenses (per diem) from project commencement up to 31 May 2001.	None
4.	73,196.29	10 Aug 01	21 Aug 01	Out-of-pocket expenses (local labor, international travel, local travel, per diem allowances, communications, reports reproduction, office space and supplies, and equipment) up to 31 Jul 2001.	Summary of billings vis-à-vis budget by item of expenditure Copies of Section 6.03–6.11, Article VII and Article VIII
5.	96,206.00	30 Sep 01	5 Dec 01	Completion of detailed design phase.	None
6.	73,246.84	1 Oct 01	13 Dec 01	Out-of-pocket expenses (local labor, international travel, local travel, per diem allowances, communications, reports reproduction, office space and supplies, and equipment) 1 Aug–30 Sep 2001 (\$60,121.84). Contingency claim (\$13,125) for services and per diem in the development of a special debtors ledger for the reconciliation of EDP accounts.	Notes for local labor, international travel, per diem, local travel, communications, reports and reproduction, office space and supplies, and equipment
7.	90,000.00	6 Dec 01	1 Feb 02	15 Oct 2001 claim in accordance with the billing schedule in the terms of reference revision for	None

Payment No.	Invoice Amount (\$)	Invoice Date	Payment Date	Details	Supporting Documents
8.	90,000.00	6 Dec 01	1 Feb 02	increasing the sustainability of EDTL billing and collection. 15 Nov 2001 claim in accordance with the billing schedule in the terms of reference revision for increasing the sustainability of EDTL billing and collection.	None
9.	90,000.00	14 Dec 01	1 Feb 02	15 Dec 2001 claim in accordance with the billing schedule in the TOR revision for increasing the sustainability of EDTL billing and collection.	None
10.	68,439.87	15 Jan 02	18 Mar 02	Adjusted claim for Jan 2002 (final payment).	None
Total	790,002.00				

EDP = Electricidade de Portugal, EDTL = Electricidade de Timor-Leste, TOR = terms of reference.
Source: Project management unit, 2010.

12. Since the consultant in this case had not delivered the expected outputs as per the contract with ADB, it indicates room for improvement in the project management and supervision by ADB.

CURRENT STATUS OF PROJECT OUTPUTS

A. Roads Component

1. The independent evaluation mission (IEM) visited the following road sections: (i) Tibar–Maliana, (ii) Manatuto–Natarbora, and (iii) Baucau–Viqueque. Both Phase 1 and Phase 2 of the Emergency Infrastructure Rehabilitation Project comprised minor road repair components, but mostly focused on slope stabilization and drainage construction or repair on these sections. Most of these sections are now in a state of disrepair. The IEM field visit took place during the period following the rainy season in Timor-Leste. Heavy rainfall, which is common caused pavement failures, landslides, landslips, road cracking, depressions, and generally poor road conditions. Although the project helped improve access, its effectiveness was short term owing to inadequate routine and periodic maintenance. In addition, it was determined that project assistance concentrated on minor road repairs. Even in cases where extensive repair works were to be undertaken on some road sections, no pavement was provided because of the inexperience of the private contractors in implementing double-bituminous surface treatment.

2. In case of the Gleno–Hatolia–Maliana, Manatuto–Natarbora, and Venilale–Viqueque roads as well as the Liquidoe access road, the pavement has been largely destroyed, eroding the base and subbase. Large rocks and fallen trees partly block some roads, and slope stabilization measures, such as gabions and concrete embankments have failed in some areas. Further, drains are either destroyed in landslide-prone areas or clogged with debris and vegetation due to the combination of soft geology, heavy rainfall, and lack of maintenance. Average vehicle speed on these sections is 20 kilometers per hour or lower.

3. Table A4 provides a summary of the road roughness.

Table A4: Road Roughness Conditions^a
(meter per kilometer)

No.	Road Section	2005 ^b	2008/09 ^c	2010 IEM
1.	Manatuto–Natarbora Road			
	Manatuto–Criba	5	7	7–12
	Criba–Laclubar	12	9.5	7–12
	Laclubar–Natarbora	7	9	7–12
2.	Tibar–Gleno–Ermera–Maliana			
	Tibar–Gleno	5	8.5	7–8
	Gleno–Ermera	4	9	9–10
	Ermera–Maliana	12	12.5	9–12
3.	Baucau–Los Palos			
	Baucau–Lautem	6	6.5	7–8
	Lautem–Los Palos	6	7	7–8
4.	Baucau–Viqueque			
	Baucau–Venilale	5	8.5	7–10
	Venilale–Viqueque	7	10	8–12
5.	Aileu–Lequidoe		12.5	
6.	Maliana–Zumalai			
	Maliana–Oeleu	6	8.5	7–8
	Oeleu–Lourba	7	8.5	8–12
	Lourba–Zumalai	12	10	8–12
7.	Viqueque–Natarbora	10	9	–
8.	Cassa Bridge			

IEM = independent evaluation mission.

^a Road roughness is used as a primary indicator of pavement condition (a characteristic that impacts most directly on users) and is primarily a measure of functional condition.

^b Estimate based on Asian Development Bank (ADB). 2006. Transport Sector Improvement. Consultants' Report. Manila (TA 3731-TIM).

^c Estimate based on ADB. 2009. *Preparing the Road Network Development Project*. Consultants' Report. Manila (TA 7100-TIM).

Source: Independent evaluation mission.

B. Ports Component under Phase 1

4. The project-constructed berth was found to be in limited operating condition and is used only for general cargo vessels. This is due to its questionable structural integrity and capacity to handle container traffic. Discussions with Port Authority officials indicated that the foundation of the wharf was wearing out. Dili's port is limited to small vessels with maximum drafts of 6.1 meters.

5. The project-paved container yard is about 10,000 square meters in area and is still being used in the movement of container traffic. It has suffered damage due to drainage issues, and remedial measures have been employed to patch the failed areas. It remains a major asset of the port serving critical needs.

6. The project-rehabilitated slipway located adjacent to the container yard area is one of two in Dili's port. This slipway is regularly used by the government-owned Nakroma roro vessel that serves Timor-Leste's Oecusse District in West Timor and Atauro Island. Since the slipway has no dedicated passenger facilities, passenger and vehicle traffic tend to conflict during loading and unloading. The lighting and firefighting facilities were appropriately supplied and are functional.

C. Power Component under Phase 1

7. Most of the power generators provided under the project are functioning and provide power to localized areas for a period of 6 hours in the subdistricts and 12 hours per day in the districts (i.e., these areas get electricity only during nights). The operations of these power plants vary during the year. The Manalima power plant is said to be operational for only about 6 months a year since it does not work in rainy conditions. Equipment wear and tear has resulted in the Manalima generator set breaking down often, and operators have to wait for long periods before Electricidade de Timor-Leste (EDTL) is able to send repair crews and spare parts. These issues are common across other power plants.

8. The Balibo power plant was replaced in 2009 due to equipment failure caused by lack of maintenance. The replacement was a project-supplied containerized power generator from Maubisse containerized power plants from Maubisse, which had been extensively repaired by EDTL and brought to Balibo. The original Balibo power generator is now under major repair at the EDTL Comorro power plant in Dili. The Balibo power plant currently works for 6 hours a day, from 6 p.m. to 12 midnight. At other times of the day, the area does not receive any electricity.

9. Similarly, the Liquidoe power plant currently operates for 6 hours per day. However, due to its poor condition, it is unable to supply the requirements of existing users, and the operator has to ration supply by rotating service by area. As a result, EDTL has been unable to collect electricity tariffs for the past 6 months. In Maubisse, the remaining project-funded power generator has not been operational since January 2010 owing to technical problems.

10. The Ainaro power plant performs relatively better than the others mentioned above. It operates for 12 hours a day, from 6:00 p.m. to 6:00 a.m. Service coverage includes 730 connections, with three generator sets operating every night, with a fourth generator operational but unusable since it does not have the synchronization equipment needed. The Ainaro equipment appears well maintained. No equipment problems were reported at the time of the IEM. No replacement of major parts has been reported since 2002. The relatively good performance of this unit could be attributed to the technical background of the local EDTL operator.

11. EDTL reported that the Fatolulik and Fatumean power plants started operations recently (2010) with the installation of distribution lines. These appear to have been idle since installation in the absence of the distribution lines, although the PCR stated that they had been operational since 2004.

GRANT AGREEMENTS COMPLIANCE

Table A5.1: Emergency Infrastructure Rehabilitation Project Phase 1

Condition and Covenant	Reference in Grant Agreement	Status of Compliance
The recipient declares its commitment to the objectives of the project as set forth in Schedule 2 to this Agreement; and, to this end, shall carry out the project through the project management unit with due diligence and efficiency and in conformity with appropriate administrative, engineering, environmental, financial, and social practices; and shall provide promptly, as needed, the funds, facilities, services, and other resources required for the project.	Section 3.01 (a)	Complied with.
Without limitation upon the provisions of paragraph (a) of this section, and except as the recipient and ADB shall otherwise agree, the recipient shall cause the project to be carried out in accordance with the implementation arrangements set forth in Schedule 4 to this Agreement.	Section 3.01 (b)	Complied with.
Except as ADB shall otherwise agree, procurement of the goods, works, and consultants' services required for the project and to be financed out of the proceeds of the grant shall be governed by the provisions of Schedule 3 to this Agreement.	Section 3.02	Complied with.
The recipient shall maintain, or cause to be maintained, records and accounts adequate to reflect in accordance with sound accounting practices the operations, resources, and expenditures for the project of the departments or agencies of the recipient responsible for carrying out the project or any part thereof. (iii) furnish to ADB such other information concerning said records and accounts, and the audit thereof, as ADB shall from time to time reasonably request.	Section 4.01 (a)	Complied with.
For all expenditures with respect to which withdrawals from the grant account were made on the basis of statements of expenditure, the recipient shall: i. maintain, or cause to be maintained, in accordance with paragraph (a) of this section, records and accounts reflecting such expenditures; ii. retain, until at least 1 year after ADB has received the audit report for the fiscal year in which the last withdrawal from the grant account was made, all records (contracts, orders, invoices, bills, receipts, and other documents) evidencing such expenditures; iii. enable ADB representatives to examine such records as ADB shall from time to time reasonably request; and iv. ensure that such records and accounts are included in the annual audit referred to in paragraph (b) of this section, and that the report of such audit contains a separate opinion by said auditors as to whether the statements of expenditure submitted during such fiscal year, together with the procedures and internal controls involved in their preparation, can be relied upon to support the related withdrawals.	Section 4.01 (c)	Complied with.
Except as ADB may otherwise agree, the procedures and qualifications referred to in the following provisions of section I of this Schedule shall apply in the procurement of goods and works to be financed out of the proceeds of the grant.	Schedule 3, para. 1	Complied with.
The recipient may use the proceeds of the grant only for procurement of goods and works supplied from, and procured in, (i) member countries of ADB, (ii) East Timor, (iii) countries that have entered into a contribution agreement with the trustee with	Schedule 3, para. 2	Complied with.

