



# Project Completion Report

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## PCR

Project Name:	National Highway Program.
Country:	Trinidad and Tobago.
Sector:	Transportation.
Original Project Team:	Jacob Greenstein, Louis Niles, Valnora Leister, Maria Claudia Perazza (INE/RND), Eduardo Zamora, Bernardo Guillamon, Dora Currea (Team Leader).
Project Number:	TT-0043.
Loan Number:	LO-932/OC-TT.
QRR Date:	October 15, 2010.
Approval Date:	NOVEMBER 5, 2010

PCR Team:  
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## TABLE OF CONTENTS

<b>I. BASIC INFORMATION.....</b>	<b>1</b>
<b>II. THE PROJECT .....</b>	<b>2</b>
A. Project Context.....	2
B. Project Description.....	3
C. Quality -At- Entry Review .....	5
<b>III. RESULTS .....</b>	<b>6</b>
A. Outcomes .....	6
B. Externalities .....	9
C. Outputs.....	9
D. Project Costs .....	9
<b>IV. PROJECT IMPLEMENTATION.....</b>	<b>11</b>
A. Analysis of Critical Factors .....	12
B. Borrower/Executing Agency Performance .....	13
C. Bank Performance.....	13
<b>V. SUSTAINABILITY .....</b>	<b>14</b>
A. Analysis of Critical Factors .....	14
B. Potential Risks .....	14
C. Institutional Capacity .....	15
<b>VI. MONITORING AND EVALUATION .....</b>	<b>16</b>
A. Information on Results.....	16
B. Future Monitoring and Ex-Post Evaluation .....	17
<b>VII. LESSONS LEARNED .....</b>	<b>17</b>

### ANNEXES:

ANNEX I	Borrower's Note/ Exit Workshop
ANNEX II	Borrower's Evaluation
ANNEX III	Economic and Financial Evaluation
ANNEX III	Operations Procurement Office Note

## **ACRONYMS AND ABBREVIATIONS**

ADT	Average Daily Traffic
AFS	Audited Financial Statements
CTPU	Central Transport Planning Unit
DO	Developmental Objective
ERR	Economic Rate of Return
GOTT	Government of Trinidad and Tobago
GDP	Gross Domestic Product
HDM-III	Highway Design and Maintenance Model
IDB	Inter-American Development Bank
IRI	International Roughness Index
IRR	Internal Rate of Return
PCR	Project Completion Report
RMMS	Routine Maintenance Management System
VOC	Vehicle Operating Cost
WAN	Wide Area Network
WCP	Weight Control Program
WGS	Work Services Group

## I. BASIC INFORMATION

BASIC DATA (AMOUNTS IN US\$)							
<b>PROJECT NO:</b> TT0043	<b>TITLE:</b> National Highway Program						
<b>Borrower:</b> Trinidad and Tobago	<b>Date of Board Approval:</b> 26 Jun 1996						
<b>Executing Agency (EA):</b> Ministry of Works and Transport	<b>Date of Loan Contract Effectiveness:</b> 20 May 1997						
	<b>Date of Eligibility for First Disbursement:</b> 11 May 1998						
<b>Loan(s):</b> 932/OC-TT	<b>Months in Execution</b>						
<b>Sector:</b> Transportation	* from Approval: 156						
	* from Contract Effectiveness: 146						
<b>Lending Instrument:</b> Investment/Global Multiple Works Operation							
	<b>Disbursement Periods</b>						
	<b>Original Date of Final Disbursement:</b> 12 Jul 2003						
	<b>Current Date of Final Disbursement:</b> 12 Jul 2009						
	<b>Cumulative Extension (Months):</b> 72						
	<b>Special Extensions (Months):</b> 36						
	<b>Loan Amount(s)</b>						
	* <b>Original Amount:</b> 120,000,000						
	* <b>Current Amount:</b> 120,000,000						
	* <b>Pari Passu (if applicable):</b> 40:60 – Bank:Local						
<b>Poverty Targeted Investment (PTI):</b> No	<b>Disbursements</b>						
<b>Social Equity (SEQ):</b> No	* <b>Amount to date:</b> 119,783,401.78 (99.8%)						
<b>Environmental Classification:</b> B							
	<b>Total Project Cost</b> (306,400,000):						
	<b>Redirectioning</b>						
	<b>Has this Project?</b>						
	Received funds from another Project [ ]						
	Sent funds to another Project [ ]						
	N/A [x]						
	<table border="1"> <thead> <tr> <th>To/From Project Number</th> <th>From Sub-Loan Number</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>	To/From Project Number	From Sub-Loan Number	Amount			
To/From Project Number	From Sub-Loan Number	Amount					
	* Current amount (adjusted for redirectioning):						
	<b>On Alert Status</b>						
	<b>Is project currently designated "on alert" by PAIS:</b> Yes/No						
	<b>If yes then why is the project on alert (DO , IP Ratings and/or relevant PAIS indicators):</b>						
	<b>Comments on relevance of "on alert" status for this project (if applicable):</b> No						

Summary Performance Classifications				
DO	<input type="checkbox"/> Highly Probable (HP)	<input checked="" type="checkbox"/> Probable (P)	<input type="checkbox"/> Low Probability (LP)	<input type="checkbox"/> Improbable (I)
IP	<input type="checkbox"/> Highly Satisfactory (HS)	<input checked="" type="checkbox"/> Satisfactory (S)	<input type="checkbox"/> Unsatisfactory (US)	<input type="checkbox"/> Very Unsatisfactory (VU)
SU	<input checked="" type="checkbox"/> Highly Probable (HP)	<input type="checkbox"/> Probable (P)	<input type="checkbox"/> Low Probability (LP)	<input type="checkbox"/> Improbable (I)

