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Report No: PAD1994

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT PAPER

ON A

PROPOSED SECOND ADDITIONAL CREDIT

IN THE AMOUNT OF SDR 26 MILLION
(US$35.20 MILLION EQUIVALENT)

TO THE

DEMOCRATIC REPUBLIC OF TIMOR-LESTE

FOR A

ROAD CLIMATE RESILIENCE PROJECT

APRIL 6, 2017

Transport and ICT
East Asia and Pacific Region

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CURRENCY EQUIVALENTS

(Exchange Rate Effective February 28, 2017)

Currency Unit	=	SDR
SDR 0.73861	=	US$1
US$1.35389	=	SDR 1

FISCAL YEAR
January 1 – December 31

ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
ADM	Accountability and Decision-Making
AF	Additional Financing
CAE	Child Abuse and Exploitation
DRBFC	Directorate of Roads, Bridges, and Flood Control
EIRR	Economic Internal Rate of Return
EMP	Environmental Management Plan
ESIP	Environmental Safeguards Implementation Plan
EU	European Union
FM	Financial Management
GBV	Gender-based Violence
GoTL	Government of Timor-Leste
GRM	Grievance Redress Mechanism
GRS	Grievance Redress Service
HIV	Human Immunodeficiency Virus
ICB	International Competitive Bidding
IDA	International Development Association
IEE	Initial Environmental Examination
ILO	International Labour Organization
IPCC	Intergovernmental Panel on Climate Change
IRI	International Roughness Index
MPWTC	Ministry of Public Works, Transport, and Communication
NPV	Net Present Value
PAD	Project Appraisal Document
PBM	Performance-Based Maintenance
PDO	Project Development Objective
PMU	Project Management Unit
RCRP	Road Climate Resilience Project
RP	Resettlement Plan

RPF	Resettlement Policy Framework
SDR	Special Drawing Right
VOC	Vehicle Operating Cost

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DEMOCRATIC REPUBLIC OF TIMOR-LESTE
ROAD CLIMATE RESILIENCE PROJECT SECOND ADDITIONAL FINANCING

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SECOND ADDITIONAL FINANCING DATA SHEET

Timor-Leste

Road Climate Resilience Project Second Additional Financing (P252338)

EAST ASIA AND PACIFIC

GTI02

Basic Information – Parent			
Parent Project ID:	P125032	Original EA Category:	B - Partial Assessment
Current Closing Date:	31-Dec-2018		

Basic Information – Second Additional Financing (AF)			
Project ID:	P252338	Second Additional Financing Type (from AUS):	Cost Overrun, Restructuring
Regional Vice President:	Victoria Kwakwa	Proposed EA Category:	
Country Director:	Michel Kerf	Expected Effectiveness Date:	30-Jun-2017
Senior Global Practice Director:	Jose Luis Irigoyen	Expected Closing Date:	31-Dec-2021
Practice Manager/Manager:	Almud Weitz	Report No:	PAD1994
Team Leader(s):	Elisabeth Goller		

Borrower				
Organization Name	Contact	Title	Telephone	Email
Ministry of Finance	Minister of Finance	Minister of Finance	670-331-2886	sitatilman@mof.gov.tl

Project Financing Data - Parent (Timor-Leste Road Climate Resilience Project-P125032) (in USD Million)

Key Dates

Project	Ln/Cr/TF	Status	Approval Date	Signing Date	Effectiveness Date	Original Closing Date	Revised Closing Date
P125032	IBRD-82900	Effective	22-Oct-2013	18-Nov-2013	04-Mar-2014	31-Dec-2018	31-Dec-2018
P125032	IDA-53030	Effective	22-Oct-2013	18-Nov-2013	04-Mar-2014	31-Dec-2018	31-Dec-2018
P125032	IDA-H6830	Effective	17-May-2011	06-Jul-2011	30-Aug-2011	31-Dec-2015	31-Dec-2018

Disbursements

Project	Ln/Cr/TF	Status	Currency	Original	Revised	Cancelled	Disbursed	Undisbursed	% Disbursed
P125032	IBRD-82900	Effective	USD	15.00	15.00	0.00	0.04	14.96	.25
P125032	IDA-53030	Effective	USD	25.00	25.00	0.00	16.70	8.30	66.80
P125032	IDA-H6830	Effective	USD	20.00	20.00	0.00	17.43	0.81	87.16

Project Financing Data - Additional Financing Road Climate Resilience Project Second Additional Financing (P252338) (in USD Million)

[ ] Loan [ ] Grant [ ] IDA Grant

[X] Credit [ ] Guarantee [ ] Other

Total Project Cost:	39.14	Total Bank Financing:	35.20
Financing Gap:	0.00		

Financing Source – Additional Financing (AF)	Amount
BORROWER/RECIPIENT	3.93
International Development Association (IDA)	35.20
Financing Gap	0.00
Total	39.14

Policy Waivers

Does the project depart from the CAS in content or in other significant respects?	No
Explanation	
Does the project require any policy waiver(s)?	No
Explanation	

Team Composition

Bank Staff

Name	Role	Title	Specialization	Unit
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	Management Specialist	Management Specialist	Management	
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Maria Luisa G. Juico	Team Member	Program Assistant	ACS	GTI10

Extended Team

Name	Title	Location

Locations

Country	First Administrative Division	Location	Planned	Actual	Comments
		Maubisse	X	X	
Timor-Leste	Dili	Dili	X	X	
		Dili	X	X	
Timor-Leste	Ainaro	Ainaro	X	X	
Timor-Leste	Aileu	Aileu	X	X	
		Lauhili	X	X	

		Haotio	X	X	
		Aituto	X	X	
		Laulara	X	X	

Institutional Data
Parent (Timor-Leste Road Climate Resilience Project-P125032)
Practice Area (Lead)
Transport & ICT
Contributing Practice Areas
Additional Financing Road Climate Resilience Project Second Additional Financing (P252338)
Practice Area (Lead)
Transport & ICT
Contributing Practice Areas

I. Introduction

1. This Project Paper seeks the approval of the Executive Directors to provide an additional credit in an amount of SDR 26 million (US$35.20 million equivalent) to the Timor-Leste Road Climate Resilience Project (RCRP) (P125032), Grant IDA-H683-TP, Credit IDA-5303-TL, Loan IBRD-8290-TL, in accordance with OP 10.00. This is in response to a request from the Minister of Finance to the World Bank dated May 17, 2016.

2. The proposed second Additional Financing (AF) would cover a financing gap and cost overruns under the ongoing project. It would also include a level-two restructuring to cancel one project component, modify the description of two project activities, enhance the Results Framework, and update the costs and disbursement estimates to adjust the project to the reality on the ground. In addition, the restructuring would extend the project closing date of the original project and the first AF from December 31, 2018 until December 31, 2021. Since the overall project implementation period would exceed 10 years, Bank management agreed at the concept stage to have a single implementation completion and results report prepared upon completion of the project.

3. This proposed AF would not change the project development objective (PDO). There would also be no changes to the fiduciary and implementation arrangements as a result of this AF, nor would the environment categorization be altered or any additional safeguard policy be triggered.

4. The expected outcomes from the activities to be supported with the proposed second AF would be a climate resilient and reliable road on the entire Dili-Ainaro corridor and a strengthened Project Management Unit (PMU).

II. Background and Rationale for Second Additional Financing in the Amount of US$35.20 million Equivalent

5. **Country and sector context.** Timor-Leste has basic income, health, and literacy levels similar to those of countries in Sub-Saharan Africa. Unemployment and underemployment combined are 12 percent.[1] Women labor participation is between 10 percent and 30 percent lower than that of men.[2] Around 41 percent of the country's population lives below the poverty line, and poverty among women remains higher.[3] Cases of domestic violence are also frequent. Economic growth in the non-oil sector has slowed following a period of very rapid growth in the 10 years following independence but remains robust, averaging 4.8 percent per year over the past three years.