Condition and Covenant	Reference in Grant Agreement	Status of Compliance
respect to the TFET, and (iv) countries that are members of any organization that has entered into a contribution agreement with the trustee with respect to the TFET.		
Subject to the qualification stated in the preceding paragraph, procurement of goods and works shall be subject to the provisions of the <i>Guidelines for Procurement under Asian Development Bank Loans</i> dated February 1999 (hereinafter called the <i>Guidelines for Procurement</i>), as amended from time to time, and the following provisions of section I of this Schedule.	Schedule 3, para. 3	Complied with.
Each civil works contract estimated to cost the equivalent of more than \$1 million, and each supply contract for equipment or materials estimated to cost the equivalent of more than \$500,000 shall be awarded based on international competitive bidding, as described in chapter II of the <i>Guidelines of Procurement</i> .	Schedule 3, para. 4	Complied with.
Bidders for civil works contracts shall be prequalified before bidding.		
Each civil works contract estimated to cost the equivalent of \$1 million or less, and each supply contract for equipment or materials estimated to cost the equivalent of \$500,000 or less (other than minor items), shall be awarded based on international shopping, as described in chapter III of the <i>Guidelines for Procurement</i> .	Schedule 3, para. 5	Complied with.
Goods estimated to cost less than the equivalent of \$100,000 per contract may generally be procured based on direct purchase and/or negotiation, or single tender, in accordance with the provisions of paragraph 3.05 of the <i>Guidelines for Procurement</i> .	Schedule 3, para. 6	Complied with.
Notwithstanding the provisions of paragraph 5, small works contracts (defined as any civil works contract estimated to cost the equivalent of \$100,000 or less), at the discretion of ADB, may be procured under lump-sum, fixed-price contracts awarded based on local competitive bidding among prequalified contractors. Any such procurement shall be in accordance with procurement procedures acceptable to ADB with prequalification, selection, and engagement of contractors being subject to the approval of ADB. Without limiting the generality of the foregoing, whenever local competitive bidding is approved, quotations shall be obtained from three qualified contractors in response to a written invitation. The invitation shall include a detailed description of the works, including basic specifications, the required completion date, a basic form of agreement acceptable to ADB, and relevant drawings, where applicable. The award shall be made to the contractor who offers the lowest price quotation for the required work and who has the experience and resources to complete the contract successfully.	Schedule 3, para. 7	Complied with.
Works required for the project involving community participation may be procured in accordance with procedures acceptable to ADB.	Schedule 3, para. 8	Complied with.
Before the issuance of any invitations to prequalify for bidding or to bid for contracts, the project management unit shall furnish ADB with a proposed procurement plan for the project for its review and approval. Procurement of all goods and works shall be undertaken in accordance with such procurement approved by ADB.	Schedule 3, para. 9	Complied with.
With respect to each contract awarded based on international competitive bidding, procurement actions shall be subject to review by ADB in accordance with the procedures set forth in chapter IV of the <i>Guidelines for Procurement</i> . Each draft prequalification	Schedule 3, para. 10 (a)	Complied with.

Condition and Covenant	Reference in Grant Agreement	Status of Compliance
invitation and each draft invitation to bid, to be submitted to ADB for approval under such procedures, shall reach ADB as far as possible before it is to be issued, and shall contain such information as ADB shall reasonably request to enable ADB to arrange for the separate publication of such invitation.		
For all other contracts, each draft invitation to bid and related bid document shall be submitted to ADB for approval before they are issued.	Schedule 3, para. 10 (b)	Complied with.
Each award of contract shall be subject to prior ADB approval.	Schedule 3, para. 10 (c)	Complied with.
The services of consultants shall be used to carry out the project, particularly for staffing of the project management unit.	Schedule 3, para. 11 (a)	Complied with.
Five international consultants shall be recruited: (i) a chief technical adviser, (ii) a financial manager, (iii) a roads engineer, (iv) a ports engineer, and (v) an electrical engineer.	Schedule 3, para. 11 (b)	Complied with.
In addition, five East Timorese nationals shall be recruited: (i) a project manager, (ii) a project accountant, (iii) a roads engineer, (iv) a port engineer, and (v) an electrical engineer.	Schedule 3, para. 11 (c)	Complied with.
The terms of reference of the consultants shall be as prepared by ADB and agreed with the recipient.	Schedule 3, para. 11 (d)	Complied with.
The consultants shall be nationals of (i) any of the member countries of ADB, (ii) East Timor, (iii) countries that have entered into a contribution agreement with the trustee with respect to the TFET, and (iv) countries that are members of any organization that has entered into a contribution agreement with the trustee with respect to the TFET.	Schedule 3, para. 12	Complied with.
Subject to the qualification stated in the foregoing paragraph, the selection, engagement, and services of the consultants shall be subject to the provisions of the <i>Guidelines on the Use of Consultants by Asian Development Bank and Its Borrowers</i> dated October 1998, as amended from time to time, and the following provisions of section II of this Schedule.	Schedule 3, para. 13	Complied with
<p>The recipient shall select and engage all consultants in accordance with the following procedures:</p> <ol style="list-style-type: none"> i. A list of the candidates, with their qualifications and a draft contract, shall be furnished to ADB for approval before the selection of consultants; ii. Promptly after the contract is signed, ADB shall be furnished with the evaluation of the candidates and a brief justification for the selection, with a copy of the signed contract; and iii. If any substantial amendment of the contract is proposed after its execution, the proposed changes shall be submitted to ADB for prior approval. 	Schedule 3, para. 14	Complied with
The project management unit shall program, administer, and coordinate all project activities, thereby assuming the role of project executing agency. The project management unit shall be headed by an East Timorese project manager, supported by an East Timorese project accountant and three East Timorese subsector engineers. The project manager shall be supported by internationally recruited consultants: a chief technical adviser; a financial manager; and three engineers for roads, ports, and electricity, respectively. The chief technical adviser shall support the project manager in administering the project and its contracts in accordance with ADB guidelines. The project management	Schedule 4 para. 1	Complied with

Condition and Covenant	Reference in Grant Agreement	Status of Compliance
unit, through the project manager and the chief technical adviser, shall report to the head of infrastructure of UNTAET. The project manager and the chief technical adviser also shall be accountable to ADB for project implementation, including management of the special account.		
The recipient shall establish, with the support of ADB's Transport Sector Restoration TA Project (TA 3401-TIM), a steering committee for the project to ensure broader stakeholder representation in project implementation. The steering committee shall meet monthly to discuss and resolve emerging issues in project implementation, procurement, and community employment; and to review and comment on the project reports for submission to ADB.	Schedule 4, para. 2	Complied with.
In carrying out any part of the project, the recipient, through the project management unit, shall ensure that:	Schedule 4, para. 3	Complied with.
Appropriate engineering and environmental standards and practices that would minimize any acquisition of land and avoid involuntary resettlement of affected persons have been complied with; and	Schedule 4, para. 3 (a)	Complied with.
ADB's resettlement guidelines have been complied with, and if applicable, appropriate compensation arrangements have been completed and are satisfactory to the affected persons.	Schedule 4, para. 3 (b)	Complied with.
For the purposes of subparagraphs (a) and (b), affected persons means any person who, due to the execution of any parts of the project, has or would have his or her (i) standard of living adversely affected; (ii) right, title, or interest in any house, land (including premises, agricultural land, and grazing land), or any other fixed or movable asset acquired or possessed, temporarily or permanently; or (iii) business, occupation, work, or place of residence or habitat adversely affected.	Schedule 4, para. 3 (c)	Complied with.
Without limiting the generality of section 8.06 of the General Conditions, the recipient shall cause the project management unit to prepare and furnish to ADB quarterly reports on the implementation of the project in a format acceptable to ADB. The quarterly reports shall cover all aspects of the project, including financial, procurement of services and equipment, expenditure budgets, and all <i>civil</i> works included in the project. The recipient shall also furnish ADB with quarterly reports on the use of its recurrent funds for road, port, and power activities, listing expenditures by items, and detailing implementation of donor support, and progress in implementation policy initiatives, transport policy and regulations, and organizational changes.	Schedule 4, para. 4	Complied with.

ADB = Asian Development Bank, TA = technical assistance, TFET = Trust Fund for East Timor, UNTAET = United Nations Transitional Administration in East Timor.

Source: Independent evaluation mission drawn from Asian Development Bank. 2005. *Completion Report: Emergency Infrastructure Rehabilitation Project, Phase 1*. Manila (Grant 8181-TIM[TF], for \$29.8 million, approved on 13 April 2000).