## II. THE PROJECT

### A. Project Context

- 2.1 The National Highways Program (LO-932/OC-TT) was developed and designed between 1993 – 1996 against the socio-economic backdrop of a protracted recession which began since 1983. As a consequence of the recession, the then Government was grappling with four key development challenges: a) reversing the economic contraction and achieving sustained economic growth;(b) reducing unemployment and poverty; (c) slowing financial hemorrhaging through improved efficiency in the public sector; and (d) improving natural resource management and environmental protection.
- 2.2 Faced with these challenges, Government responded by embarking on a strategy of efficiency improvements et al throughout the public sector. To this end, because the system for road administration was antiquated it was determined that sector-wide institutional reengineering was required and that attention should be paid to improving efficiency.
- 2.3 In addition, fiscal austerity measure which had to be adopted during this period of the prolonged recession translated into a highway network which did not receive adequate maintenance. As a result by 1994 during project design a base line of 48.6% (1,181km)<sup>1</sup> of the 2,685 Km of national network was in disrepair and required rehabilitation work. The state of disrepair further compounded traffic congestion on the main arteries given the country's high rate of motorization.
- 2.4 Accordingly, the Government requested support for a program of works that will target priority segments of the road network encompassing 586km or slightly over one half of the identified investment needed to improve the overall quality and condition of the national highway system. The Government also requested that the program be tailored to fit with Government's public sector modernization thrust and provide support for the realignment of the public sector road administration functions, to improve efficiency so that routine road maintenance cost will be reduced by 50%.
- 2.5 **Implementation and Project Execution:** The original loan program was designed and approved on June 26, 1996 as a seven year time slice operation<sup>2</sup> to be fully disbursed by July 12, 2003. The program actually took thirteen (13) years to realize its final disbursement, disbursing over the period 1996 – 2009.
- 2.6 The thirteen (13) year implementation period of this operation (1996 – 2009) was characterized and shaped by tumultuous changes in the socio-economic and political landscapes which witnessed five National elections (1996, 2000, 2001, 2002, 2007), adverse climatic conditions and attendant floods which further

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<sup>1</sup> Comprehensive Highway Maintenance Study 1994 base line produced in annex V

<sup>2</sup> **Time-Slice Operations** are loans in which the investment program for a sector is adjusted from time to time, (usually annually) within general criteria and global objectives that the Bank and the borrower agree upon in advance.

damaged the road network, as well as a construction boom which created resource scarcity in the construction sector. Collectively these events impacted on the project and provide the context for the modifications to the program and the protracted implementation as reflected in the historical PPMR ratings and disbursement profile table below and as detailed in the ensuring document.

**Historical PPMR ratings and Annual Disbursement Profile US\$ million**

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Implementation Progress	S	S	S	U	U	U	U	U	S	S	S	S	S
Assumptions	H	H	H	H	L	H	H	H	H	H	H	H	H
Development Objective	P	P	P	P	P	P	P	P	P	P	P	P	P
Disbursement Annual Profile	0.0	0.0	22.6	25.2	3.6	5.1	6.6	10.3	27.4	14.8	15.5	11.2	0

u-unsatisfactory, s-satisfactory, h-highly probable, l-low probability, p- probable

The compatibility of the implmetation rating with the extraordinary delay is based on the realization that an operation which purports major social dislocation and worker layoff cannot sensible be implemented within the strictures of a seven year loan this assumption in the design was flawed, hence the satisfactory implementation rating all other things being equal. This has emerged as a lesson and isdocumented at paragraph 7.1

## B. Project Description

2.7 The National Highways program was structured as a seven-year time slice<sup>3</sup> of investments related to: (i) routine maintenance expenditures supported by institutional changes, (ii) Periodic maintenance and rehabilitation works and (iii) trunk road expansion. The project's design philosophy is founded on the tenets of (i) optimizing the maintenance system for the national network through the use of state of the art but practical systems and technologies (ii) achieving an adequate level of road maintenance through a balanced allocation of funds between investment and maintenance in line with government policies and priorities (iii) giving higher priority in annual spending programs to maintaining the existing road network over expansion and new construction by monitoring and programming of new investments based on project eligibility criteria agreed upon with the Bank and (iv) strengthening the technical and managerial capacity of the Transportation Division to meet the challenge of increased participation of the private sector in highway administration.

### i. Development Objective

2.8 The overarching development objective which has remained unchanged throughout the life of the project was to improve the road services provided by the national main road network administered by the Highways Division of the Ministry of Works and Transport in Trinidad and by the Works Division of the Tobago House of Assembly in Tobago. The purpose of the operation was also to assist the Government in providing the country with a road transport system that can facilitate diversification of the economy through lower transportation costs. Specifically the project was designed to improve and sustain the service provided by the road network through strategic road rehabilitation and expansion works and through the

<sup>3</sup> **Time-Slice Operations** are loans in which the investment program for a sector is adjusted from time to time, (usually annually) within general criteria and global objectives that the Bank and the Borrower agree upon in advance.

improved efficiency of road maintenance practices and systems. Complementary objectives included: (i) improving Government's road rehabilitation and maintenance planning and performance; and (ii) migrating to private-sector participation in road maintenance.

- ii. **Components:** In order to achieve the above objective the program was designed with the following three components.