6. Oil and gas revenues are critical to the country's economy and its socioeconomic development. The only currently active field is located offshore in an area shared with Australia. The Government of Timor-Leste (GoTL) set up a special Petroleum Fund in 2005 to facilitate the sustainable use of oil revenues. By 2015, the Petroleum Fund assets reached US$16.5 billion. Coffee accounts for over 90 percent of Timor-Leste's non-oil and gas exports.

[1] Timor-Leste Labour Force Survey 2013, General Directorate of Statistics.
[2] Timor-Leste Labour Force Survey 2013; General Directorate of Statistics.
[3] Poverty Declining in Timor-Leste; General Directorate of Statistics; September 28, 2016.

7. Economic development is dependent on government spending partly financed by petroleum revenues and assistance from international donors. Although still low, private investment has begun to increase in recent years, but private sector development has lagged due to human capital shortages and a weak business environment.

8. Timor-Leste has an extensive road network, with 1,427 km of national roads, 869 km of district roads, and 3,025 km of rural roads. The main network corridor runs along the northern fringe of the country from the Indonesian border in the west through the capital Dili and then eastward to the second largest city, Baucau, and beyond. The road network in the west is reasonably dense, serving a strong agricultural region. In the rest of the country, the road network consists of five north-south connectors linking the northern corridor across the mountainous spine to the east-west road along the southern coastal plain. These main road corridors are important as they connect potentially promising agricultural areas and new oil industry-related developments along the southern coast to the main population and more developed areas along the northern coast. However, much of this road network is in a poor condition, and traffic, although still light, is growing rapidly. Data from a 2011 study showed that two-wheel drive cars could only drive at reasonable speeds on 20 percent of the national road network, and more than 6 percent were in such a poor condition that it was only passable by four-wheel drive vehicles.

9. This situation has arisen in a large measure due to underinvestment in maintenance and has resulted in increased isolation of communities, higher vehicle operating costs (VOCs) and freight costs, and longer journey times. In many cases, however, the roads were also not properly designed, lacked sufficient drainage capacity, and/or were structurally unsound. Due to the steep terrain, ground conditions, and local climate, slope instability is a major problem and frequent landslides result in significant damage to the road network and potential risk to road users. Combined with the shortage of maintenance funds, these factors resulted in a necessary focus on emergency repairs rather than systematic maintenance.

10. Immediately after independence, only some works, on the main road between Dili and the Indonesian border with West Timor, and emergency repairs, largely as a result of frequent landslides, took place. In 2009, the Asian Development Bank (ADB) financed a Road Network Development Plan that specified a strategic core national road network where repairs would provide a relevant economic return. Based on this plan, ADB has financed or is financing about 300 km of road upgrading and the Japan International Cooperation Agency is financing the rehabilitation of about 120 km. The International Labour Organization (ILO) and the Governments of Australia, Ireland, and Norway are active in the rehabilitation and maintenance of rural roads. The GoTL is also upgrading selected links with its own budget.

11. The GoTL's capacity to manage the road network has improved significantly since the start of project implementation, although some limitations still exist. The Ministry of Public Works, Transport, and Communication (MPWTC) is responsible for planning, developing, and maintaining roads. The MPWTC's Directorate of Roads, Bridges, and Flood Control (DRBFC) has received significant support and training from many donors. It increased its staffing, but the number of engineers is still relatively low. All the national road network upgrading financed by donors is implemented by a multidonor PMU, who previously reported directly to the Minister of MPWTC and recently has been put under the responsibility of the DRBFC. This PMU is headed

by a local project manager, staffed with local and international professionals, and has developed reasonably good capacity over time.

12. Road maintenance is the responsibility of the Maintenance Department under the DRBFC, which currently has around 10 engineers. For several years, this department did not receive a budget and lost capacity and resources. Since 2015, at least partially due to the constant insistence of the World Bank and other donors, the GoTL put new focus on road preservation. In 2016, the GoTL provided a budget for routine and periodic maintenance of national, district, and urban roads of US$4 million and for rural roads of US$10 million. A similar amount was allocated in 2017. These amounts seem proportionate to the current absorptive power of this department. In 2016, they procured nine two-year performance-based maintenance (PBM) contracts for about 400 km of roads. The PMU, with the support of the Maintenance Department, is supervising road maintenance on the road sections upgraded under their management. To address capacity constraints in the sector, ADB, the Governments of Japan, Indonesia, and Australia, and the European Union (EU), among others, have been supporting the GoTL with road sector technical assistance. This has been geared toward planning, contracting, and supervising maintenance contracts, and has included support to set up a road asset management system. The EU and ILO have also worked for several years to strengthen the capacity of local contractors.

13. The RCRP complements other donor investments by strengthening capacity within the MPWTC and financing the upgrading and maintenance of the 110 km north-south Dili-Ainaro corridor, which serves as a key cross country link between the north and the south of the country. The road corridor connects the three districts of Dili, Aileu, and Ainaro, or approximately 32 percent of the country's population. Furthermore, the Dili-Ainaro road will serve as one of the most direct links between the new oil and gas development services along the south coast and the main commercial center in the capital.

14. **Project background.** The RCRP was approved on May 17, 2011 and became effective on August 30, 2011. The PDO was to deliver sustainable climate resilient road infrastructure on the Dili-Ainaro corridor. The RCRP comprised three components: A. Climate Resilient Road Infrastructure; B. Climate Responsive Maintenance and Emergency Planning; and C. Project Support and Training. The total IDA grant amount was SDR 12.70 million (equivalent to US$20 million at the time).

15. This was followed by a first AF, which was approved on October 22, 2013, for US$40 million (IDA credit of US$25 million and IBRD loan of US$15 million). The first AF became effective on March 4, 2014. It was necessary because under the original financing, the project design only envisaged spot pavement improvements along the 110 km Dili-Ainaro corridor. Given the unexpected quicker deterioration of the pavement along the corridor, this treatment had become insufficient to deliver a climate resilient corridor and full upgrading of the road was warranted.

16. Further, as part of the restructuring under the first AF, Subcomponent B.1. related to PBM was cancelled and this activity was absorbed by Component A, for an approximate value of US$2.8 million. This cancellation was not reflected in the legal agreements. Subcomponents B.2. to extend an ADB-financed road maintenance program and B.4. to pilot an emergency response

system were also cancelled. The scope of the remaining Subcomponent B.3. was reduced to cover the design of an emergency planning and response system only.

17. Finally, a new component—Component D, Feasibility Study and Detailed Design of Additional Road Segments—was added to the project, and some changes to the project costs and indicators were made. The closing date of the original financing was also extended from December 31, 2015, to December 31, 2018. There was no change to the PDO.

18. For procurement purposes, the Dili-Ainaro corridor was divided into five sections. During the negotiations of the first AF, the World Bank and the GoTL agreed to finance the improvement of section 1 through the IDA grant and the improvement of section 2 through the IDA grant and separate government funds. They also agreed to use the resources from the first AF, including the respective counterpart funds, for sections 3, 4, and 5 only. Eventually, the grant funds were only sufficient to finance section 1. Section 2, from Laulara to Solerema (22.62 km), nevertheless continued to be part of the project, mainly in terms of PDO, project description, indicator targets, safeguard requirements, and economic evaluation.