Table A5.2: Emergency Infrastructure Rehabilitation Project Phase 2

Description	Reference in Grant Agreement	Status
<p>Financial Conditions</p> <p>The Recipient shall maintain, or cause to be maintained, records and accounts adequate to reflect in accordance with sound accounting practices the operations, resources, and expenditures in respect of the project of the departments or agencies of the Recipient responsible for carrying out the project or any part thereof.</p>	<p>Art. IV, Section 4.01 (a)</p>	<p>Complied with.</p>
<p>The Recipient shall:</p> <p>i. Have the records and accounts including those for the Special Account for each fiscal year audited, in accordance with appropriate auditing principles consistently applied, by independent auditors acceptable to ADB;</p> <p>ii. Furnish to ADB as soon as available, but in any case not later than 6 months after the end of each such year, the report of such audit by said auditors, of such scope and in such detail as ADB shall have reasonably requested; and</p> <p>iii. Furnish to ADB such other information concerning said records and accounts and the audit thereof as ADB shall from time to time reasonably request.</p>	<p>Art. IV, Section 4.01 (b)</p>	<p>Complied with.</p> <p>Partly complied with. The accounts have been audited annually, but submissions of auditor reports were repeatedly delayed (para. 28 refers).</p> <p>Complied with.</p>
<p>For all expenditures with respect to which withdrawals from the Grant account were made on the basis of statements of expenditures, the Recipient shall:</p> <p>i. Maintain or cause to be maintained, in accordance with paragraph (a) of this Section, records and accounts reflecting such expenditures;</p> <p>ii. Retain, until at least 1 year after ADB has received the audit report for the fiscal year in which the last withdrawal from the Grant Account was made, all records (contracts, orders, invoices, bills, receipts and other documents) evidencing such expenditures;</p> <p>iii. Enable ADB's representatives to examine such records as ADB shall from time to time reasonably request; and</p> <p>iv. Ensure that such records and accounts are included in the annual audit referred to in paragraph (b) of this section and that the report of such audit contains a separate opinion by said auditors as to whether the statements of expenditures submitted during such fiscal year, together with the procedures and internal controls involved in their preparation, can be relied upon to support the related withdrawals.</p>	<p>Art. IV, Section 4.01 (c)</p>	<p>Complied with.</p> <p>Complied with.</p> <p>Complied with.</p>
<p>International Competitive Bidding</p> <p>Each civil works contract estimated to cost the equivalent of more than \$1,000,000 each supply contract for equipment or materials estimated to cost the equivalent of more than \$500,000 shall be awarded on the basis of international bidding as described in chapter II of the <i>Guidelines for Procurement</i>. Bidders for civil works contracts shall be prequalified before bidding.</p>	<p>Schedule 3, Section 1, Para. 4</p>	<p>Not complied with. All contracts, including those above \$1 million, were awarded using LCB and approved by ADB. The PCR mission viewed LCB as valid because of the small size of contracts and the security situation, which make foreign competition unlikely.</p>
<p>International Shopping</p> <p>With respect to each civil works contract estimated to cost the</p>	<p>Schedule 3, Section 1, Para. 5</p>	<p>Complied with.</p>

Description	Reference in Grant Agreement	Status
equivalent of \$1,000,000 or less and each supply contract for equipment or materials estimated to cost the equivalent of \$500,000 or less (other than minor items), such contracts shall be awarded on the basis of international shopping as described in chapter III of the <i>Guidelines for Procurement</i> .		
Direct Purchase Goods, materials, and equipment estimated to cost less than the equivalent of \$100,000 per contract may generally be procured on the basis of direct purchase/negotiation or single tender in accordance with the provisions of paragraph 3.05 of the <i>Guidelines for Procurement</i> .	Schedule 3, Section 1, Para. 6	Complied with.
Local Competitive Bidding Notwithstanding the provisions of paragraph 5 above and paragraph 8 below, small works contracts (defined as any civil works contract estimated to cost the equivalent of less than \$100,000) may at the discretion of ADB be procured under lump sum, fixed price contracts awarded on the basis of local competitive bidding among prequalified contractors. Any such procurement shall be in accordance with procurement procedures acceptable to ADB with prequalification, selection, and engagement of contractors being subject to the approval of ADB in consultation with the Ministry of Water and Public Works. Without limiting the generality of the foregoing, whenever local competitive bidding is approved, quotations shall be obtained from three qualified contractors in response to a written invitation. The invitation shall include a detailed description of the works, including basic specifications, the required completion date, a basic form of agreement acceptable to ADB, and relevant drawings, where applicable. The award shall be made to the contractor who offers the lowest price quotation for the required work, and who has the experience and resources to complete the contract successfully.	Schedule 3, Section 1, Para. 7	Complied with.
Community Participation Works required for the project are expected to incorporate labor-intensive employment-generating methodologies whenever possible. Least-cost methodologies shall be adopted under the project to ensure maximum use of local labor, materials, and contractors. In this connection, community participation shall be permitted, with such participation being procured in accordance with the procedures acceptable to ADB in consultation with the Ministry of Water and Public Works.	Schedule 3, Section 1, Para. 8	Complied with.
Procurement Planning Prior to the issuance of any invitations to prequalify for bidding or to bid for contracts, the project management unit shall furnish ADB with a proposed procurement plan for the project for its review and approval. Procurement of all goods and works shall be undertaken in accordance with such procurement plan as shall have been approved by ADB.	Schedule 3, Section 1, Para. 9	Complied with.
Invitation to Bid/Contract Award a) With respect to each contract awarded on the basis of international competitive bidding, procurement actions shall be subject to review by ADB in accordance with procedures set forth in chapter IV of the <i>Guidelines for Procurement</i> . Each draft prequalification invitation to bid, to be submitted to ADB for approval under such procedures, shall reach ADB as far as possible in advance of when it is to be issued and shall contain such information as ADB shall reasonably request to enable ADB to arrange for the separate publication of such invitation.	Schedule 3, Section 1, Para. 10	Complied with.

Description	Reference in Grant Agreement	Status
<p>b) With respect to all other contracts, each draft invitation to bid and related bid document shall be submitted to ADB for approval before they are issued.</p> <p>c) Each award of contract shall be subject to prior ADB approval.</p>		<p>Complied with.</p> <p>Complied with.</p>
<p>Employment of Consultants</p> <p>a) The services of consultants shall be used in the carrying out of the project, particularly with regard to the staffing of the project management unit.</p> <p>b) The terms of reference of the consultants shall be agreed by ADB and the Recipient.</p>	<p>Schedule 3, Section II, Para. 11.</p>	<p>Complied with.</p> <p>Complied with.</p>
<p>The consultants shall be nationals of (i) any of the member countries of ADB, (ii) East Timor, (iii) countries that have entered into a contribution agreement with the Trustee with respect to the TFET, and (iv) countries that are members of any organization that has entered into a contribution agreement with the Trustee with respect to the TFET.</p>	<p>Schedule 3, Section II, Para. 12</p>	<p>Complied with.</p>
<p>Subject to the qualification stated in the foregoing paragraph, the selection, engagement and services of the consultants shall be subject to the provisions of the <i>Guidelines on the use of Consultants by Asian Development Bank and its Borrowers</i> dated October 1988, as amended from time to time, and the following provisions of section II of this Schedule.</p>	<p>Schedule 3, Section II, Para. 13</p>	<p>Complied with.</p>
<p>All consultants shall be selected and engaged by the Recipient in accordance with the following procedures:</p> <ol style="list-style-type: none"> i. A list of the candidates together with their qualifications and a draft contract shall be furnished to ADB for approval before the selection of consultants; ii. Promptly after the contract is signed, ADB shall be furnished with the evaluation of the candidates and a brief justification for the selection, together with a copy of the signed contract and iii. If any substantial amendment of the contract is proposed after its execution, the proposed changes shall be submitted to ADB for prior approval. 	<p>Schedule 3, Section II, Para. 14</p>	<p>Complied with.</p> <p>Complied with.</p> <p>Complied with.</p>
<p>Project Management Unit</p> <p>The project management unit shall program, administer, and coordinate daily project activities, and shall implement the project in accordance with ADB's guidelines. The project management unit shall report and be accountable to the Minister of Water and Public Works. The project management unit shall comprise an East Timorese project manager, financial manager, and engineers, and an international chief technical advisor, financial advisor, and engineer.</p>	<p>Schedule 4, Para. 1</p>	<p>Complied with.</p>
<p>Steering Committee</p> <p>The Minister of Water and Public Works shall, in consultation with other relevant ministries, nominate a steering committee for the project to involve stakeholder representation of the Recipient in project implementation. The steering committee shall meet every 2 months to discuss and resolve emerging issues in project implementation, future project work plans, review and comment on project reports, and the attainment of project objectives.</p>	<p>Schedule 4, Para. 2</p>	<p>Partly complied with.</p> <p>The steering committee met during the initial period of implementation but then stopped. The PCR stated that there was sufficient coordination achieved among ADB, the EA, related agencies, consultants, and contractors during other meetings.</p>

Description	Reference in Grant Agreement	Status
<p>Involuntary Resettlement</p> <p>In carrying out any part of the project, the Recipient through the project management unit shall ensure that:</p> <p>a) Appropriate engineering and environmental standards and practices designed to minimize acquisition of land and avoid involuntary resettlement of affected persons have been followed; and</p> <p>b) ADB's Policy on Involuntary Resettlement and ADB's Handbook on Resettlement 1998, as amended from time to time, have been complied with, and, if applicable, appropriate compensation arrangements have been completed and are satisfactory to the affected persons.</p>	Schedule 4, Para. 3	<p>Complied with.</p> <p>Complied with.</p>
<p>For the purposes of paragraph 3 above, affected person means any person who solely on account of and as a direct result of the physical implementation of the activities under Schedule 2 has or would have his or her (i) standard of living adversely affected; (ii) right, title, or interest in any house, land (including premises, agricultural land and grazing land) or any other fixed or movable asset acquired or possessed, temporarily or permanently; or (iii) business, occupation, work, or place of residence or habitat adversely affected.</p>	Schedule 4, Para. 4	Complied with. There was no permanently or temporarily affected property during project implementation.
<p>Environment</p> <p>In the rehabilitation, repair, operation, and maintenance of road infrastructure, the Recipient shall ensure due compliance with all existing laws, regulations and standards concerning environmental protection, and ADB's environmental guidelines. Environmental monitoring shall be under the guidelines of the project management unit. In addition to regular inspections of works to ensure that all possible mitigation measures have been taken, the project management unit shall (i) measure the effectiveness of environmental improvements; (ii) identify problems that may arise during the works and, if necessary, (iii) provide ecological audit information for future works of this nature.</p>	Schedule 4, Para. 5	Complied with.
<p>Reporting</p> <p>Without limiting the generality of Section 8.06 of the General Conditions, the Recipient shall cause the project management unit to prepare and furnish to ADB the following reports:</p> <p>a) A brief inception report, to be submitted within 4 weeks of the start of the project, which shall, inter alia, outline the project management unit's approach, methodology, and work plan, as well as cost implications for consulting services: the report shall also provide a bar chart of all activities under the project;</p> <p>b) Quarterly progress reports on the achievement of project objectives; progress and status of activities including expenditures; any emerging difficulties; and progress in implementing policy initiatives, transport policy and regulations, and organizational changes. The quarterly reports shall provide, in clear graphical presentations, the status of project progress and performance and plans for the next 6 months' work, including budgets, and quarterly disbursement and payment forecasts;</p> <p>c) A technical draft final report, to be submitted no later than 1 month prior to completion of the project, which shall summarize all project activities and recommendations, and shall outline continuing training programs, and programs for establishment, implementation, and strengthening of the relevant institutions, and recommendations for future support; and</p>	Schedule 4, Para. 6	<p>Complied with.</p> <p>Complied with.</p> <p>Complied with but delayed due to late notice from the World Bank about the financial closing date.</p>