## 2.9 **Component I. Periodic Road Maintenance and Rehabilitation**

The scope of work for this component included the repair of surface distress areas, pavement strengthening and reduction of roughness, reconstruction of inadequate drainage facilities, retaining walls and slopes as well as improvement of geometrical and structural characteristics of the road. Originally, the output of this component of the project envisioned the rehabilitation of 586 km of national main roads and the reconstruction of 65 bridges.

- 2.10 This expected output was revised however when the road network was damaged due to floods and the Bank subsequently agreed that funds from the loan could be used for emergency repairs to landslips, waterline installation, drainage improvement and deep patching or reconstruction in the pavement structure<sup>4</sup>. Accordingly, the program's outputs were revised from the rehabilitation of 586 km of roads and 65 bridges to the rehabilitation of 269 km of roads and 58 bridges and 21 landslips.

### **Component II Trunk Road Expansion Works**

- 2.11 The scope of this component of work supported upgrading of existing highways mainly through lane expansion and new construction of trunk roads and or designs where feasible according to the project eligibility criteria covering technical, economic financial and environmental aspects viz.
  - (i) Be part of the national main road system
  - (ii) Comply with the agreed priority for expenditure based on road serviceability and traffic volume projections
  - (iii) Have an economic internal rate of return of 12%
  - (iv) Be environmentally feasible and
  - (v) Be free of legal problems or conflict involving third party rights

- 2.12 The expected output envisioned the improvement or design of in aggregate 50km of trunk roads over the life of the project.

### **Component III Routine Maintenance**

- 2.13 The activities of this component focused on reducing cost in the conduct of routine road maintenance activities of patching, painting, manual clearing of vegetation and filling road cracks. The scope as originally designed supported yearly routine maintenance over the life of the project for 2,700 km of roads and 1,000 bridges on

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<sup>4</sup> Ref: Aid Memoire of Special Mission dated, January 19-21, 2000

the national network, together with road administration reforms that reduce the cost of routine road maintenance by 50%. The design was to reorient the public sector road administration agencies away from force account civil works activities towards sector policy, network planning and contract management. This would be achieved by fundamentally laying off force account workers and using the private sector and/or micro enterprises of displaced workers to provide road maintenance and civil works activities.

- 2.14 The original outputs were (i) establishment of labour services units in THA and MOWT for affected workers. (ii) implementation support in testing contract packages, procedures and systems (iii) management system and complementary Payment Management systems; (iv) Technical studies for: (a) development of hazardous materials transport policy and (b). Vehicle weight control systems.
- 2.15 This component was revised, however, after strong opposition from the union to the mass worker layoff approach to reducing cost. Accordingly, the Bank agreed to consider alternative approaches to reduce the cost of routine road maintenance, and agreed that the contractual commitment of a 50% reduction could be implemented in absolute dollar terms as a reduction of routine maintenance cost from the US\$10,000 per Km. baseline to approximately US\$5,000 per Km. Ref: Aid Memoire of Administrative Mission dated Jan 19-21, 2000. The Bank further agreed that it would not require any particular method for achieving this reduction, and accepted an action plan submitted by the Government dated July 2002 (Revised Action Plan for Routine Road Maintenance July 11, 2002 by Ministry of Works and Transport PIU).
- 2.16 Therefore in lieu of worker layoff and micro enterprise development the component now supported the implementation and operationalization of Government's Action Plan based on an analysis of cost centers. Accordingly, in keeping with Government's action plan the revised outputs includes studies for (i) rationalizing and reducing **indirect over head** maintenance cost and the creation of a Road Authority, (ii) reducing **direct overhead** cost by redeploying excess labour to implement work backlog and through natural attrition, and (iii) reducing **direct cost** by increasing productivity through continuous training and mechanization of basic maintenance task in the districts. (iv) Technical studies for (a) RMMS system (b) transport of hazardous waste policy (c) Vehicle weight control systems.

### C. Quality -At- Entry Review

- 2.17 The Project was approved in 1996 and at that time the quality-at-entry review had not been adopted as an element within the approval process.

Quality -At- Entry Review			
<input type="checkbox"/> Highly Satisfactory (HS) - 1	<input type="checkbox"/> Fully Satisfactory (S) - 2	<input type="checkbox"/> Less than Satisfactory (LS) - 3	<input type="checkbox"/> Unsatisfactory (U) - 4



### III. RESULTS

#### A. Outcomes

- 3.1 Ultimately the success or failure of any program is assessed by the extent to which it has met its objectives. Since the goal and objective of the National Highways Program are detailed in its logical framework the key concepts contained in the logical framework are evaluated to determine the results of outcomes of the project.

**Goal:** To support a diversified economy and export base through lower transportation costs.

**Objective:** To provide higher levels of road service at lower cost.

##### 1. Has vehicle operation cost been reduced after the project?

- 3.2 The indicator used to track achievement of this Development Objective is the “Percentage of Roads on the Network in bad condition”. What the results show is that at the time of design (1994) the baseline percentage of roads on the main road network classified as bad was 48.6% or 1,181km<sup>5</sup>. The project at design targeted the rehabilitation of 586km of the bad road, which was revised to 269km following approved changes in the scope of works<sup>6</sup>. Hence the end of project target aimed for a reduction from 48.6% (to originally 25% revised with the change in scope) to 34% of the road network in bad condition.
- 3.3 Analyzing the 2009 road condition survey statistic collected across the country by the regional districts for the Program for the Upgrading of Road Efficiency (PURE) a unit of the Ministry of Works and Transport revealed that currently in aggregate 19% or 245km of the highways and main road network was in poor or critical condition. This figure represents 15 percentage points lower than the maximum end of project target of 34%. This difference over and above the minimum expected outcome is due to 606km of re-surfacing works done over the road network by the Government over the life of the project which together with the 269km achieved by the project contributed to the aggregated positive improvement of the road network. Accordingly, we can extrapolate that transportation cost has been reduced given the direct correlation between the percentage of good roads and transportation cost ceteris paribus.
- 3.4 Other results achieved under this component was the rehabilitation of 58 bridges and the repair to 21 landslips representing a 100% achievement of expected outputs