19. **Project performance.** Progress toward achieving the PDO has been moderately satisfactory since June 2015. With the first road section completed and the other civil works ongoing, except for section 2, progress has been recorded for most of the results indicators. For instance, the drainage in good condition has increased from 20 percent to 40.34 percent, the roads in good and fair condition have increased from 10 percent to 29.95 percent, the number of locations with improved slope protection has increased from 0 to 431, and roughness on section 1 has decreased to an International Roughness Index (IRI) of about 3, leading to a decrease of the IRI for the whole corridor from 10 to 8.42. Therefore, the PDO is largely on track with shortcomings, mainly due to the lack of civil works on section 2.

20. The project implementation progress has also been moderately satisfactory since June 2015. Under Component A, Climate Resilient Road Infrastructure, the emergency works on the whole corridor and the civil works on section 1 are completed and their quality is good. Upgrading works are ongoing on three of the remaining four road sections of the Dili-Ainaro corridor, but these works are experiencing delays because of delays in implementation of resettlement plans (RPs) and the issuance of quarry licenses, and more recently, an exceptionally long rainy season. Pre-construction road safety audits were carried out for the whole corridor and the recommendations were incorporated in the road design. For section 1, the project supported the newly created Road Safety Agency in the implementation of road safety awareness campaigns in schools.

21. With respect to road maintenance, previously under Subcomponent B.1. and absorbed under Component A, the current civil work contracts foresee a one-year defects liability period and two years of PBM. During this three-year period, the contractor is also expected to carry out emergency works. The period is shorter than envisaged in the Project Paper of the first AF, which includes a two-year defects liability period and three years of PBM, but was applied to the ongoing contracts because they followed the ADB contract model. Although a longer maintenance period would have been desirable, sooner or later the GoTL will have to take over this responsibility. As mentioned before, the Maintenance Department's capacity is being

strengthened to carry out PBM to take over the maintenance of these road sections once the current contracts expire.

22. Under Component B, currently consisting of the original Subcomponent B.3. Design of Emergency Planning and Response System, the PMU's road design consultant conceived an emergency planning and response system for the Dili-Ainaro corridor. This system uses the civil works' supervision consultants as intermediaries to alert the PMU on the need for emergency works and trigger the necessary response on time. This is working relatively well. Discussions with different agencies involved in infrastructure emergency works on setting up a general infrastructure emergency response system as envisaged in the first AF Project Paper showed that in Timor-Leste all communications regarding emergency works go from the village leaders directly to the Minister of Public Works, Transport, and Communication, who takes the decisions. The agencies involved in emergency response act upon the request from the Minister. Given the small size of the country, this system is said to work in a satisfactory way and therefore the GoTL does not want to invest additional resources in it.

23. Under Component C, Project Support and Training, a large amount of project implementation support was provided to the PMU. A study trip to Brazil for MPWTC and PMU staff to learn about performance-based rehabilitation and maintenance took place. Several training courses on PBM for MPWTC and PMU staff were/will be carried out. The project also facilitated the participation of the Road Safety Agency in a road safety training in Malaysia.

24. With respect to Component D, Feasibility Study and Detailed Design of Additional Road Segments, the detailed designs for the Dili-Solorema section were completed. The contract for the feasibility study and detailed designs of a number of roads connecting to the Dili-Ainaro corridor was cancelled because of the unsatisfactory performance of the consultants. The rebidding process is ongoing and the contract is expected to be awarded towards the end of 2017.

25. The environmental safeguards compliance is moderately satisfactory. Uncertainty in the licensing procedures and limited staff in the environmental agency (National Department of Pollution Control and Environmental Impact) delayed the renewal confirmation/issuance of licenses under the project. This issue was brought up to the highest levels of the GoTL, personally involving the Ministers of Public Works, Transport, and Communication, of Petroleum, and of Commerce, Industry, and Environment. To facilitate and speed up the environmental licensing process, in December 2016, these ministers signed a Memorandum of Understanding. All project environmental licenses are now up to date, and the renewal of the mineral permit and underlying environmental license of one contractor is expected to be imminent. On the ground, some shortcomings in dust control, limiting traffic speeds, and the absence of personal protective equipment were observed. The contractors were formally instructed to pay close attention to these issues, and the supervision consultants are strictly following up. Workers without personal protective equipment are not allowed to work.

26. The project currently has two workers' camps, with 54 and 56 foreign workers, respectively. One is located in Aileu, which is around 45 km from the capital city, Dili, and the other is in Aituto, around 90 km away from Dili. These workers have limited interaction with the local community and largely rely on services and supplies from Dili. No incidents, such as inappropriate behavior, violence against women, and conflicts between local and foreign

workers, have been reported under the project. For more details, see the section on Social Analysis under IV. Appraisal Summary.

27. The social safeguards compliance is satisfactory, with World Bank safeguard requirements being observed. Payments to affected people on sections 1, 3, 4, and 5 are completed except for a few cases in which bank account details need to be rectified. Adjustments during works implementation have been affecting a small number of additional people, for whom the compensation process has started. The road alignment was thoroughly studied to avoid the need for private land acquisitions. Demolition of main and ancillary structures occupying the road right of way and cutting of various species of trees has been and will be kept to the minimum. The land acquisition has been and will be conducted in line with the RPs. Table 1 summarizes households and assets affected by the project.

Table 1. Affected Households and Assets

	Section 1	**Section 2**	**Section 3**	**Section 4**	**Section 5**	**Total**
Affected households	159	264	231	238	310	1,202
Affected land owners	0	0	18	0	0	18
Affected residential building owners	7	18	9	9	20	63
Affected commercial structure (stalls and kiosks) owners	17	93 (of which 72 non-fixed structures)	13	52 (of which 34 non-fixed structures)	36 (of which 27 non-fixed structures)	211 (of which 133 non-fixed structures)
Affected other structure owners (fence, water tank, stairs, and so on)	1	10	1	6	47	65
Affected tree owners	143	216	221	177	225	982

28. Procurement and financial management (FM) aspects have consistently been moderately satisfactory. In terms of procurement performance, this rating is justified by some capacity limitations within the PMU and shortcomings in filing and keeping records, which made tracking of documents difficult. In terms of FM, interim financial reports have been provided largely on time and have been acceptable. There were significant delays in the submission of the 2014 financial audit report mainly due to a change in government audit arrangements. This was rectified and all audit reports, including the 2015 report, were submitted and contained unqualified opinions.

29. The project is in compliance with all loan covenants and audit and other reporting requirements.

30. As of February 28, 2017, disbursements have reached US$34.17 million (grant IDA-H6830: US$17.43 million; credit IDA-53030: US$16.70 million; loan IBRD-82900: US$0.04 million) out of approximately US$60 million. All project funds are committed.

31. **Lessons learned.** An initial lesson learned from this project is that uncertainties and delays need to be factored into the project implementation process and schedule. Timor-Leste is a young nation that is still building its institutions and establishing rules and procedures. Therefore, for certain activities, such as the compensation of people affected by the civil works,

processes did not exist and had to be established under the original project during the implementation of RPs. This delayed both the compensation payments and the roadworks. Similarly, environmental rules and procedures have changed during project implementation and the capacity of the environmental agency is weak, which has caused delays in the issuance and renewal of licenses. In such a context, flexibility, pragmatism, and intensive hand-holding are essential parts of project implementation.

32. Another lesson relates to having the joint PMU for all donor-financed road projects. This is an efficient way to implement projects since it enables sharing staff, experts, and facilities, avoids reinventing the wheel under each project, and facilitates problem solving across the board. To avoid that the PMU becomes too self-sufficient and that the collaboration between the DRBFC and the PMU is neglected, the GoTL has recently assigned the DRBFC to oversee the PMU. An intensification of the collaboration between the PMU and the DRBFC is desirable to transfer skills effectively to DRBFC staff and ensure that the road assets are properly maintained. This needs to be a two-way exercise, in which the initiative also comes from the DRBFC.