Description	Reference in Grant Agreement	Status
d) A final report to be submitted by the project management unit immediately prior to completion of the project, after receipt of the comments on the draft final report from ADB.		Same as above.
Currencies in which Withdrawals are to be Made Except as the Recipient, ADB, and the Trustee shall otherwise agree, withdrawals from the Grant Account shall be made in the respective currencies in which the expenditures to be financed out of the proceeds of the Grant have been paid or are payable; provided, however, that withdrawals in respect of expenditures in the currency of the Recipient shall be made in such currency or currencies as the Trustee shall from time to time reasonably select.	Art. IV, Section 4.01	Complied with.
<p>Reallocation Notwithstanding the allocation of an amount of the Grant or the percentages for withdrawal set forth or referred to in the Trust Fund Grant Agreement, if ADB has reasonably estimated that the amount of the Grant then allocated to any withdrawal category set forth in the Trust Fund Agreement or added thereto by amendment will be insufficient to finance the agreed percentage of all expenditures in that category, ADB may, by notice to the Recipient.</p> <p>a) Reallocate to such category, to the extent required to meet the estimated shortfall, proceeds of the Grant which are then allocated to another category and which in the opinion of ADB are not needed to meet other expenditures; and</p> <p>b) If such reallocation cannot fully the estimated shortfall, reduce the percentage for withdrawal then applicable to such expenditures in order that further withdrawals under such category may continue until all expenditures there under shall have been made.</p>	Art. V, Section 5.04	<p>Complied with.</p> <p>Complied with.</p>
<p>Treatment of Taxes It is the policy of ADB and the Trustee that no proceeds of the Grant shall be withdrawn on account of payments for any taxes levied by, or in the territory of, the Recipient on goods and services, or on the importation, manufacture, procurement or supply thereof. To that end, if the amount of any taxes levied on or in respect of any item to be financed out of the proceeds of the Grant decreases, ADB may, by notice to the Recipient, increase or decrease the percentage for withdrawals set forth or referred to in respect of such item in the Trust Fund Grant Agreement as required to be consistent with such policy.</p>	Art. V, Section 5.08	Complied with.
<p>Payment by the Trustee The Trustee shall pay the amounts withdrawn by the Recipient from the Grant Account only to or on the order of the Recipient and following receipt of a letter of instruction from ADB.</p>	Art. V, Section 5.09	Complied with.
<p>Cooperation and Information</p> <p>a) The Recipient and ADB shall cooperate fully to assure that the purposes of the Grant will be accomplished. To that end, the Recipient and ADB shall:</p> <p>i. From time to time, at the request of any one of them, exchange views with regard to progress of the project, the purposes of the Grant and the performance of their respective obligations under the Trust Fund Grant Agreement; and furnish to the other party all such information related thereto as it shall reasonably request; and</p> <p>ii. Promptly inform each other of any condition which interferes with, or threatens to interfere with, the matters referred to in paragraph (i) above.</p>	Art. VII, Section 8.01	<p>Complied with.</p> <p>Complied with.</p>

Description	Reference in Grant Agreement	Status
b) The Recipient shall afford all reasonable opportunity for representatives of ADB to visit any part of its territories for purposes related to the Grant.		Complied with.
<p>Financial and Economic Data</p> <p>The Recipient shall furnish to ADB all such information as ADB shall reasonably request with respect to financial and economic conditions in its territory including its balance of payments and its external debt as well as that of its political or administrative subdivisions and any entity owned or controlled by, or operating for the account or benefit of the Recipient or any such subdivision and any institution performing the functions of a central bank or exchange stabilization fund, or similar functions for the Recipient.</p>	Art. VII, Section 8.02	Complied with.
<p>Insurance</p> <p>The Recipient shall insure or cause to be insured, or make adequate provision for the insurance of, the imported goods to be financed out of the proceeds of the Grant against hazards incident to the acquisition, transportation and delivery thereof to the place of use or installation. Any indemnity for such insurance shall be payable in a freely usable currency to replace or repair such goods.</p>	Art. VII, Section 8.07	There is no insurance company in Timor-Leste. Bank guarantees were issued.
<p>Maintenance</p> <p>The Recipient shall at all times operate and maintain, or cause to be operated and maintained, any facilities relevant to the project, and promptly as needed, make or cause to be made all necessary repairs and renewals thereof.</p>	Art. VII, Section 8.07	Complied with. At the time of the PCR mission, the project works were in good condition with the exception of the works at Laclubar, which were destroyed in a February–March 2007 landslide.
<p>Land Acquisition</p> <p>The Recipient shall take, or cause to be taken, all such action as shall be necessary to acquire as and when needed all such land and rights in respect of land as shall be required for carrying out of the project and shall furnish ADB, promptly upon its request, evidence satisfactory to ADB that such land and rights in respect of land are available for purposes related to the project.</p>	Art. VIII, Section 8.08	There was no land acquisition required as works undertaken in the existing road alignment.

ADB = Asian Development Bank, EA = executing agency, LCB = local competitive bidding, PCR = project completion report, TFET = Trust Fund for East Timor.

Source: Independent evaluation mission drawn from the Asian Development Bank. 2008. *Completion Report: Emergency Infrastructure Rehabilitation Project, Phase 2*. Manila (Grant 8198-TIM[TF], for \$9 million, approved on 18 May 2002).

FINANCIAL AND ECONOMIC REEVALUATION

A. Emergency Infrastructure Rehabilitation Project Phase 1

1. **General.** Financial and economic evaluations were not undertaken for any of the components at appraisal nor in the project completion report (PCR).

2. **Roads component.** For the road component, the works undertaken included road repair (e.g., pothole patching); removal of obstructions (e.g., fallen trees and landslide debris); and cleaning and unclogging of drainage canals. These were intended to reopen impassable roads, and thanks to improved drainage and slope stability, to reduce the occurrence of road closures. No improvement was made on the road surface. In addition, since mid-2002 when the works were completed, additional road maintenance and repairs have been carried out. Therefore, it would be impossible to separate the benefits of Phase 1 from those works undertaken subsequently.

3. **Port component.** The availability of port statistics on, among others, vessel waiting time at anchorage, one of the primary inputs to estimating the benefits of berth extension; container storage yard improvement; and repair of the slipway was not collected. The delay costs were not known or estimated. The independent evaluation mission (IEM) could not collect this data.

4. Based on available statistics and estimates, the economic internal rate of return (EIRR) of the port component was estimated. Phase 1 costs were adjusted to economic costs using the following assumptions.

- (i) Taxes and duties were excluded.
- (ii) Costs were divided into tradable and nontradable components.
- (iii) The nontradable component is made up of unskilled labor and represents 5% of costs; to account for local unemployment, labor costs were adjusted by a shadow wage rate factor of 0.50 to arrive at the economic opportunity cost. The tradable component comprised 40% of total costs and was adjusted using a factor of 0.88.

5. Phase 1's benefit was estimated as the savings in vessel waiting time. This was computed assuming a without-project situation of two available berths and a with-project scenario of three available berths. The project completed construction of an additional berth, which was started (but not completed) during the Indonesia administration. The construction work of the additional berth was initiated before 1999 but was not completed. Previous civil works done were considered as sunk costs. Table A6.1 provides the underlying assumptions:

Table A6.1: Select Assumptions on Port Component Projections

No.	Assumptions	Value
1.	Service time per day	12 hours
2.	Annual available time at the port	
	1. 2 berths (2 x 12 x 350)	8,400 hours
	2. 3 berths (3 x 12 x 350)	12,600 hours
3.	Assumed value of ship per day – 3,000 GRT	\$6,500
4.	The average waiting time of ships is estimated using the computed utilization rate for 2 and 3 berths and assigning the average waiting time of ships in queue value.	

GRT = gross register tonnage.

Note: The value of ships per day was sourced from the study.

Source: Independent evaluation mission based on discussions with the Port Authority; and E. Page. 1972. *Queuing Theory in Operations Research*. London: Butterworths, p. 155.

6. The computed EIRRs for the port component are given in Table A6.2 and were estimated using two cost assumptions: (i) with the wharf extension and slipway repair but without the cost of block paving the eastern container yard, security fencing, flood lights, fire equipment, and refrigerated container power outlets; and (ii) with the wharf extension, slipway repair, and other costs excluded in (i) above.

Table A6.2: Sensitivity Analysis on Cost Assumptions

Costs Considered	Computed EIRR
With the wharf extension and slipway repair but without the cost of block paving the eastern container yard, security fencing, flood lights, fire equipment, and refrigerated container power outlets	8.8%
With all costs	(11.9%)

() = negative, EIRR = economic internal rate of return.
Source: Independent Evaluation Department.

7. The Port Authority (APORTIL) is a revenue-generating port entity, although its revenues are remitted to the national government. For its operation and maintenance costs, APORTIL is provided an annual budget. The PCR determined that financial evaluation was not possible since the port was not generating additional revenue. Given the availability of financial data during the IEM, the port component's financial internal rate of return (FIRR) was computed. Realistic assumptions were made by this project performance evaluation report (PPER) where data on APORTIL was missing.

8. Dili's port charges have remained unchanged since 8 October 2003 as summarized in Table A6.3.

Table A6.3: Port Charges in Dili Port
(as of 8 October 2003)

Item	Description	Rate
Navigation fee		\$0.06 per ton of gross tonnage
Dockage fee		\$0.015 per hour per ton of gross tonnage
Wharfage fee	Containers up to 20 TEU	\$35 full; \$15 empty
	Container over 20 TEU	\$80 full; \$40 empty
	Loose cargo	\$1.80 per ton
	Vehicle up to 6 m	\$50
	Vehicle over 6 m	\$100
Storage fee	Containers in excess of 5 days	\$25 per day (up to 5 days free)
	Vehicles (in excess of 3 days)	\$25 per day (up to 3 days free)

m = meter, TEU = twenty-foot equivalent unit.