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<sup>5</sup> Lea – Trintoplan Comprehensive Highway Maintenance Study March 1994

<sup>6</sup> Ref: Aid Memoire of Special Mission dated, January 19-21, 2000

## 2. Has the cost of road maintenance been reduced?

3.5 The loan outlined a strategy to make road maintenance more efficient by contracting out the function in lieu of road maintenance by force account. This was not implemented and was replaced by an Action Plan based on the rationalization of cost centers. The agreed action plan, focused on, (1) Indirect Overheads: to be reduced through the creation and operation of a new Road Authority, (2) **Direct overheads:** to be curtailed by redeploying excess labour to implement work backlog, and through natural attrition of staff.

Year	Cost per Km (USD)
1997	\$9,190.00
1998.	\$9,490.00
1999	\$5,937.04
2000	\$6,567.11
2001	\$7,077.18
2002	\$7,716.83
2003	\$6,451.54
2004	\$6,452.06
2005	\$5,827.98
2006	\$6,073.42
2007	\$5,642.75
2008	\$5,152.36

(3) **Direct Cost:** to be reduced by increasing productivity through continuous training, increase worker task schedules and through mechanization of agreed road maintenance task.

3.6 At the end of the project the GOTT had successfully implemented actions 2 & 3 initiatives related to improving efficiency of Direct overheads and Direct Cost. That is increased productivity work-task along with continuous training and mechanization of the basic maintenance functions had been implemented. Also excess labour has been re-deployed and redundant workers were not replaced when they retire or leave the service. From information collected over the life of the project from the annual monitoring reports<sup>7</sup> the figures show that roads and bridges throughout the national road network have been routinely maintained at a cost as outlined in the table see graph elaborated at annex III .

3.7 The trend of this indicator suggests that the strategies implemented thus far are having the desired effect. It is expected that these figures will reduce even further when a new Roads Authority is established and operationalized.

3.8 Other modernization and efficiency gains of the project were (i) the establishment of a national computer based road routine maintenance management system, (ii) establishment and operationalization of an environmental division within the Ministry of Works and Transport (iii) improved planning practices based on economically prioritized annual plans, not only to improve efficiency of expenditures but also to formulate technical policies and the (iv) Establishment and operationalization of two mobile weight scales together with the institutional, administrative and legislative framework to enforce fines on overweight vehicles.

3.9 In summary therefore from detailed achievement against key quantitative and qualitative indicators, the result of the outcomes show that the cost of routine road maintenance has been reduced in real terms from US\$9,190.00 per km in 1997 to US\$5,152.00 per km in 2008, representing a 3% variance from the target US\$5,000.00. This target is expected to be surpassed and to be sustainable when a

<sup>7</sup> Annual Monitoring Reports were a requirement of the project and were received annually by the Bank as a modality of monitoring and evaluation of the project.

roads authority is established that will effectively reduce indirect overhead cost to routine road maintenance.

ACHIEVEMENT OF DEVELOPMENT OBJECTIVES (DO)			
Development Objective(s) (Purpose)		Key Outcome Indicators Percentage of Road Network in bad condition	
<p>1. To improve and sustain the service provided by the road network through strategic road rehabilitation and expansion works and through improving the efficiency and rationalization of road maintenance practices and systems</p>			
<p><i>Classification: HP,P,LP,I</i></p>			
<p><b>Planned Outcomes</b></p> <p>Baseline Intermediate End of Project</p> <p>1.1 44% (6/26/1996) 1.1I __*__(date) 1.1E 34% (7/12/2009)</p> <p><small>*Intermediate indicators were not dimension into project designed prior to 2004. More over road network conditions surveys are expensive and were not catered for in the loan.</small></p>		<p><b>Outcomes Achieved</b></p> <p>1.1 19.3% (7/12/2009)</p>	
<p><b>Reformulation.</b></p> <p>[ ] N/A</p>			
<p><b>PPMR Retrofitting.</b> Indicate if and when the PPMR was retrofitted and explain any changes resulting from this exercise.</p> <p>[ ] N/A</p>			
Summary Development Objective(s) Classification (DO):			
<p>[ ] Highly Probable (HP) [X] Probable (P) [ ] Low Probability (LP) [ ] Improbable (I)</p>			
<p><b>Briefly justify DO classification, based on degree to which planned targets were met, explaining the differences between planned and achieved outcomes as well as any other relevant factors. Include references to evidence that can support these results.</b></p> <p>The developmental objective classification of probable is justified on the strengthen of the developmental objective indicator which demonstrates that the project's developmental objective of reducing transportation cost has been achieved and given the improved road condition at the end of project. Reference to the baseline information is provided 1994 LeaTrinitoplan Comprehensive Highway Maintenance Study. End of project information provided by the Ministry of Works and Transport PURE unit's 2009 road condition survey but can also be computed from the length of road rehabilitated.</p>			
<p><b>Country Strategy.</b> Given the results described above, briefly discuss how the project contributed to the Bank's strategy in the country.</p> <p>The Bank strategy in the country (2004-2007) is founded on three pillars</p> <ul style="list-style-type: none"> <li>(a) Promoting private sector development to increase economic diversification.</li> <li>(b) Promoting public sector modernization to improve efficiency and effectiveness, and upgrade capacity.</li> <li>(c) Promoting social development by improving social public services.</li> </ul> <p>The results achieved in reducing the percentage of bad roads on the road network and by extension reducing transportation cost contributes to the tenets of pillar 1 of the Banks strategy in that reduced transportation cost will reduce transactional cost of the private sector thus promoting private sector development and the increase of economic diversification.</p> <p>Results achieved in reducing the maintenance cost over the road network has been as a result of modernizing the road maintenance function of the Ministry of Works which contributes directly to the Bank's strategy of promoting public sector modernization to improve efficiency and effectiveness and upgrading capacity.</p>			