33. **Rationale for the second AF.** The proposed AF is necessary to fully achieve the PDO and indicator targets of this project. It would cover the financing gap related to the upgrading of section 2 of the Dili-Ainaro corridor, which the GoTL has not implemented with its own resources as agreed during appraisal of the first AF. The GoTL did not allocate the necessary funds to upgrade section 2 because of reduced Government revenues and prioritization of other investments. In addition, the proposed AF would cover a cost overrun of approximately US$8 million. This is due to the fact that the cost of the feasibility studies and detailed road designs, civil works, supervision, and project support/training turned out slightly higher than estimated. In addition, the devaluation of the SDR reduced the available resources under the IDA grant by about US$1.5 million. The resources needed to cover the cost overrun is partially reduced by an underspending of about US$1 million in terms of emergency response system design. Finally, this AF would provide an opportunity to readjust the project component/activity description, costs, results framework, and disbursement estimates to the current reality on the ground.

34. **Alternatives considered.** The alternative considered was funding from other donors, but World Bank financing was preferred because it allows continuity with the rest of the sections, especially in terms of safeguards. Section 2 is part of the RCRP and subject to World Bank safeguard requirements, so financing by other donors would have complicated the implementation of the project in terms of safeguard compliance.

III. Proposed Changes

Summary of Proposed Changes

The RCRP would be restructured to (a) introduce minor alterations to the description of project activities, (b) adjust the costs per component; (c) adjust the disbursement estimates, (d) change indicators descriptions, measurement procedures, and/or targets, and (e) extend the closing date.

Change in Implementing Agency	Yes [ ] No [X]
Change in Project's Development Objectives	Yes [ ] No [X]

Change in Results Framework	Yes [X] No [ ]
Change in Safeguard Policies Triggered	Yes [ ] No [X]
Change of EA category	Yes [ ] No [X]
Other Changes to Safeguards	Yes [ ] No [X]
Change in Legal Covenants	Yes [ ] No [X]
Change in Loan Closing Date(s)	Yes [X] No [ ]
Cancellations Proposed	Yes [ ] No [X]
Change in Disbursement Arrangements	Yes [ ] No [X]
Reallocation between Disbursement Categories	Yes [ ] No [X]
Change in Disbursement Estimates	Yes [X] No [ ]
Change to Components and Cost	Yes [X] No [ ]
Change in Institutional Arrangements	Yes [ ] No [X]
Change in Financial Management	Yes [ ] No [X]
Change in Procurement	Yes [ ] No [X]
Change in Implementation Schedule	Yes [X] No [ ]
Other Change(s)	Yes [ ] No [X]

Development Objective/Results

Project's Development Objectives

Original PDO

The project will deliver sustainable climate resilient road infrastructure on the Dili-Ainaro corridor.

Change in Results Framework

Explanation:

The proposed changes to the Results Framework would include (a) renaming one PDO indicator and downgrading another PDO indicator to intermediate results indicator, (b) providing a definition for some indicators, and (c) specifying the measurement methods. Based on the new definitions, it would also redefine several baselines and end targets. Finally, the proposed changes would include additional citizen-engagement indicators.

The PDO indicator '"Improvement in climate resilience of the Dili-Ainaro corridor" would be renamed to "Increase in drainage in good condition on the Dili-Ainaro corridor" to better reflect what the indicator measures. Drainage in good condition on the Dili-Ainaro corridor would measure the percentage of lined ditches, pipe culverts, and box culverts in good condition compared to the total quantity of lined ditches, pipe culverts, and box culverts planned/constructed on the corridor. Good condition would mean that the ditches and drains are clean and free of silted materials, debris, or obstacles and without erosion, and that culverts, including inlets, outlets, and headwalls, are clean and free of silted material and obstacles, have no structural damage, and are firmly contained by the surrounding soil or material (this corresponds to the definition of an adequately maintained drainage system in the PBM contract specifications). This would be

assessed through visual surveys by the supervision consultants.

The PDO indicator "Increase in traffic on the Dili-Ainaro corridor" is mostly dependent on growth in population and economic activity and not on road improvements under the project. Therefore, the indicator is not adequate to measure the achievement of the PDO. However, information on the increase in traffic is important. Consequently, this indicator would become an intermediate results indicator. The current baseline is grounded on data from a traffic survey carried out in 2009. This baseline data would be replaced by the results of a traffic survey from 2014, which was carried out before civil works started on the corridor. For further details, see annex 3.

The project documents do not include a definition for the PDO indicator "Reduction in the number of incidents requiring emergency repairs on the Dili-Ainaro corridor". Consequently, the number of incidents requiring emergency works would be defined as "all conditions that are linked to the road works and/or affect the functioning of the road (traffic, drains, and so on) that require the mobilization of heavy equipment and/or labor". This number was 53 in 2015, based on real figures for sections 1, 3, 4, and 5 and a proportional estimate for section 2, which would be used as the new baseline of this indicator. In addition, the end target would change to 15 to be in line with the new definition for the indicator.

For the PDO and core indicator "Roads in good and fair condition as a share of total classified roads", the project documents do not provide information on the classified roads in the project area. This restructuring would clarify that the classified roads in the project area are 110 km, being the project area defined as the road to be rehabilitated.

The project documents also do not provide a definition for the intermediate result indicator "Number of locations with improved slope protection on the Dili-Ainaro corridor". Considering the information that the PMU is collecting, "locations with improved slope protection" would be defined as "locations with completed continuous slope protection structures 20 m or more". In line with this definition, the end target would be adjusted to 820 locations (currently the end target is 25 and there are already 431 completed locations under the project).

For the indicator "Dili-Ainaro corridor is adequately maintained", the current project end target of "Maintenance included in the ICB contract" does not measure the adequacy of maintenance. Therefore, the project end target would be replaced by "85 percent of the road under PBM/defects liability period is compliant with the contractual service level on an annual basis".

The following two citizen-engagement indicators would be added to the project's intermediate result indicators: (a) Grievances registered related to delivery of project benefits by gender that are actually addressed; and (b) Grievances responded and/or resolved within the stipulated services standards for response time. See annex 1 for further details.

Compliance

Covenants - Additional Financing (Road Climate Resilience Project Second Additional Financing - P252338)

Source of Funds	Finance Agreement Reference	Description of Covenants	Date Due	Recurrent	Frequency	Action
				☐		

Conditions

Source of Fund	Name	Type

Description of Condition

Risk

Risk Category	Rating (H, S, M, L)
1. Political and Governance	Substantial
2. Macroeconomic	Moderate
3. Sector Strategies and Policies	Substantial
4. Technical Design of Project or Program	Moderate
5. Institutional Capacity for Implementation and Sustainability	Substantial
6. Fiduciary	Substantial
7. Environment and Social	Moderate
8. Stakeholders	Moderate
9. Other	
OVERALL	Substantial

Finance

Loan Closing Date - Additional Financing (Road Climate Resilience Project Second Additional Financing - P252338)

Source of Funds	Proposed Second Additional Financing Loan Closing Date
IDA recommitted as a Credit	31-Dec-2021

Loan Closing Date(s) - Parent (Timor-Leste Road Climate Resilience Project - P125032)

Explanation:

The current closing date of the project would be extended from December 31, 2018, to December 31, 2021, to allow for the upgrading of section 2. The civil works contract for this section is expected to start in mid-2018. In this case, the works would be completed by mid-2021.

All civil works and other activities under the ongoing project are expected to be finished by December 31, 2018, but the PBM will go beyond the current closing date. For section 1 financed under IDA-H6830 grant, this maintenance will continue until the second semester of 2019. For sections 3, 4, and 5 financed under the IDA-53030 credit and the IBRD-82900 loan, it will continue until 2020. Therefore, a closing date extension for IDA-H6830 grant until December 31, 2019, and for the IDA-53030 credit and IBRD-

82900 loan until December 31, 2020, would also be needed.