Source: Decreto-Lei 19/2003 de 8 de Outubro, Regulamento de Tarifas dos Portos de Timor-Leste-Suplemento.

9. The cargo throughput at Dili's port has been growing every year, except in 2005 and 2006 when the volume declined. From 2003 to 2009, the incoming container volume increased by 7.9% annually, while the outgoing container volume increased by almost the same rate. For general cargo, the volume of imports increased for the same period at 30.5% annually. General cargo exports declined continuously. For vehicles, imports increased by 5.3% annually from

2003 to 2009. For imports and exports by container, the United Nations accounted for 7.50% of imports and 11.73% of exports. For vehicles, the United Nations accounted for 7.1% of total imports.

Table A6.4: Cargo Throughput and Number of Vessels Calling at Dili's Port

Year	Containers (TEU)		General Cargo (ton)		Vehicles (unit)		Vessels (unit)
	Imports	Exports	Imports	Exports	Imports	Exports	No.
2003	10,465	10,148	38,552	2,086	671	194	263
2004	10,792	11,266	57,885	5,308	1,620	274	243
2005	7,640	7,514	57,885	5,308	1,620	274	242
2006	8,232	6,909	110,221	50	408	3	234
2007	11,208	10,990	126,172	1,659	868	119	278
2008	12,069	10,798	133,984	289	563	2	349
2009	16,493	15,947	190,666	...	915	...	343
Annual growth rate	7.9%	7.8%	30.5%	nc	5.3%	nc	4.5%

... = data not available, nc = not calculated due to lack of data for 2009, TEU = twenty-foot equivalent unit.

Notes:

1. For most cargo types (especially general cargo), these are only going to Timor-Leste without any outward cargo. Ships leave Dili's port empty after unloading cement, rice, etc. Coffee, which is the only substantial export of Timor-Leste, is normally shipped out by container.
2. For the outward shipment of vehicles (including military vehicles), these are presumably those owned by the United Nations, Australia, New Zealand, and other international agencies which have ended their service in Timor-Leste and bringing or relocating these to another country.

Source: Planning Office, Port Authority of Timor-Leste (APORTIL), 2010.

10. The number of vessels calling at Dili's port declined from 2004 to 2006, but subsequently increased up to 2008. In 2009, the number of vessels calling at the port decreased minimally. Overall, from 2003 to 2009, the number of vessels calling at the port increased 4.5% annually on average. The increase in cargo and vessel volume increased port revenues by 10.5% per year. The allocable share of revenues from the additional berth and stacking area for the 20-foot containers was estimated at 30%.

11. Recurrent costs were estimated using data provided by APORTIL, but since these included capital development, minor capital, and operation and maintenance costs lumped together, annual recurrent costs were estimated at \$286,000 per year. The proportionate share of total recurrent cost of the additional berth and container area was assumed to be 50%. The resulting estimate of FIRR is given in Table A6.5.

Table A6.5: Estimate of Financial Internal Rate of Return for the Port Component
(\$)

Year	Investment Cost	Recurrent Cost	Revenues	Net Revenues
2001	597,808			(597,808)
2002	597,808			(597,808)
2003		123,146	240,980	117,834
2004		143,009	265,079	122,070
2005		143,009	291,586	148,577
2006		143,009	232,134	89,125
2007		143,009	311,777	168,768
2008		143,009	518,396	375,387
2009		143,009	437,795	294,786
2010		143,009	483,600	340,591
2011		143,009	534,196	391,187
2012		143,009	590,087	447,078
2013		143,009	651,825	508,816
2014		143,009	720,022	577,013
2015		143,009	795,354	652,345
2016		143,009	878,568	735,559
2017		143,009	970,489	827,480
2018		143,009	1,072,026	929,017
			FIRR	18.4%
			NPV@12%	666,882.03

(-) = negative, FIRR = financial internal rate of return, NPV = net present value.
Source: Independent evaluation mission estimate.

12. The high FIRR for the port component may be attributed to the low cost in completing the berth extension. As stated previously, Phase 1 only finished the works on the additional berth that were not completed previously. Thus, there remained substantial sunk costs linked to the period before Phase 1.

B. Emergency Infrastructure Rehabilitation Project Phase 2

13. **Road component.** Economic evaluation of the roads was not undertaken at appraisal, but was conducted during the PCR. To assess the efficiency of an investment at postevaluation, it is desirable to compare the PCR estimates and the PPER estimates. Economic reevaluation was undertaken for the (i) Tibar–Ermera–Maliana road, (ii) Maliana–Zumalai road, (iii) Manatuto–Natarbora road, (iv) Baucau–Viqueque road, and (v) Cassa Bridge.

14. The methodology used was similar to that of the PCR, which considered savings from traffic diversion due to road closure as the primary source of benefits. The main points of differences between the PCR and PPER economic analyses are as follows.

- (i) The PCR estimate assumed that if Phase 2 roads were closed due to landslides, an alternate route would be taken by road users despite an associated increase in travel distance or cost.¹ The results of an origin–destination survey indicated that for the Gleno–Ermera–Maliana road, trips are mostly internal (i.e., within the project road area), which do not have alternative roads. The major trip desire line is between Dili and Maliana and the typical route would be Dili–Tibar–Batugade–

¹ Benefits from avoidance of additional vehicle-operating and travel-time costs due to road closure and diverting to an alternative longer route are difficult to estimate on the basis of traffic count data alone. Origin–destination data are needed to determine the origin–destination of trips.

Maliana.² In this case, if the road is closed due to landslide, the vehicle trip will not take place. Valuation of the restoration of road access is difficult under such a situation. It was, therefore, assumed that the value of the benefits from restoration of road access is the savings from traffic diversion due to road closure. For the other roads and bridge projects, the estimate of benefits is also the savings from traffic diversion due to road closure.

- (ii) The PCR assumed that the project will result in savings in the period of road closures owing to landslides during the rainy season. It assumed that the project interventions will lead to a savings of 6 months, i.e., if the roads were closed for 6 months per year under the without-project case, the project interventions will result in no road closures. This assumption was changed in the PPER, which assumed that project interventions will lead to annual savings equivalent to 1 month's vehicle operating cost and time saved as compared with the alternative route, i.e., if the roads were closed for any number of months per year under the without-project case, the project interventions will result in the avoidance of 1 month per year of road closure.³ The government does not maintain records on locations or lengths of closures. Interviews with Directorate for Roads, Bridges, and Flood Control technical staff and Ministry of Infrastructure officials indicate that road closures do continue since landslides still take place on the project roads. The Independent Evaluation Department's socioeconomic assessment confirmed this. Phase 2 has put in place countermeasures which could be attributed to reducing the road closures by 1 month. This assumption has been used in this PPER's economic analysis.

15. The methodology and assumptions used by the PPER's economic analysis are given below.

1. Methodology

16. The economic reevaluation was undertaken by estimating the savings from traffic diversion due to road closures. While the Highway Development and Management Tool (HDM 4) or Roads Economic Decision models could be used for the analyses, these models assume an improvement in road pavement quality. However, Phase 2 included only minimal road repairs and did not undertake any improvement in the quality of the road pavement but focused on implementing limited engineering countermeasures on critical road sections where landslides or road slips occur frequently. This included construction or repair of road drains and completion of the Cassa Bridge. However, due to financial constraints, not all critical road sections identified could be provided the required countermeasures. Phase 2 had reduced the probable occurrence of road closure, not prevented it totally. The benefit accruing to Phase 2 is avoidance of vehicle diversion costs due to road closure. In view of this, HDM 4 was used only for estimating vehicle-operating and time-savings costs to calculate vehicle diversion costs. The remaining analysis was based on a Microsoft Excel model.

17. While Phase 2 concentrated on specific road sections, it still responded to emergency requirements to keep national roads open for security and humanitarian purposes. Economic

² An origin–destination survey of trips along a sample of national roads was carried out by a study funded under Asian Development Bank. 2008. *Technical Assistance to Timor-Leste for Preparing the Road Network Development Project*. Manila (TA 7100-TIM, for \$800,000, approved on 23 July).

³ The recently completed PCR for the Road Sector Improvement Project (Grant 0017-TIM) has similar assumption in its economic analysis. Source: ADB. 2010. *Completion Report: Road Sector Improvement Project*. Manila (Grant 0017-TIM, for \$10 million, approved on 27 September 2005).

reevaluation was undertaken since the works completed are permanent, although the Phase 2 interventions were not improving the quality of road pavements but mainly on countermeasures such as slope stabilization and drainage works.

18. Phase 2 road sections comprise parts of the core national system and are considered essential for access to economic opportunities and government services. Road closure has economic and social impacts that go against the objective of normalizing life in Timor-Leste after years of conflict.

19. A reexamination of Phase 2 road sections was undertaken by the IEM, and viable alternative routes were identified in case of closure. As previously stated, the United Nations Integrated Mission in Timor-Leste (UNMIT) and the government did not maintain records of road closures in terms of location and length of time before access was restored.

20. Phase 2 road sections and alternate routes are given in Table A6.6. The additional kilometers (km) that road users will need to travel (i.e., on the alternative route due to road closures) is given based on discussions with the consultant engineer and project management unit. It was determined that (i) road closures do not exceed 1 month or 30 days within a year, and (ii) road users are willing to take a longer route if necessary.

Table A6.6: Comparison of Road Length between Phase 2 Road Sections and Their Alternate Routes

Road or Road Section Subject to Closure	Length (km)	Alternate Route	Length (km)	Difference (km)
Tibar–Ermera–Maliana Road	76.3	Maliana–Batugade–Mota Ain–Liquica–Tibar	141.9	65.6
Maliana–Zumalai Road	35.9	Oeleu–Fatululik–Tilomar–Suai–Zumalai	118.7	82.8
Manatuto–Natarbora Road	80.9	Natarbora–Viqueque–Baucau–Manatuto	158.3	77.4
Baucau–Viqueque Road	58.0	Viqueque–Natarbora–Manatuto–Baucau	181.2	123.2
Cassa Bridge	25.0	Zumalai–Aituto–Same–Hatudo	104.1	79.1

km = kilometer.

Source: Independent evaluation mission estimate.