## B. Externalities

- 3.10 A change in Government early in the life of the project occasioned a two year delay as the new Government took as much time to review the project. In addition five National elections held over the term of execution with three of them in as many years 2000, 2001 and 2002 were externalities which in aggregate delayed the project by 60 months. These events engendered a power vacuum and/or uncertainty in its governance by the Borrower where no decision could be made to move the project forward.
- 3.11 The operation proposed the process of contracting out maintenance work to the private sector and laying-off workers within the Ministry of Works who traditionally maintained roads through force accounts. A social externality, which emerged from this strategy, was the strong resistance from the unions to the laying-off of workers. The IDB country office COF/CTT was picketed and Union representatives at their own expense when to Washington to personally voice their resistance to Mr. Enrique Iglesias then President of the IDB. This lead to a joint Union/IDB/Government solution of introducing efficiencies and cost savings without the need for mass worker lay-offs.
- 3.12 There was a turn in fortune of the country where from 2000 - 2008 the country began to experience an energy boom stronger than the one in the mid 1970s to early 1980s. This spawned a construction boom putting severe pressure on the capacity of the construction industry and the available supply of essential materials (aggregate, cement and steel) which conspired to impair contractor performance. Accordingly some contractors were fired with attendant litigation leaving incomplete highly visible projects which spawned the perception by the general public of the Bank's involvement in unfinished projects.
- 3.13 Another externality relates to flood damage to the road network which occurred following heavy rains 1999/2000 which caused Bank/Borrower agreement on a revised scope of works of the operation to utilize the resources to repair twenty-one critical landslides to arrest deterioration of the road network which were not originally envisioned under the program.

## B. Outputs

IMPLEMENTATION PROGRESS (IP)	
<b>Components (Outputs):</b>	
<b>1. Component 1: Periodic maintenance and rehabilitation</b>	
Total cost of Component 1: <b>89,100,000.00</b>	
Counterpart: <b>19,100,000.00</b>	
IDB: US\$ <b>74,998,643.76</b> – [LP US\$70,000,000.00]	
IDB Disbursement: 100%	
<u>Classification:</u> HS, S, U, VU	
<b>Key Output Indicators: Kilometers of road and highway along the national road network rehabilitated.</b>	

<b>Planned Outputs</b>			<b>Outputs Achieved</b>
<u>Baseline*</u> 1.1 B_0_ (20/05/1997)	<u>Annual/Intermediate</u> 1.1I ____ (date)	<u>End of Project</u> 1.1E 269_ (12/07/2009)	<b>1.1</b> 269km_ (12/07/2009)
Briefly explain differences between planned and actual outputs (if applicable).			
[ <input checked="" type="checkbox"/> ] N/A			
<b>Restructuring.</b> Indicate if this component was restructured (date of approval by Manager). Briefly discuss the consequences of these changes. <p>Originally the output of the periodic maintenance and rehabilitation component of the project envisioned the rehabilitation of 586Km of national main roads and the reconstruction of 65 bridges. This expected output was rescoped to the rehabilitation of 269km of roads and 58 bridges and 21 landslips. This change did not require the approval of the manager because there was no change in the objective of the operation. The impact of the change however meant that a smaller percentage of the network could be rehabilitated.</p>			
[    ] N/A			
<b>2. Component 2 Trunk Road Expansion</b> Total cost of Component 2: <b>US\$ 47,200,000.00</b> Counterpart: <b>US\$30,000,000.00</b> IDB: <b>US\$12,193,027.97 [LP US\$17,200,000.00]</b> IDB Disbursement: 100%  <u>Classification:</u> HS, <b>S</b> , U, VU			
<b>Key Output Indicators: Length of Trunk Road Designed/Constructed</b>			
<b>Planned Outputs</b>		<b>Outputs Achieved</b>	
<u>Baseline*</u> 2.1B_0_ (20/05/1997)	<u>End o Project</u> 2.1E <b>50</b> (12/07/2009)	<u>End of Project</u> 2.1 __ <b>50km</b> __ (12/07/2009)	
Briefly explain differences between planned and actual outputs (if applicable).			
[ <input checked="" type="checkbox"/> ] N/A			
<b>Restructuring.</b> Indicate if this component was restructured (date of approval by Manager). Briefly discuss the consequences of these changes.  [ <input checked="" type="checkbox"/> ] N/A  <i>(In case of more components, create new row and complete.)</i>			
<b>2. Component 3 Institutional Strengthening of Routine Maintenance</b> Total cost of Component 2: <b>US\$ 108,900,000.00</b> Counterpart: <b>US\$106,300,000.00</b> IDB: <b>US\$2,739,730.05 [LP US\$2,600,000.00]</b> IDB Disbursement: 100%  <u>Classification:</u> HS, <b>S</b> , U, VU			
<b>Key Output Indicators:</b>			
<b>1. Percentage reforms implemented to strengthen the Ministry of Works and Transport and the Tobago House of Assembly's capacity to manage road maintenance.</b> <b>2. Annual Cost of Routine road maintenance reduced to US\$5,000.00/km (1997 dollars)</b>			