Ln/Cr/TF	Status	Original Closing Date	Current Closing Date	Proposed Closing Date	Previous Closing Date(s)
IBRD-82900	Effective	31-Dec-2018	31-Dec-2018	31-Dec-2020	31-Dec-2018
IDA-53030	Effective	31-Dec-2018	31-Dec-2018	31-Dec-2020	31-Dec-2018
IDA-H6830	Effective	31-Dec-2015	31-Dec-2018	31-Dec-2019	31-Dec-2018

Change in Disbursement Estimates (including all sources of Financing)

Explanation:

The disbursement estimates need to be adjusted to accommodate the proposed second AF and some delays in the implementation of the civil works.

Expected Disbursements (in USD Million) (including all Sources of Financing)

Fiscal Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Annual	5.26	0.94	8.77	9.63	15.75	19.72	12.54	9.09	10.51	2.99
Cumulative	5.26	6.20	14.97	24.60	40.35	60.07	72.61	81.70	92.21	95.20

Allocations - Additional Financing (Road Climate Resilience Project Second Additional Financing - P252338)

Source of Fund	Currency	Category of Expenditure	Allocation	Disbursement %(Type Total)
			Proposed	Proposed
IDA	USD	Category 1: Civil works	27,101,256.00	87.32
IDA	USD	Category 2: Goods, consultant services, non-consulting services, incremental operating costs, and training	8,100,000.00	100.00
		Total:	35,201,256.00	

Components

Change to Components and Cost

Explanation:

The description of Part 1 in the legal agreements of the first AF would be modified to include road maintenance and would read as follows:

"Part 1. Development and Maintenance of Climate Resilient Road Infrastructure. A. Carrying out civil works and maintenance to reduce the impact of volume and intensity of rainfall on road infrastructure, including (a) construction or reinforcement of slope stabilization structures; (b) improvement of drainage structures; (c) road infrastructure upgrading; and (d) maintenance of the Dili-Ainaro Road Corridor. B. Design and supervision of activities in Part 1.A of the Project."

This is necessary because there is an inconsistency between the Project Paper of the first AF and the respective project description in the legal agreements. The Project Paper of the first AF (paragraph 16) clarifies that Subcomponent B.1. related to PBM would be canceled and that road maintenance would be absorbed under the civil works contracts of Component A (corresponding to Part 1 of the legal agreements). However, the legal agreements of the first AF did not reflect this change and included PBM under Part 2: B. In line with the above, Part 2: B would be deleted from the legal agreements of the first AF.

Component B, which according to the Project Paper of the first AF currently consists of Subcomponent B.3. Design of Emergency Planning and Response System only, would be cancelled. The setting up of an emergency planning and response system was a relatively small part of a broader institutional reform effort driven by different donors at the time the original project was designed. While many of the planned reforms have taken place, there has been no momentum for a comprehensive emergency response mechanism. Therefore, the conditions for the successful implementation of Subcomponent B.3 are absent.

In addition, the reference to specific road sections in the description of Component D, in paragraph 18 of the first AF Project Paper, would be removed to provide more flexibility and would read as in the legal agreements: "Component D. This component will support feasibility studies and detailed designs of selected road segments linked to the Dili-Ainaro corridor."

Current Component Name	Proposed Component Name	Current Cost (US$M)	Proposed Cost (US$M)	Action
Component A: Climate Resilient Road Infrastructure	Component A: Climate Resilient Road Infrastructure	105.01	140.85	Revised
Component B: Climate Responsive Maintenance and Emergency Planning Response Systems	Component B: Climate Responsive Maintenance and Emergency Planning Response Systems	1.00	0.00	Revised
Component C: Project Support and Training	Component C: Project Support and Training	1.99	4.49	Revised
Component D: Feasibility Studies and Detailed Design of Additional Road Segments	Component D: Feasibility Studies and Detailed Design	2.00	3.80	Revised
	Total:	110.00	149.14	

Other Change(s)		
Implementing Agency Name	**Type**	**Action**
Ministry of Public Works	Implementing Agency	No Change
Ministry of Finance	Central Ministry	No Change

Change in Implementation Schedule

Explanation:

For the ongoing project, all civil works and other activities are expected to be finished by December 31, 2018, but the PBM will go on until 2020.

For the proposed second AF, the bidding process for the supervision of section 2 upgrading is ongoing and the services are expected to be contracted by mid-2018. The bidding process for the civil works of this section would start toward mid-2017 and the contract would also be in place by mid-2018. Civil works would last three years, so upgrading would be completed by mid-2021.

IV. Appraisal Summary

Appraisal Summary
Economic and Financial Analysis
Explanation: As mentioned earlier, section 2 has been part of the project since the beginning, even if it was expected to be financed and implemented by the GoTL. Therefore, it was covered by the economic analyses of 2011 and 2013. This last analysis showed a net present value (NPV) for the entire Dili-Ainaro corridor of US$13.51 million and an economic internal rate of return (EIRR) of 14.0 percent. Given the time that has elapsed since this analysis, the project's economic evaluation was updated mainly to include actual construction and maintenance costs, updated information on traffic, and revised growth rates. The results showed an EIRR for the project of 15.9 percent and an NPV of US$30.01 million. The results by section range from an EIRR of 14.3 percent and an NPV of US$3.80 million for section 3 to an EIRR of 17.6 percent and an NPV of US$14.40 million for sections 1 and 2. These values are higher than those in the 2013 analysis, mainly due to higher traffic volume (from the 2014 survey, versus original estimates) and slightly higher growth rates on average (with cars and buses growing faster, and motorcycles growing slower after 2025). This also resulted in higher estimates of generated traffic. More details are included in annex 4.
Technical Analysis
Explanation: The technical analyses included in the Project Paper of the first AF and the original Project Appraisal

Document (PAD) cover the complete Dili-Ainaro road, including section 2.

The engineering design and cost estimate for section 2 were prepared in 2012 and are currently being updated to reflect the deterioration of the road condition and changes in unit prices.

Social Analysis

Explanation:

The proposed second AF would not trigger any additional social safeguard policy. All social assessments and instruments prepared under the original project and in the framework of the first AF are included section 2.

The GoTL prepared a Resettlement Policy Framework (RPF) under the original project, updated it, and redisclosed it on January 31, 2013. They also prepared two RPs for the project: one covered sections 1, 2, and 3, and another sections 4 and 5. The World Bank approved the RP for sections 1, 2, and 3 on January 31, 2013. These RPs were disclosed on the World Bank's and GoTL's websites. In addition, the GoTL carried out a tracer study for section 2 because they opened some minor shortcuts on this section. It was approved by the World Bank in March 2014. Finally, an Indigenous People Note that covers the entire length of the Dili-Ainaro road was prepared and disclosed in the InfoShop on April 24, 2012.

Given the time that has lapsed since the approval of the RP and some minor changes in the road alignment for section 2, the PMU updated the existing RP with the results of the revalidation of the affected people for section 2 and the abovementioned tracer study. The World Bank approved the updated RP on December 1, 2016. Based on this updated RP, the works on section 2 would affect 264 households, including 11 from the tracer study, who own some structures (mostly temporary stalls) and trees. No private land would be affected since the physical works would be within the existing road right of way and no one would be physically displaced. The entitlement matrix was established to compensate the people with affected assets based on the RPF. Sufficient funds to implement the RP of section 2 are available and compensation payments are expected to begin in the last quarter of 2017.

No changes to the Indigenous People Note would be necessary.