21. Without Cassa Bridge, the alternate road to reach Hatudo is a roundabout route, Zumalai–Aituto–Same–Aiassa Junction–Hatudo, for a total distance of about 104.1 km. It is observed that the alternate routes required an additional travel distance of between 65.6 km and 123.2 km.

2. Traffic Counts, Analysis, and Forecast

22. **Vehicle profile.** From the vehicle profile for Timor-Leste, eight vehicle categories were used: (i) motorcycles; (ii) cars; (iii) large sports utility vehicles (SUVs), pickup trucks, and vans; (iv) microlets;⁴ (v) minibuses and buses; (vi) light trucks less than 5 tons; (vii) medium trucks between 5 and 10 tons; and (viii) heavy trucks more than 10 tons.

⁴ Microlets or minibuses are actually vans that are used commonly for intercity transport (passengers and cargo) in Timor-Leste.

23. **Traffic counts.** The IEM contracted 1-week (i.e., 7-day) traffic counts from 6:00 a.m. to 6:00 p.m. in specific sites along Phase 2 roads and Cassa Bridge. A road condition survey was also undertaken on Phase 2 road sections. The results of the traffic counts are compared with counts conducted in 2005 (during implementation) and 2008 (at PCR stage). Estimates of traffic growth per vehicle type were computed, including the percentage share of each vehicle category to total traffic. Table A6.7 shows the results of the different traffic counts conducted on Phase 2 road sections, including the IEM counts.

Table A6.7: Comparison of Traffic Counts Conducted in 2005, 2008, and 2010

Item	Motor-cycles	Cars	SUVs/Pick-up Trucks, and Vans	Microlets	Mini-buses and Buses	Light Trucks	Medium Trucks	Heavy Trucks	Total with Motor-cycles	Total without Motor-cycles
Baucau–Viqueque										
Baucau–Venilale										
2005	72	12	105	44	23	49	50	16	371	299
2008	337	12	109	116	17	50	2	1	644	307
2010	962	55	186	307	33	80	29	2	1654	692
Growth Rate (2005–2010)	67.9%	35.7%	12.1%	47.5%	7.3%	10.4%	(10.6%)	(34.8%)	34.8%	18.3%
% of Total	58.2%	3.3%	11.2%	18.6%	2.0%	4.9%	1.7%	0.1%	100.0%	
Venilale–Viqueque										
2005	63	0	64	0	0	0	47	16	190	127
2008	248	18	33	22	15	25	2	0	363	115
2010	373	14	74	12	14	36	8	1	531	159
Growth Rate (2005–2010)	42.7%		2.9%				(30.0%)	(42.2%)	22.8%	4.5%
% of Total	70.2%	2.6%	13.9%	2.3%	2.6%	6.7%	1.5%	0.2%	100.0%	
Manatuto–Natarbora										
Manatuto–Criba										
2005	7	0	3	0	0	12	2	0	24	17
2008	48	9	23	8	0	21	2	0	111	63
2010	398	8	90	27	2	75	19	3	622	223
Growth Rate (2005–2010)	124.4%		97.4%			44.2%	57.2%		91.7%	67.3%
% of Total	64.1%	1.3%	14.5%	4.3%	0.3%	12.0%	3.1%	0.5%	100.0%	
Criba–Natarbora										
2005	6	0	3	4	0	4	3	0	20	14
2008	22	0	5	7	0	5	2	0	41	19
2010	74	0	58	1	0	13	4	0	150	76
Growth Rate (2005–2010)	65.5%		80.7%	(29.7%)		26.6%	3.7%		49.7%	40.2%
% of Total	49.5%	0.2%	38.4%	0.5%	0.1%	8.7%	2.4%	0.2%	100.0%	
Tibar–Gleno										
2005	118	0	65	80	0	72	59	5	399	281
2008	349	15	227	111	2	170	18	2	894	545
2010	658	116	185	165	26	396	71	35	1651	993
Growth Rate (2005–2010)	41.0%		23.2%	15.6%		40.6%	3.7%	47.6%	32.9%	28.7%
% of Total	39.8%	7.0%	11.2%	10.0%	1.6%	24.0%	4.3%	2.1%	100.0%	
Ermera–Maliana										
Ermera–Maliana										
2005	26	0	4	13	0	18	5	0	66	40
2008	103	1	18	1	1	23	27	1	175	72
2010	302	6	94	11	0	55	4	0	470	169
Growth Rate (2005–2010)	63.3%		88.0%	(3.9%)		24.8%	(6.4%)		48.1%	33.4%
% of Total	64.1%	1.3%	20.0%	2.3%	0.0%	11.6%	0.8%	0.0%	100.0%	
Maliana–Zumalai										
Maliana–Lourba										
2005	106	0	215	132	12	83	86	0	634	528
2008	184	0	29	26	4	12	9	0	264	80
2010	458	6	159	9	1	151	7	1	792	333
Growth Rate (2005–2010)	34.0%		(5.8%)	(42.1%)	(36.9%)	12.7%	(40.3%)		4.5%	(8.8%)

Item	Motor-cycles	Cars	SUVs/Pick-up Trucks, and Vans	Microlets	Mini-buses and Buses	Light Trucks	Medium Trucks	Heavy Trucks	Total with Motor-cycles	Total without Motor-cycles
% of Total	57.9%	0.7%	20.1%	1.1%	0.2%	19.1%	0.8%	0.1%	100.0%	
Lourba–Zumalai										
2005	85	0	14	5	11	7	14	0	136	51
2008	309	0	23	8	9	9	9	0	367	58
2010	323	3	104	10	2	51	7	2	502	179
Growth Rate (2005–2010)	30.6%		49.5%	15.5%	(32.5%)	48.6%	(12.0%)		29.8%	28.5%
% of Total	64.4%	0.6%	20.8%	2.0%	0.3%	10.1%	1.5%	0.3%	100.0%	
Cassa Bridge										
2005	94	0	20	4	16	8	26	12	180	86
2008	342	0	32	7	14	10	18	12	435	93
2010	120	9	81	7	1	23	8	0	250	130
Growth Rate (2005–2010)	5.0%		32.4%	11.9%	(40.4%)	24.0%	(21.6%)	(100.0%)	6.8%	8.6%
% of Total	47.9%	3.8%	32.5%	2.8%	0.5%	9.4%	3.1%	0.0%	100.0%	

() = negative, SUV = sports utility vehicle.

Sources: Average daily traffic (ADT) 2005 – Asian Development Bank (ADB). 2006. Transport Sector Improvement. Consultants' Report. Manila (TA 3731-TIM); ADT 2009 – ADB. 2009. *Preparing the Road Network Development Project*. Consultants' Report. Manila (TA 7100-TIM); ADT 2010 – ADB independent evaluation mission traffic count survey results of 2010.

24. The traffic count results show that motorcycles have been increasing at a rate of growth ranging from 30.0% to 124.4%. Motorcycles account for at least 40.0% of total traffic, 70.2% at their highest. For the Cassa Bridge traffic count, 2010 motorcycle counts were less than in 2008/09. In general, average daily traffic has increased from 2005 to 2010, with the annual rate of increase varying by road section. The lowest was at 6.8% for Cassa Bridge, and the highest was at 91.7% for the Manatuto–Criba section of the Manatuto–Natarbora road.

25. **Traffic forecast.** The traffic forecast considered only normal traffic and traffic growth rates that were estimated based on the increases (or decreases) of traffic by vehicle type from 2005 to 2010. Traffic growth rates used were tempered by the estimate of gross domestic product (GDP) growth and its effect on travel. Developing economies experience travel growth of between 1.2 and 1.5 times their growth in real GDP. Using the factor 1.5, the GDP growth rate for Timor-Leste without oil and gas revenues is expected to result in a 7.5% annual growth rate in travel. This growth has to be met by expanding vehicle ownership and use.

26. Relatively high traffic growth rates are assumed from 2011 to 2015, medium growth rates from 2016 to 2020, and leveling off at lower rates from 2021 onward. Motorcycles have grown at an accelerated rate due to their flexibility and capability of traveling through the country's continuously deteriorating road system. Cars have had limited use, and preference has been for four-wheel drive vehicles such as SUVs and pickup trucks, which has shown rapid growth. There is minimal heavy truck traffic due to the country's narrow road widths and bad conditions. Most heavy trucks are utilized within Dili. The estimated growth rates per vehicle category are given in Table A6.8.

Table A6.8: Forecast Vehicle Growth Rates by Vehicle Category, 2011–2027

Period	Motor-cycles	Cars	SUVs, Pickup Trucks, and Vans	Microlets	Minibuses and Buses	Light Trucks	Medium Trucks	Heavy Trucks
2009–2015	0.20	0.15	0.10	0.10	0.10	0.05	0.05	0.05
2016–2020	0.10	0.10	0.08	0.08	0.08	0.04	0.04	0.04
2021	0.03	0.05	0.05	0.05	0.05	0.03	0.03	0.03

SUV = sports utility vehicle.

Source: Independent evaluation mission estimate.

3. Converting Financial to Economic Costs

27. The actual financial costs incurred for each road section and bridge were taken from the PCR. These were adjusted to economic prices by (i) applying the shadow wage factor on unskilled labor (based on previous studies, unskilled labor was estimated to comprise 5% of total construction cost and a shadow wage factor of 50% applied on the actual wage paid); and (ii) for the tradable component, it was assumed at 40% of total construction financial costs and adjusted using a factor of 0.88.

4. Economic Benefits

28. Phase 2's economic benefits were estimated by comparing with- and without-project scenarios. The primary measurable benefit is the avoidance of vehicle diversion costs or additional vehicle operating costs incurred by using a longer alternative route due to project road closure (i.e., without-project).

29. The typical vehicle operating cost per km by vehicle type was estimated using HDM 4 and is shown in Table A6.9.

Table A6.9: Assumptions on Vehicle Operating and Time Costs
(\$ per kilometer)

Vehicle Type	Vehicle Operating Cost	Time Cost	Total Costs
Motorcycles	0.07	0.01	0.07
Cars	0.28	0.01	0.29
SUVs, Pickup Trucks, and Vans	0.51	0.01	0.51
Microlets	0.47	0.07	0.54
Minibuses and Buses	0.83	0.17	1.00
Light Trucks	0.61	0.07	0.68
Medium Trucks	0.77	0.02	0.80
Heavy Trucks	1.43	0.00	1.43

SUV = sports utility vehicle.