<b>Planned Outputs</b>		<b>Outputs Achieved</b>
<u>Baseline*</u>	<u>End of Project</u>	<u>End of Project</u>
3.1B <b>0%</b> (20/05/1997)	3.1E <b>100%</b> (12/07/2009)	3.1 <b>25%</b> (12/07/2009)
3.2B <b>US\$9,190.00</b> (20/05/1997)	3.2E <b>US\$5,000.00</b> (12/07/2009)	3.2 <b>US\$5,152.36</b> (31/12/2008)
<p>Briefly explain differences between planned and actual outputs (if applicable).</p> <p>By the end of the project in terms of reforms, it was expected that a system of permanent weight stations would have been institutionalized and operationalized and an environmental unit would have been created within the Ministry of Works and Transport; a Routine Road Maintenance Management System would have been implemented and a Roads Authority would have been established. While all the soft components of these initiatives have been developed only the RMMS and the Environmental units have been setup and are functional. While the government has demonstrated commitment to the other reforms such as establishing a Roads Authority and implementing weight stations progress has been slow and was not achieved by the terminal disbursement date of the project.</p> <p><input type="checkbox"/> N/A</p> <p><b>Restructuring.</b> Indicate if this component was restructured (date of approval by Manager). Briefly discuss the consequences of these changes.</p> <p>The loan outlined a strategy to make road maintenance more efficient by contracting out the function in lieu of road maintenance by force account. This was not implemented and the Bank agreed to consider alternative approaches to rationalize and reduce the cost of routine road maintenance to a targeted US\$5,000/km using 1997 as a base year. (Approval given through Aid Memorie March 1-5 1999). The consequences of this shift meant that there was no massive social dislocation of unionized workers.</p>		
<p><b>Summary Implementation Progress Classification:</b></p> <p><input type="checkbox"/> Highly Satisfactory (HS)    <input checked="" type="checkbox"/> Satisfactory (S)    <input type="checkbox"/> Unsatisfactory(U)    <input type="checkbox"/> Very Unsatisfactory (VU)</p>		

### C. Project Costs by Budget Categories

Total Project Cost - Planned (US\$000)		Total Project Cost - Actual (US\$0 00)	% Difference
CATEGORY	BANK	BANK	
1. Engineering & Supervision	6,000	6,000	0
2. Direct Cost – Civil Works	92,200	92,192	(0.01)
Routine Maintenance	nil	nil	0
Periodic Maintenance	70,000	74,999	7
Bridges repair	5,000	5,000	0
Trunk roads expansion	17,200	12,193	(29)
3. Technical Assistance	2,600	2,740	5.4
Weight Scales	900	74	92
Institutional Strengthening	1,700	2,666	57
4. Financial Charges	19,200	18,852	2

### D. Project Costs by Components

Total Project Cost - Planned (US\$000)	Total Project Cost - Actual	% Difference
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		(US\$0 00)	
COMPONENTS	BANK	BANK	
<b>COMPONENT I</b>			
<b>PERIODIC MAINTENANCE</b>	<b>81,000</b>	<b>85,999</b>	
Engineering & Supervision	6,000	6,000	0
Periodic Maintenance	70,000	74,999	7
Bridges repair	5,000	5,000	0
<b>COMPONENT II</b>			
<b>TRUNK ROAD EXPANSION</b>	<b>17,200</b>	<b>12,193</b>	<b>(29)</b>
<b>COMPONENT III</b>			
<b>TECH. ASSIST.&amp; ROUTINE MAINTENANCE</b>	<b>2,600</b>	<b>2,740</b>	5.4
Weight Scales	900	74	<b>92</b>
Institutional Strengthening	1,700	2,666	<b>57</b>
4. Financial Charges	19,200	18,852	2

Analysis of project cost by budget category and by component effectively elicit the same storey. That is, variations in the budget of any significant relate to line items captioned weight scales and institutional strengthening. In the case of weight scales because only two mobile weight scales were purchased, resources for the two permanent weight scales were transferred to support institutional strengthening initiatives in support of establishing a Roads Authority, given the tripartite agreement between the Bank, Government and the union to reduce the cost of routine maintenance by means other than by worker layoff as mention before. Also, savings realized in the execution of the Trunk road expansion which were mainly financed with counterpart resources were transferred to institutional strengthening initiatives to support the new efficiency structures being recommended for routine maintenance reforms. In addition the Bank records show that the aggregate in commitment fees paid by the Borrower was US\$3,986,971.71<sup>8</sup>. Assuming that the project disbursed evenly over the seven years and then computing credit fees at 1% on the outstanding balance equals US\$3,600,000. Therefore the approximate cost of the additional credit fees is US\$386,971.71

#### IV. PROJECT IMPLEMENTATION

##### A. Analysis of Critical Factors

An analysis of the critical factors which affected project implementation reveals the following:

- 4.1 The original loan program was approved on June 26, 1996 as a seven year time slice operation to be fully disbursed by July 12, 2003. The National Highways Program actually took thirteen (13) years to realize its final disbursement, disbursing over the period 1996 – 2009. This period was characterized by tumultuous changes in the socio-economic and political landscape and was shaped by five National elections (1996, 2000, 2001, 2002, and 2007), abnormal climatic conditions and a construction boom. Collectively these were the critical factors which impacted on project implementation and significantly contributed to delays and modifications to the program.
- 4.2 Another critical factor on the project was the turn in fortune of the country where from 2000 - 2008 the country began to experience an energy boom stronger than the one in the mid 1970s to early 1980s and entered into another golden decade; in five years the GDP per capita almost doubled from 6.479 in 2000 to 11.711 US dollars in

<sup>8</sup> Information provided by TRY/FSV finance and budget

2005 (CSO: 2008a). This conspired to impair contractor performance and many civil works contracts were terminated due to non performance of the contractor.