Grievance Redress Mechanism (GRM). The project GRM in place for the project is built on the existing traditional structures present in Timor-Leste, which is adequate, and will be used during the implementation of section 2 as well. The main first point of contact is the village chief, who normally refers the grievance to the supervision consultants. The latter immediately coordinates with the PMU for quick resolution. Sometimes the community also directly approaches the supervision consultants with their complaints. If grievances cannot be resolved by the supervision consultants/PMU, they are referred to the MPWTC. As a last resort, the village chief or the community can take the matter to the Council of Ministers in Dili. So far, grievances, such as those related to the displacement of a market in section 3 to an adjacent location or disagreements regarding some compensation amounts, have been handled successfully and are being recorded in the safeguards monitoring reports.

Labor influx. The impact of labor influx from the project is expected to be limited and is being managed through the Environmental Management Plan (EMP). The numbers are small (currently, 110 foreign skilled workers are on site for the ongoing project), and the workers are housed in construction camps to minimize the impact on the limited local accommodation options. The local absorptive capacity relative to the worker numbers seems reasonable (one camp is in Aileu with a population of 17,536 and the second in Aituto with 6,206). Provisions are obtained from Dili or the nearby market in Maubisse.

The risks for potential negative impacts from labor influx include, particularly, social conflicts between the local community and the construction workers, increased inappropriate behavior, such as theft, physical assault, substance abuse, especially alcohol, and increased communicable diseases, gender-based violence (GBV), sexual harassment, or aggressive advances. For the ongoing works, no adverse impacts have been reported so far. On the contrary, the experience on the ground has shown that the foreign workers' presence has helped reduce situations of conflict between local workers from different communities. In addition, the base camps have local helpers, cleaners, and security personnel, bringing to the community economic opportunities through employment. All workers received training/awareness raising on sexually transmitted diseases/human immunodeficiency virus (HIV) and unacceptable conduct toward the local community members.

To further minimize any negative impact of labor influx, the new civil works activities would build upon the experiences to date in Timor-Leste, as well as recent work elsewhere in the World Bank:

- For bidding, the project EMP would be updated to include specific requirements for the provision of facilities at workers' camps, as well as occupational health and safety.
- The contractor would be required to develop: (a) "Codes of Conduct" for GBV and protecting children from child abuse and exploitation (CAE), based on draft codes that would be included with the bidding document; and, (b) an Action Plan to mitigate and respond to GBV and CAE within the contractor and the community. The Codes of Conduct would outline the responsibilities of (a) the contractor, to create a positive culture for its workplace and employees; (b) managers, to ensure that culture is implemented; and, (c) individuals, to adhere to the principles of that culture and not to engage in GBV and/or CAE.
- Training of all workers on GBV and CAE would be done in conjunction with the HIV/AIDS training, and the GRM would record any complaints related to GBV or CAE, as well as actions taken.
- The Environmental Safeguards Implementation Plan (ESIP) prepared by the contractor would be required to provide specific measures to address workers' camps, labor influx management, and occupational health and safety, and civil works would not commence until the ESIP has been cleared by the supervision engineer and publicly disclosed.
- Increased awareness raising and outreach to the communities would be required to facilitate the timely implementation of the works.

Environmental Analysis

Explanation:

The proposed second AF would neither change the environment categorization nor trigger any additional environmental safeguard policy. Section 2 has been part of the project from the beginning, even if after the first AF it was expected to be implemented and financed with local resources. All environmental assessments and instruments prepared under the original project and in the framework of the first AF included section 2.

Under the original project, the GoTL prepared an EMP and disclosed it on March 2011. For the first AF, in 2012, the GoTL prepared and disclosed an Environmental Assessment Review Framework. They also prepared an Initial Environmental Examination (IEE), which is the local environmental document for category B projects in line with Law 5 of February 2011. This IEE also includes the EMP. The IEE was disclosed on the Ministry of Finance's website in February 2015. The GoTL obtained a joint environmental license to carry out the works on sections 1, 2, and 3. Confirmation of the automatic renewal of this license was received on January 18, 2017. Finally, the civil works contractor of section 1 prepared a joint ESIP for sections 1 and 2 because this contractor is also responsible for emergency works under section 2. This ESIP would be updated by the civil works contractor, who wins the contract for section 2.

Based on the above, in terms of environmental safeguards, no additional actions would be required for the proposed second AF.

The project was screened for short- and long-term climate change and disaster risks. Timor-Leste has a tropical climate and the threat from intense rainfall, flooding, and landslides is high, especially in the mountains, where most of the Dili-Ainaro road is located. Other high current and future risks include increasing temperatures and earthquakes.

Temperatures in Timor-Leste have been on the rise for years, but increases in temperature are getting milder. Nevertheless, it is expected that over the next decades, temperatures will keep rising, although with a lower decadal increase, and heat waves will be more frequent. Cyclones bringing heavy rains and seasonal monsoon rains affect Timor-Leste frequently and cause human and economic losses. There have been major flood events, which have increased in number since 2010. Rainfall is expected to increase, particularly at high elevations. Strong winds, brought by the Southeast dry monsoon, regularly affect people and damage and destroy homes. Higher winds occur where mountain ranges are present, but estimates for the future are highly uncertain. Timor-Leste is also highly exposed to earthquakes and landslides, the latter mainly as a consequence of heavy rains. These events cause severe damage to infrastructure and other assets and negatively affect livelihoods.

The designs for the rehabilitation of the Dili-Ainaro road incorporate several climate resilient elements, mainly for drainage and slope protection. An important part of the project is the construction of drainage structures, such as culverts, and cross and side drains, including subsurface drainage all along the side drains. These drainage facilities for the Dili-Ainaro corridor are designed for the 1:25-year rain event. Bridges included in the corridor are designed for the 1:50-year rain event and works are envisaged to reduce the speed of water, and thus erosion and scouring, around the bridges. Under the project, special emphasis is also placed on routine maintenance of the road, including vegetation, debris, and silt removal from drainage elements, so that the drainage system performs as designed. The project also focuses on protecting slopes from heavy rains and frequent landslides through the use of gabions, retaining walls, and bioengineering. Where possible, retaining walls are being replaced by gabions, which have proved to be a more flexible and optimal solution for the terrain along the corridor. In addition, the asphalt mix used for the corridor's pavement would be able to resist significant increases in temperatures.

Based on the results of the climate and disaster screening process, there is a 21.7 percent adaptation cobenefit assigned to the Roads and Highways sector under the whole project. As for the proposed second AF, there is a 21.9 percent adaptation cobenefit to the Roads and Highways sector.

Risk

Explanation:

The overall project risk remains Substantial. Although the current political situation is stable, the World Bank’s 2015 Country Policy and Institutional Assessment still considers the country to be fragile, especially with relation to public sector management and institutions. Other risks that contribute to the Substantial rating are the long-term sustainability of road maintenance and capacity limitations within the counterpart agencies, including the PMU. These risks are mitigated by the fact that all contracts over US$1 million are procured by the National Procurement Commission, an independent body with international staff. In addition, the GoTL closely scrutinizes the use of foreign loan funds and carries out technical and fiduciary audits. The project has strongly benefited from the experience of international consultants, who support the PMU and build capacity in the country. The World Bank and other donors have also done a lot of handholding and capacity strengthening, especially in fiduciary and safeguards matters, which has led to the establishment of clear procedures and improved practices. The risk regarding the long-term

sustainability of road maintenance is mitigated by the fact that the current government program includes infrastructure maintenance as a priority and resources have been provided for maintenance and to strengthen the capacity of the road maintenance department, among others. The climate change and disaster risks are mitigated by incorporating climate resilience elements into the road designs.