Source: Independent evaluation mission estimate.

5. Results of the Economic Reevaluation

30. The EIRRs for each Phase 2 road section and bridge were calculated based on the stream of economic costs and benefits over the lifetime of Phase 2. Phase 2's life was assumed at 10 years, the same as in the PCR. The computed EIRRs at reevaluation were lower than the PCR results. For the Tibar–Ermera–Maliana road, the computed EIRR at reevaluation was 2.3% which was lower than the PCR result of 13.2%. The same was true for the other Phase 2 road sections and the bridge. At reevaluation, the EIRRs were 30.5% for the Maliana–Zumalai road, 0.0% for the Manatuto–Natarbora road, 11.2% for the Baucau–Viqueque road, and 20.8% for Cassa Bridge. The PCR EIRRs were 88.9% for the Maliana–Zumalai road, 17.4% for the Manatuto–Natarbora road, 51.4% for the Baucau–Viqueque road, and 41.6% for Cassa Bridge. Overall EIRR for Phase 2 was estimated at 10.6% by this PPER as compared with 37.5% by the PCR.

Table A6.10: Economic Reevaluation of Phase 2 Roads and Cassa Bridge
(\$ million)

	Tibar–Ermera– Maliana	Maliana– Zumalai	Manatuto– Natarbora	Baucau– Viqueque	Cassa Bridge	All Project Sections
Year	Net Benefits	Net Benefits	Net Benefits	Net Benefits	Net Benefits	Net Benefits
2005	...				(0.86)	(0.86)
2006	(2.07)	(0.60)	(1.10)	(2.54)	0.18	(6.12)
2007	0.07	0.23	0.02	0.15	0.20	0.68
2008	0.11	0.14	0.03	0.29	0.22	0.78
2009	0.12	0.16	0.03	0.34	0.24	0.88
2010	0.22	0.17	0.11	0.42	0.18	1.10
2011	0.24	0.19	0.12	0.47	0.20	1.21
2012	0.27	0.21	0.13	0.52	0.22	1.34
2013	0.30	0.24	0.14	0.58	0.24	1.49
2014	0.33	0.26	0.16	0.65	0.27	1.66
2015	0.37	0.30	0.17	0.73	0.29	1.86
2016	0.39	0.32	0.19	0.78	0.32	2.00
EIRR	2.3%	30.5%	0.0%	11.2%	20.8%	10.6%
NPV@12%	(\$0.80)	\$0.52	(\$0.52)	(\$0.09)	\$0.32	(\$0.40)

... = data not available, () = negative, EIRR = economic internal rate of return, NPV = net present value.

Note: Some of these components were not complete in 2005.

Source: Independent evaluation mission estimates.

31. Besides the differences mentioned in para. 14 of this appendix between the PCR and IEM results, the differences in the EIRRs could be attributed to the different traffic forecast results. The PCR used limited traffic counts, including the 2005 traffic count results. The IEM had the additional knowledge resource of the 2005, 2008, and 2010 traffic count results, which showed a decreasing rate of growth for certain vehicle types and accelerated and calmer growth for other vehicle types.

SOCIOECONOMIC ASSESSMENTS

A. Roads Component

1. Socioeconomic impacts from the roads component of the Emergency Infrastructure Rehabilitation Project, phases 1 and 2 have been *moderate*. The outcomes (i.e., benefits) were *substantial* at completion and some of these benefits have extended until date (Table A7.1). During the emergency period immediately following the 1999 conflict, road restoration had direct impacts on creating temporary employment and ensuring the flow of goods and fuel for vulnerable rural communities (i.e., access to humanitarian assistance). At post-project, the restored road system continues to contribute to economic and social activities in terms of mobility, social interaction, and access to government and international aid programs. Independent evaluation mission's (IEM) discussions with some villagers confirm the positive impacts on rural communities. The respondents can travel more easily and have access to information, markets, basic needs, and health care.

Table A7.1: Assessment of Socioeconomic Impacts during Project and Post-Project

During Emergency Period	Post-Project
Transported food supplies to famine-stricken areas, and facilitated distribution of food and other emergency supplies to vulnerable communities.	Mobility. Villagers travel more easily, facilitating their economic activity. For example, they are able to go to urban areas to buy different kind of goods for their daily needs. Convenient transport enables them to have access to hospital services in district towns and Dili.
Moved agricultural supplies, especially seeds for farmers, and ensured the flow of goods.	Social interaction. The purpose for travel varies among villagers. Some people travel to district towns or to Dili to visit their families or to buy goods to sell in their small shops. They use motorcycles to travel to urban areas. In addition, they have more chances to participate in decision-making processes by participating in meetings outside of villages.
Aided in resettlement for internally displaced persons and refugees. Many of the village communities, which benefited from the project, comprised refugees who returned from West Timor and found their property and livelihood destroyed. The project provided access to better health care, food, and access to reviving markets to vulnerable communities.	Access to government and aid programs. The majority of survey respondents indicated that they have access to interventions of development programs and schemes from the government, such as safe water supply, sanitation, campaigns, and visits from agricultural extension workers.
Moved UN peacekeeping forces. The road improvements enabled the smooth operation of the UN peacekeeping force, bringing a sense of security to the rural communities.	
Generated temporary employment, where up to 100 people per village were employed during project implementation.	

UN = United Nations.

Source: Independent evaluation mission.

2. With respect to longer-term contributions to economic development, these were *less moderate* in the absence of other interventions to capture benefits from the roads (i.e., power supply, investments, and credit). After a return to normalcy following the project, roads have had limited effects on promoting economic development, in particular regarding income, investments, migration, employment, and market access (Table A7.2).

Table A7.2: Assessment of Road Component Contributions to Economic Development

Impact	Contribution to Economic Development
Changes in income	<p>The survey found that village-level wage rates are, on average, \$3.00 per day. This is the same as 9 years ago. It revealed that village-level employment has remained the same in the last 10 years. This local observation is consistent with the unemployment rate for the country as a whole. It is estimated that annually, around 15,000–16,000 people enter the labor market, where only 400 new jobs are created.^a According to the 2004 census, the unemployment rate in Dili was 23% with unemployed youths at 40%, rising to 58% for the 15–19-year age bracket.</p> <p>A majority of survey respondents confirmed that road construction near their villages resulted in up to 20 people normally getting road construction work. In the last 5 years, villagers who worked on public works received \$2.00 per day.</p>
Impact on agricultural activities	<p>The survey revealed that no new agricultural products were introduced in the villages in the last few years. Presently, the Ministry of Agriculture, Forestry, and Fisheries is experimenting on new crops to be introduced. In the last 10 years, products sold along the roadsides are from the forest. These include honey, firewood, bamboo, wood for building materials, and wild fruits.</p>
Access to markets	<p>A majority of survey respondents use traditional means to market their agricultural products. They travel to nearby markets weekly or display their products at home for those who live alongside the road. In the last 5 years, the number of roadside stalls had increased. Seven years ago, there was one stall every 20 km. This has increased to one stall every 10 km, on average, in the last 5 years. At the same time, survey respondents also acknowledged that direct access to markets has been limited in the last 5 years. Local farmers have benefited from a government program of buying local products, which had encouraged them to grow more. The products bought by the government include beans, coffee, rice, onions, and garlic.</p>
Impact on nonagricultural activities	<p>The survey noted that economic activities in rural areas have increased. The number of kiosks grew from two per village before the project to five per village after the project. The rehabilitation of the roads and port has contributed to this. Small kiosks in Timor-Leste are categorized as microenterprises (i.e., small unregistered businesses with no employees). The survey found that there are currently five owner-operated kiosks per village on average. These small kiosks sell goods such as rice, soap, noodles, and cigarettes.</p>
Access to credit	<p>Currently, there are no new investments at the village level. This is because Timor-Leste has a poor investment policy, unclear insurance policy, instability, and security concerns. Therefore, in the villages, no investment patterns were found. According to the European Commission's <i>Country Strategy Paper 2006–2007</i> (p. 14), Timor-Leste's economy is uncompetitive due to small, isolated markets; high costs of transport; a low skills base; poor physical infrastructure; and weak or incomplete government institutions and financial and banking sector. Micro Credit Timor-Leste is the only credit institution and the only source for credit in the country. This institution has branches in every district capital, but those who need credit have to travel from their villages to the district capitals.</p>
Access to health and education facilities	<p>About 80% of schools and clinics were completely or partly destroyed during the conflict. The village surveys found that hospitals were mainly located in district centers. The distances from the villages range from 5 km to 35 km. For emergency needs, there are several ambulances operating from each hospital to cover remote villages. Clinics are</p>

Impact	Contribution to Economic Development
	<p>mainly at subdistrict centers, while at the village level, there are clinics operated by Catholic nuns and NGOs. Average distances to clinics range from 1 km to 15 km. Survey respondents indicated that some health campaigns have reached the village over the past few years. Government and NGOs actively conduct campaigns on polio, family planning, sanitation, and HIV/AIDS. Since 2000, monthly visits by a doctor to most villages have been regularized.</p> <p>Primary schools are located within villages. The average distance to the school is 1 km and is easily accessible. Pre-secondary and secondary schools are located in subdistrict towns, which are far (i.e., 5 km to 35 km) from villages. Students walk to school or live with relatives who are close to the schools.</p>
Access to information	In the last 3 years, almost all villages in the country have access to mobile communications through Timor Telecom. Mobile subscribers increased from one subscriber for every 9.3 adults in mid-2007 to one for every 1.7 adults by the end of 2009. The ratio of internet users is 1 per 1,000 individuals.
Changes in land values	A majority of respondents have not sold any land. For some in Ermera District, the price of land was the same in the last 10 years at \$15 per square meter.

km = kilometer, NGO = nongovernment organization.

^a The 2004 national census estimated Timor-Leste's population at 925,000. The World Bank shows Timor-Leste's population in 2009 as 1,133,594 (Source: <http://data.worldbank.org/country/timor-leste> accessed on 17 November 2010).

Sources: Independent evaluation mission, information drawn from various sources during field study, and data on Timor-Leste economy drawn from European Commission's *Country Strategy Paper 2006–2007*.

3. Other benefits from restored road access relate to road passability, vehicle ownership, traffic density, and transport costs.