- 4.3 Notwithstanding the delays and the many varied changes to the program the project was still able to chart a course towards its objective the critical reason for this was the logical approach and guidance provided by INE/TSP through quarterly administration missions and the clarity and experience of the cadre of civil engineers who formed the project team and who supported the project.

## B. Borrower/Executing Agency Performance

Executing Agency performance in key areas. The Executing Agency Performance in the following areas is as follows:

1. Participation and quality of its contributions during project design	Low ← 1 2 3 <b>4</b> → High ○ ○ N/A
2. Organization for project execution (Executing / Coordinating Unit's staff, infrastructure, coordination, communication, etc.)	Low ← 1 2 <b>3</b> 4 → High ○ N/A
3. Coordination and integration of the project executing/Coordinating Unit with the Executing Agency	Low ← 1 2 3 <b>4</b> → High ○ N/A
4. Establishing a monitoring and results framework (baseline data, systems, procedures, data analysis and reporting, etc.)	Low ← 1 2 <b>3</b> 4 → High ○ N/A
5. Executing/Coordinating Unit's management and decision-making capacity	Low ← 1 2 3 <b>4</b> → High ○ N/A
6. Timeliness in the fulfillment of the Bank's policies, procedures and contractual clauses	Low ← 1 2 <b>3</b> 4 → High ○ N/A
7. Financial management (securing counterpart resources, disbursements, quality and timeliness of AFS, etc.)	Low ← 1 2 <b>3</b> 4 → High ○ N/A
8. Timeliness and efficiency for procurement of goods, works and consulting services	Low ← 1 2 <b>3</b> 4 → High ○ N/A
9. Executing Agency top-level management's leadership, ownership and support to project execution	Low ← 1 <b>2</b> 3 4 → High ○ N/A
10. Concrete actions to secure project sustainability	Low ← 1 2 <b>3</b> 4 → High ○ N/A

The one area with low ratings related to the continued changing of staff Permanent Secretaries responsible for the implementation of the reforms of the program which too frequently left the project leaderless and without the requisite support to initiate the institutional changes.



Borrower/Executing Agency			
<input type="checkbox"/> Highly Satisfactory (HS)	<input checked="" type="checkbox"/> Satisfactory (S)	<input type="checkbox"/> Unsatisfactory (U)	<input type="checkbox"/> Very Unsatisfactory (VU)

### C. Bank Performance

- |  |                             |                           |
|--|-----------------------------|---------------------------|
| 1. Extent to which the Bank facilitated the project design in a participatory manner with the Borrower and Executing Agency                          | Low ← 1 2 3 <b>4</b> → High | <input type="radio"/> N/A |
| 2. Technical assistance and training as well as consistent follow-up provided so that the Executing Agency follow the Bank's policies and procedures | Low ← 1 2 3 <b>4</b> → High | <input type="radio"/> N/A |
| 3. Technical assistance and training provided to the Executing Agency to improve project management  | Low ← 1 2 3 <b>4</b> → High | <input type="radio"/> N/A |
| 4. Benefits of the Bank's supervision and assistance to improve project management   | Low ← 1 2 3 <b>4</b> → High | <input type="radio"/> N/A |
| 5. Timeliness in the Bank's response to the needs of the Executing Agency during project implementation  | Low ← 1 2 3 <b>4</b> → High | <input type="radio"/> N/A |
| 6. Bank flexibility to respond to emergencies during project implementation  | Low ← 1 2 3 <b>4</b> → High | <input type="radio"/> N/A |

Bank Performance			
<input type="checkbox"/> Highly Satisfactory (HS)	<input checked="" type="checkbox"/> Satisfactory (S)	<input type="checkbox"/> Unsatisfactory (U)	<input type="checkbox"/> Very Unsatisfactory (VU)

## V. SUSTAINABILITY

### A. Critical Factors

- 5.1 The critical factors that will ensure sustainability of the major outputs of the operation are:
- (i) Establishment of a dedicated Road Maintenance Fund this will ensure that there is adequate funding in place to protect the road investment and to maximize the useful life of the network. This could be established with a tariff on fuel in this way road users pay as they consume the road service.
  - (ii) In term of sustainability for the RMMS while this is a useful tool the Government is not getting value for the money being spent. For example it cost the country annually approximately US\$500,000 in licensing fees for continuous maintenance of the system and upgrades with some elements of the program being useless and cumbersome. A more sustainable and sensible approach would be for the University of the West Indies department of civil engineering to develop a more user friendly and relevant RMMS system that is tailored for use in the Caribbean where the

main road network does not exceed 5000km. The Bank should consider supporting such an initiative. The other issue of sustainability which impacts the RMMS is personnel to collect and input data into the system. This requires new positions which are not currently within the establishment of the public service this needs to be regularized with training and with strategic succession planning.