The Integrity Vice Presidency has an ongoing investigation in the project for allegations of potential sanctionable practices.

V. World Bank Grievance Redress

35. Communities and individuals who believe that they are adversely affected by a World Bank supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Mechanism. The GRM ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit http://www.worldbank.org/GRS. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

Annex 1: Revised Results Framework and Monitoring Indicators

Project Name:	Road Climate Resilience Project Second Additional Financing (P252338)		Project Stage:	Additional Financing	Status: DRAFT
Team Leader(s):	Elisabeth Goller	Requesting Unit:	EACNF	Created by:	Elisabeth Goller on 10-Jul-2016
Product Line:	IBRD/IDA	Responsible Unit:	GTI02	Modified by:	Maria Jose Sala Pelufo on 08-Mar-2017
Country:	Timor-Leste	Approval FY:	2017		
Region:	EAST ASIA AND PACIFIC	Lending Instrument:	Investment Project Financing		
Parent Project ID:	P125032	Parent Project Name:	Timor-Leste Road Climate Resilience Project (P125032)		

Project Development Objectives

Original Project Development Objective - Parent:

The project will deliver sustainable climate resilient road infrastructure on the Dili-Ainaro corridor.

Proposed Project Development Objective - Additional Financing (AF):

Results

Core sector indicators are considered: Yes

Results reporting level: Project Level

Project Development Objective Indicators

Status	Indicator Name	Core	Unit of Measure		Baseline	Actual (Current)	End Target
Revised	Increase in drainage in good condition on the Dili-Ainaro	☐	Percentage	Value	20.00	40.34	90.00
				Date	31-May-2011	25-Jan-2017	31-Dec-2021

	corridor			Comment			
Marked for Deletion	Increase in traffic on Dili-Ainaro corridor	☐	Percentage	Value	0.00	15.00	30.00
				Date	31-Dec-2009	18-Oct-2016	31-Dec-2018
				Comment		Estimate / data not yet available.	
Marked for Deletion	Reduction in the number of incidents requiring emergency repairs on the Dili-Ainaro corridor	☐	Percentage	Value	0.00	122.22	30.00
				Date	31-May-2011	18-Oct-2016	31-Dec-2018
				Comment		This should read -122.22 to show an increase in the number of incidents, mainly due to the fact that the road is under rehabilitation and so, unstable, and because the baseline was incorrect.	
New	Reduction in the number of incidents requiring emergency repairs on the Dili-Ainaro corridor	☐	Number	Value	53.00	20.00	15.00
				Date	31-Dec-2015	31-Dec-2016	31-Dec-2021
				Comment			
Revised	Roads in good and fair condition as a share of total classified roads	☒	Percentage	Value	10.00	30.41	90.00
				Date	31-May-2011	25-Feb-2017	31-Dec-2021
				Comment			

Intermediate Results Indicators

Status	Indicator Name	Core	Unit of Measure		Baseline	Actual(Current)	End Target
Revised	Improvement in road condition in the Dili-Ainaro corridor measured by reduced road roughness	☐	Number	Value	9.00	8.50	3.50
				Date	01-Apr-2011	25-Feb-2017	31-Dec-2021
				Comment			
New	Increase in average daily traffic (ADT) measured by total vehicles per day on the Dili-Ainaro corridor	☐	Percentage	Value	0.00		30.00
				Date	31-Oct-2014		31-Dec-2021
				Comment		Due to cost reasons, the indicator will only be measured at the end of the project.	
New	Grievances responded and/or resolved within the stipulated service standards for response times	☐	Percentage	Value	0.00		75.00
				Date	20-Jan-2017		31-Dec-2021
				Comment		New indicator to be measured once the proposed AF becomes effective.	
New	Grievances registered related to delivery of project benefits addressed	☐	Percentage	Value	0.00		100.00
				Date	20-Jan-2017		31-Dec-2021
				Comment		New indicator to be measured once the proposed AF becomes effective.	
Revised	Number of locations with	☐	Number	Value	0.00	431.00	820.00

	improved slope protection on the Dili-Ainaro corridor			Date	01-Apr-2011	25-Jan-2017	31-Dec-2021
				Comment			
Revised	Dili-Ainaro corridor is adequately maintained	☐	Text	Value	Corridor not adequately maintained.	Four ICB contracts signed, which include maintenance.	85% of the road under Defects Liability Period / PBM is compliant with the contractual service level on an annual basis.
				Date	01-Apr-2011	25-Jan-2017	31-Dec-2021
				Comment			

Annex 2: Revised Costs by Component

Component	Original Costs Per Component - PAD (US$, millions)		Changes Introduced by First AF 2013 (US$, millions)		Revised Cost – Including First AF 2013 (US$, millions)		Changes Introduced by Second AF 2017 (US$, millions)		Total Revised Costs Per Component - Including First and Second AF (US$, millions)	
	World Bank	GoTL	World Bank	GoTL	World Bank	GoTL	World Bank	GoTL	World Bank	GoTL
A: Climate Resilient Road Infrastructure	15.13	0.00	39.88	50.00	55.01	50	31.90	3.93	86.91	53.94
B: Climate Responsive Maintenance and Emergency Planning Response Systems	3.88	3.00	−2.88	−3.00	1.00	0.00	−1.00	0.00	0.00	0.00
C: Project Support and Training	0.99	0.00	1.00	0.00	1.99	0.00	2.50	0.00	4.49	0.00
D: Feasibility Studies and Detailed Design of Additional Road Segments	0.00	0.00	2.00	0.00	2.00	0.00	1.80	0.00	3.80	0.00
TOTAL	20.00	3.00	40.00	47.00	60.00	50.00	35.20	3.93	95.20	53.94
	23.00		87.00		110.00		39.14		149.14	

Annex 3: 2014 Traffic Survey Results

Station	Car/Taxi	Jeep/4WD	Pick-Up/Van	Micro/Minibus (Up to 20 Seats)	Large Bus (>20 Seats)	Light Truck (<5 Tons)	Medium Truck (5–10 Tons)	Heavy, Oil/Art. Truck (3+ Axles)	Motorcycle	Total
(1) DILI TS-03	87	148	270	35	19	87	187	34	2,174	3,044
(2) MAUBISSE TS-04	15	24	54	7	18	38	71	18	495	741
(3) SOLEREMA TS-05	11	12	35	9	4	22	90	7	302	493
AVERAGE	37	61	119	17	13	49	116	19	990	1,421

Annex 4: Economic Analysis Update

Economic Analysis

1. Section 2 has been part of the project since the beginning. Therefore, it was covered by the economic analyses of 2011 and 2013. This last analysis showed an NPV for the entire Dili-Ainaro corridor of US$13.51 million and an EIRR of 14.0 percent. Given the time that has elapsed since this analysis, the project's economic analysis was revised to include some updated information.

2. In line with the economic analysis of 2013, the revised analysis examines the cash flows of costs and benefits for the scenarios of "without project" and "with project", over a period of 20 years, and discounted at the interest rate of 12 percent.

3. In terms of construction and maintenance costs, for the "with project" scenario, the actual construction costs and the PBM costs for the first two years are used for sections 1, 3, 4, and 5. For section 2, updated construction and maintenance cost estimates are used. The figures in table 4.1 show these costs.