4. **Road passability.** The participants reported that when landslides close a road, it takes 1–7 days to fix. This is because the heavy equipment required to fix a road are in Dili and owned by private companies. In some areas, such as Maliana and Gleno, travel time to Dili is the same as it was 10 years ago for both the dry and rainy seasons. Maliana to Dili takes 4 hours on average, and Gleno to Dili takes 45 minutes on average. However, in some areas, travel time is slower by 1–2 hours during the rainy season.

5. **Vehicle ownership.** Indicative of a small measure of change in the quality of life is the number of motor vehicle purchases, which has been increasing annually. In the last 5 years, the number of motor vehicles (i.e., motorcycles, cars, public buses, and trucks) in villages had also increased. In particular, motorcycles rose significantly. For example, before the project, there were only two motorized vehicles each in Suco Bobonaro, Subdistrict Bobonaro, and Bobonaro District. This increased to almost 30 since 2006. The same statistics have been reported in Ermera District. At the national level, statistics show that over 11,000 new motor vehicles were registered in 2009, more than double that of 2008. In 2008, there were 26,649 motor vehicles, of which 6% were cars, 72% were motorized two- and three-wheelers, 15% were minibuses and vans with a capacity of less than 20 passengers, and 8% were trucks.

6. **Traffic density.** People normally travel using public transport (i.e., by bus) and the frequency of service has increased up to 50% in the last 5 years. Still, public transport quality (i.e., regularity and reliability of services in rural areas) has remained poor in the last few years. There are no fixed bus schedules, as well as no system for advanced ticket sales. Passengers pay for the service when they arrive at their destination. Bus departures do not have regular schedules, because these depend on whether they have enough passengers for a trip. For

those who live along the road, they normally wait until they find transport to take them to their destinations. This practice has remained unchanged in the last 10 years.

7. **Transport costs.** Fares for public transport, which vary with distance, are estimated at \$1.00 per 10 kilometers (km). In some areas, fares have remained the same for the past 10 years, while these increased up to 50% in others. For example, the transport fare in Bobonaro town (subdistrict) of Maliana (district town) increased from \$1.50 to \$2.00 in the last 4 years. Transport owners who participated in this survey stated that fares for public transport increased because the price of fuel has increased in the last few years.

8. **Gender and migration.** Road improvements have had little impact on women's mobility in the last 10 years. Women travel anywhere regardless of road conditions.

9. There has been no change in migration patterns for the last 10 years for both moving to or out of villages. Some participants stated that, during the 2006 conflict, up to 10 families moved into a village from other parts of the country. This situation was reflected in three other villages in Ermera District and three in Bobonaro District.

B. Power Component

10. The socioeconomic impacts from the power component have been *moderate*. Like the roads component, these impacts were *significant* during the emergency period (i.e., immediately after project completion). Restoration of power had a positive impact on beneficiary communities by supporting a return to normalcy, as it facilitated aid efforts as well as security intervention. It also helped facilitate continued delivery of basic services, such as water and hospital services.

11. At postevaluation, these impacts are on the low side of *moderate* at best. Measures taken to rehabilitate and operate the power plants were expected to further assist in addressing poor rural economic performance, promoting job creation in rural areas, and improving educational opportunities. Access to power services was therefore expected to have key impacts on raising the quality of life (including that of rural women), greater livelihood opportunities, safer living environments, and increased leisure time. Yet this potential for longer-term contributions to economic development is suspect at this time. For the project villages, power supply is mostly 6 hours per day, or from 6:00 p.m. to 12 midnight. Hence, it is likely to benefit household users only in terms of changes in quality of life or to provide a sense of safety at night (Table A7.3). Meanwhile, the IEM discussions reconfirmed the importance of electricity access, as this created "social jealousy" between communities with and without power supply. Although no major tension or conflict exists between communities surveyed by the IEM, those without access to power expressed their dissatisfaction.

Table A7.3: Assessment of Power Component Contributions to Economic Development

Impact	Contribution to Economic Development
Changes in quality of life	The survey participants stated that power supply had benefited them. The typical households use electricity for lighting, ironing clothes, watching television, and to enable children to study at night. For those who own small businesses such as <i>warungs</i> (local restaurants) and small kiosks, electricity is used to store food and cold drinks. A majority of survey respondents indicated that they were able to acquire some electrical appliances such as televisions, CD/VCD/DVD players, flat irons, and refrigerators during the last 7 years. Almost all households that are connected to a power supply have at least televisions in their homes. All the participants stated that

Impact	Contribution to Economic Development
	lack of electricity will create problems for them because it means that they will have to rely on kerosene to light their homes.
Power and local business	When electricity is accessible in rural areas, most businesses just wait until the power is supplied (i.e., most people plan their activities around the power supply time). A small percentage of companies purchase small generators as backups.
Peace and order	The survey respondents expressed that living in darkness is not good and that they do not feel safe at night. There are different opinions on whether the crime rate decreased with the provision of electricity. Given that electricity is only available 6 hours per day on average, it may have a moderate impact on reducing the crime rate.

CD = compact disc, DVD = digital video disc, VCD = video compact disc.

Source: Independent evaluation mission.

C. Port Component

12. Socioeconomic impacts from the port component range from *significant* to *substantial*. During the emergency period immediately after the 1999 conflict, the port restoration was not completed for peak traffic of humanitarian aid. However, after completion, the improved port capacity helped increase the effectiveness and availability of both humanitarian and military activities during this critical period. It also had indirect poverty impacts as the poor shared the social and economic benefits of improved security and humanitarian conditions through the economical, safe, and timely landing of cargo (including food and emergency supplies) at the port. The port component enabled smooth operation of the United Nations peacekeeping force, which brought a sense of security to communities in the rural areas.

13. Of the three project components, only the port component was able to deliver *substantial* contributions to economic development at the national level. It helped ensure that exports and imports are handled in a sustainable and efficient manner at Dili's port, the country's main gateway for passenger and cargo traffic (Table A7.4). Both imports and exports are highly dependant on Dili's port before and after the port interventions, because the smaller ports such as Hera and Tibar are not equipped to handle large containers.¹

Table A7.4: Assessment of Port Component Contributions to Economic Development

Impact	Contribution to Economic Development
Outbound trade	In 2000, coffee production rose by some 40%, but most of the gain was not realized because coffee prices declined in the world market. Based on figures provided by coffee exporters, the 2002 harvest was estimated at 7,000–11,000 tons of green beans worth \$6 million–\$10 million. Production is dominated by an estimated 44,000 small producers (harvesting on average one to two hectares) representing about 25% of the population. The producers are typically upland subsistence farmers who harvest areas of coffee, investing little effort in maintenance such as pruning, replanting, and weeding. For these people, coffee sales are estimated to represent 90% of their cash income. By 2009, coffee exports were estimated to have increased from \$10 million in 2008 to \$12 million.
Inbound trade	SDV Logistics, which is managing two large shipping companies, Perkins and Meratus, reported that the volume of the goods arriving in Dili's port have increased

¹ The composition of imports at Dili's port for 2005 and 2009 were mineral fuel, vehicles, cereals, machinery and parts, electrical equipment, beverages, optical and photographic articles, cement, iron and steel articles, and pharmaceutical products. The composition of exports was mainly coffee (75%), sandalwood, and marble (Source: Government of Timor-Leste, Direcção Nacional de Estatística. 2010. *Quarterly Statistical Indicators*. Dili. May).

Impact	Contribution to Economic Development
	in the last 5 years. The frequency of shipping calls also increased from 1 per month to 2–3 per month since 2005.

Source: Independent evaluation mission.

14. In 2001, ADB reported that Dili's port received an average of 36 vessels and handled 1,907 twenty-foot container equivalent units and 9.5 tons of bulk cargo per month. Other ports have relatively less traffic. Shipping services are being planned between Dili and Oecusse District.² Shipping companies stated that their activities at Dili's port have increased since 2005 in terms of frequency of ship calls per month, from once before 2005 and to 2–3 calls per month in 2010 by each company. Volume of goods shipped in and out of the port also increased. Types of commodities shipped in relate to households needs, including building materials, vehicles, etc. Commodity shipped out includes coffee, candle nuts, and copra. In 2008, Dili's port handled about 200,000 tons of cargo, of which less than 10% were containers.

15. The average waiting time of a vessel in anchorage is 4–7 days, and the average service time at berth is between 12 and 24 hours. Average size of vessel (gross revenue ton) is 3,000 tons with 100 meters in length. The number of ship calls per month on average, is two to three times, with the following routes: (i) Darwin–Dili–Darwin, (ii) Surabaya–Dili–Surabaya, and (iii) Singapore–Dili–Singapore. There are ships from the People's Republic of China, Indonesia, and Japan. Types of service provided are scheduled for both containerized and general cargo. At present, no information is available for ports in Timor-Leste for 2000. The National Statistics Directorate (DNE) provided general data on trade statistics. In 2005, the total value of exports was \$43.451 million, and the total value of imports was \$109.127 million.³ For 2009, the total exports amounted to \$291.077 million, and imports amounted to \$295.096 million.⁴

16. A 2005 Asian Development Bank study reported that a little more than 300,000 tons of freight passed through Dili's port in 2001.⁵ In 2003, 22,000 containers (almost exclusively twenty-foot container equivalent units) amounting to 310,000 tons of freight passed through the port. Ninety-five percent of incoming containers were sent back empty. Movement through the port has been boosted by the presence of international personnel based in Dili and materials imported to support the reconstruction effort. In the year ending June 2002, containers for the United Nations alone accounted for 11% of container movement. Some 237 tons of air freight also passed through the airport in 2003, two-thirds of it as imports.

² Asian Development Bank (ADB). 2001. *Technical Assistance to Timor-Leste for Transport Sector Improvement*. Manila (TA 3731-TIM, for \$500,000, approved on 1 October).

³ Government of Timor-Leste, DNE. 2005. *Timor-Leste Overseas Trade Statistics*. Dili.

⁴ Government of Timor-Leste, DNE. 2010. *Quarterly Statistical Indicators*. Dili. May.

⁵ D. Roland-Holst and B. Frielink. 2009. *Trade and Growth Horizons for Nusa Tenggara Timur and Timor-Leste*. *Southeast Asia Working Paper Series No. 4*. Manila. November.