Table 4.1. Construction and Maintenance Costs

Section	Construction Costs (US$)	PBM Costs (US$)
Section 1 (actual)	10,365,909.11	660,000.00
Section 2 (estimate)	26,835,000.00	765,000.00
Section 3 (actual)	28,605,206.10	218,400.00
Section 4 (actual)	27,823,737.00	315,000.00
Section 5 (actual)	26,036,030.79	839,040.00

4. Routine maintenance costs after those two first years have been kept the same as the actual costs until the first periodic maintenance/asphalt concrete overlay in year 10. This cost and the successive routine maintenance was kept the same as in the 2013 economic analysis. The generated traffic is assumed to be 20 percent of normal traffic in year 2018 (gradually increasing from 8 percent in 2016 and 14 percent in 2017). To be conservative, it is also assumed that VOC benefits from generated traffic are half of those of normal traffic. Finally, the IRI for this scenario is 3, based on the IRI from the already completed section 1.

5. No changes were made to the "without project" scenario, which reflects essential maintenance. The emergency works cost is US$7,500 per km per year, and an additional spot improvement of US$350,000 per km every six years is included. The IRI for this scenario is 17. For the traffic baseline, this revised analysis uses the data from a traffic study carried out in 2014 before road upgrading works started. Traffic growths for each type of vehicles are also based on the 2014 traffic study.

Results

6. The revised EIRR for the project is 15.9 percent and the revised NPV is US$30.01 million. These values are higher than those in the 2013 analysis, 14.0 percent and US$13.51 million, respectively, mainly due to the higher traffic volume (from the 2014 survey, versus original estimates) and slightly higher growth rates on average (with cars and buses growing

faster, and motorcycles growing slower after 2025). This also results in higher estimates of generated traffic. The results by section are as described in table 4.2.

Table 4.2. Results by Section

Section	EIRR (%)	NPV (US$, millions)
Sections 1 and 2 (this approximately corresponds to Dili-Aileu)	17.6	14.40
Section 3 (this approximately corresponds to Aileu-Maubisse)	14.3	3.80
Section 4 (this approximately corresponds to Maubisse-Aituto)	15.6	6.50
Section 5 (this corresponds to Aituto-Ainaro)	15.2	5.30
Total	**15.9**	**30.01**

Sensitivity Analysis

7. A sensitivity analysis was carried out to capture the scenario in which the generated traffic is reduced by half under the "with project" case. The analysis also examines the cases where costs of construction and maintenance both increase and decrease by 10 percent. Even if the construction costs and the maintenance costs for two years are actual costs for sections 1, 3, 4, and 5 and no variations are envisaged, this scenario is justified since the costs for section 2 and for the remaining years of maintenance are estimates and may vary. The changes in EIRR and NPV under the different scenarios can be found in table 4.3.

Table 4.3. Changes in EIRR and NPV Under Different Scenarios

Case	EIRR (%)	NPV (US$, millions)
Base case	15.9	30.01
Generated traffic decreased by 50%	14.4	17.76
Cost of construction and maintenance decreased by 10%	18.0	42.06
Cost of construction and maintenance increased by 10%	14.1	17.96

Annex 5: Climate Change Resilience Assessment

(a) Climate Change Context in Timor-Leste

1. Timor-Leste has a tropical climate and the threat from intense rainfall, flooding, and landslides is high, especially in the mountains, where most of the Dili-Ainaro road is located.

2. The Pacific Climate Change Science Program and the Intergovernmental Panel on Climate Change (IPCC) agree that temperatures in Timor-Leste have been on the rise for years. However, the IPCC specifies that increases in temperature are getting milder. Nevertheless, it is expected that over the next decades, temperatures will keep rising, although with a lower decadal increase, and more frequent heat waves.

3. Cyclones affect Timor-Leste frequently and bring heavy rains that cause human and economic losses. Seasonal monsoon rains also damage and destroy homes regularly. There have been major flood events, which have increased in number since 2010. Rainfall is expected to increase, particularly at high elevations.

4. Strong winds, brought by the southeast dry monsoon, regularly affect people and damage and destroy homes. Higher winds occur where mountain ranges are present, but estimates for the future are highly uncertain.

5. Timor-Leste is also highly exposed to earthquakes and landslides, mainly as a consequence of heavy rains.

(b) Specific Project Activities Addressing Climate Change Resilience

6. The designs for the rehabilitation of the Dili-Ainaro road incorporate several climate resilient elements, mainly in terms of drainage and slope protection.

7. An important part of the project is the construction of drainage structures, such as culverts, and cross and side drains, including subsurface drainage all along the side drains. These drainage facilities for the Dili-Ainaro corridor are designed for the 1:25-year rain event. Bridges included in the corridor are designed for the 1:50-year rain event and works are envisaged to reduce the speed of water and thus erosion and scouring, around the bridges. Under the project, special emphasis is also placed on routine maintenance of the road, including vegetation, debris, and silt removal from drainage elements, so that the drainage system performs as designed.

8. The project also focuses on protecting slopes from heavy rains and frequent landslides through the use of gabions, retaining walls, and bioengineering. Where possible, retaining walls are being replaced by gabions, which have proved to be a more flexible and optimal solution for the terrain along the corridor.

9. In addition, the asphalt mix used for the corridor’s pavement would be able to resist significant increases in temperatures.

(c) Estimation of Project Adaptation Cobenefits

10. Considering the information included in the sections above and based on the investments per component, the project's total adaptation cobenefits are calculated to be 21.7 percent of the total investment.

11. Under Component A, adaptation associated cobenefits include (a) emergency works, (b) the construction of a drainage system, which was practically inexistent before the project, and (c) the implementation of slope protection structures and bioengineering. Emergency works were US$0.78 million. Drainage and slope protection, including bioengineering, represent 28.39 percent of the civil works contract for section 1. These two activities were assumed to be around the same percentage for the rest of the contracts, raising the total amount invested in them to US$19.85 million.

Table 5.1. Project Climate Change Resilience Co-Benefits

Component	Climate Resilient Activities	World Bank Commitment Regarding the Component (US$, millions)	Sector	World Bank Commitment Regarding Climate Resilient Activities (US$, millions)	Adaptation Associated Cobenefits (%)	Mitigation Associated Cobenefits (%)
A: Climate Resilient Road Infrastructure	• Emergency works • Construction of drainage • Construction and strengthening of slope protection structures • Bioengineering	86.91	Roads and Highways	20.63	23.7	0
B: Climate Responsive Maintenance and Emergency Planning Response Systems	—	0.00	Roads and Highways	0.00	100	0
C: Project Support and Training	—	4.49	Roads and Highways	0.00	0	0
D: Feasibility Studies and Detailed Design of Additional Road Segments		3.80	Roads and Highways	0.00	0	0
TOTAL	—	95.20	Roads and Highways	20.63	21.7	0

12. As for the climate change resilience benefits specific to the proposed second AF, these would basically be linked to the construction of drainage, construction, and strengthening of slope protection structures, and bioengineering as part of the rehabilitation of section 2 and for the works related to the cost overrun, which was estimated at 28.39 percent of the civil works contract amount as explained above. Table 5.2 summarizes these benefits, which are all adaptation-associated and add up to 21.9 percent of the total amount of the proposed AF.

Table 5.2. Second AF Climate Change Resilience Co-Benefits

Component	Climate Resilient Activities	World Bank Commitment Regarding the Component (US$, millions)	Sector	World Bank Commitment Regarding Climate Resilient Activities (US$, millions)	Adaptation Associated Cobenefits (%)	Mitigation Associated Cobenefits (%)
A: Climate Resilient Road Infrastructure	• Emergency works • Construction of drainage • Construction and strengthening of slope protection structures • Bioengineering	31.90	Roads and Highways	7.69	24.1	0
B: Climate Responsive Maintenance and Emergency Planning Response System	—	−1.00	Roads and Highways	0	0	0
C: Project Support and Training	—	2.50	Roads and Highways	0	0	0
D: Feasibility Studies and Detailed Design of Additional Road Segments	—	1.80	Roads and Highways	0	0	0
TOTAL	—	35.20	Roads and highways	7.69	21.9	0