- (iii) To ensure sustainability of the environmental units established under the program a permanent institutional structure enshrined in the establishment of the public service is required with a robust backup and succession planning human resource strategy.
- (iv) Central to sustainability of the program would be the establishment and operationalization of a Roads Authority this would give robust governance to the road network and provide the flexibility to sustain the efficiency gains already achieved as well as the flexibility to continuously modernize the process of road and highway investments and maintenance. This organization would work in tandem with the Road Maintenance Fund. The road map to legally establish and operationalize the Road Authority and a Roads Maintenance Fund was developed under the program. Government has show commitment to this strategy under it public sector modernization program and the establishment of the Road Authority has been articulated in Government planning since the budget of 2007. A transition team now needs to be established to operationalize these plans.
- (v) Institutionalization of an island wide vehicle weight control system with the construction and commissioning of the two permanent weight scales would also be a necessary element to sustainably maintain efficiency and optimize the economic service life of the rehabilitated road network.

## **B. Potential Risks**

- 5.2 Technically the Borrower has the capacity to maintain the outputs of the project. The potential risk to sustainability however relates to not preparing for succession by enshrining the new positions created by the establishment of the Environmental Unit and to support the RMMS into the establishment of the Ministry of Works and Transport. Another potential risk relates to the Government's protracted approach to the establishment of a Road Authority and a Road Maintenance Fund as the entire initiative risk disbandment as time elapses. Also given the cost associated with the upkeep of the RMMS there would be a sensible propensity to abandon its use overtime with no adequate replacement.

## **C. Institutional Capacity**

- 5.3 The institutional Capacity of the executing agency has improved with the establishment of the expensive RMMS which is now supported by WAN over the entire island allowing road investment decision to be optimized for varying levels of

budget allocation with the information automatically collated at head office. In addition the establishment of the Environmental Unit within the Ministry of Works is a success storey which monitors the environmental impact of works related to the highways Division. This unit works in tandem with the Environmental Management Agency. Institutionally the executing agency now has the tools (albeit expensive) and technical expertise to collect information about the road network and a system of effecting appropriate and timely maintenance works. Also the executing agency has established and operationalized two mobile weight scales. Notwithstanding, governance of the road network needs to be more robust which is expected with the establishment of a Road Authority.

Sustainability Classification SU:			
<input type="checkbox"/> Highly Probable (HP)	<input checked="" type="checkbox"/> Probable (P)	<input type="checkbox"/> Low Probability (LP)	<input type="checkbox"/> Improbable (I)

## VI. MONITORING AND EVALUATION

### A. Information on Results

- 6.1 It is worth noting that the results framework to provide the grounds for judging achievements was adequate. There were clear time-bound PDO appropriate with respect to the objectives of the operation. Indicators identified to monitor progress toward PDOs and to make sure that there was commensurate progress in implementation and disbursement were sufficient. Project data was convincingly documented using appropriate collection methods, and properly used to report decision-making and resource allocation. Therefore, it can be said that monitoring and evaluation design, implementation and utilization was adequate.
- 6.2 The process of data collection was done through annual monitoring reports. Base line information was collected during design of the operation and collated in the Comprehensive Highway Maintenance Study conducted by Lea - Trintoplan date March 1994. In term of the indicator “kilometers of road build and or rehabilitated” this was collected from actual measurement and project inspection of the roads, bridges and landslips supported by the operation. In terms of monitoring the “cost of routine maintenance” it was agreed to what aspects of the works would be measured on an annual basis and that these elements would be measure and reported on an annual basis in the annual Monitoring report. The collation of the information was through the RMMS. These figures were then tracked throughout the life of the operation and a deflator applied to monitor and evaluate the impact of the action plan initiatives.

- 6.3 The base line for the road survey was conducted in 1994 under the Comprehensive Highway Maintenance study and the update was done in late 2008 early 2009 by the Program for the Upgrade of Road and Efficiency (PURE) unit in the Ministry of Works. All other information is qualitative and was monitored and evaluated through the Banks administrative missions, project inspection visits, and through the conduct of specific studies. HDM-4 was used to calculate the NPV and the IRR of the projects implemented under the project with the input data collected from traffic counts and roughness index IRI in the field.

**B. Future Monitoring and Ex-Post Evaluation**

- 6.4 Critical to the improved governance of roads in Trinidad and Tobago would be the establishment of a Road Authority set up as a statutory authority in tandem with a Road Maintenance Fund as well as the operationalization of a vehicle weight control system. Such an organization would allow the Government the flexibility to entrench the gains achieved by the operation and the executive authority to quickly adjust to the changing needs to maintain and expand the road network. Accordingly, the Bank should continuously monitor and interject where possible to facilitate the operationalization of these organizations.

**VII. LESSONS LEARNED**

The lessons learnt from the project are as follows:

- 7.1 Projects particularly with reform components should be designed in tandem with the political cycle of the country and discussed with both the incumbent Government and the opposition' strong political support for the project is essential for the successful outcome of a project.
- 7.2 The project team and Divisions should be made responsible for the project from cradle to grave. This would allow the Bank to be more responsive and flexible to the technical changes that inevitably happen during the implementation of a project. So that implementation decisions are made more on technical logic and less on administrative logic.
- 7.3 Experience has shown that reform projects cannot be implemented in less than a decade. The expectation that an operation which purports major social dislocation and worker layoff be implemented within the strictures of a seven year loan was flawed.
- 7.4 Reform components of loans appear better suited for hybrid loans or a multiphase operation where the reforms components are financed as policy based loan and infrastructure done as investment loan. This operation would have benefited from the establishment of a steering committee as part of the supervision and monitoring given the need to continuously have policy decisions across functional sectors.

- 7.5 During implementation the Bank should structure its operating manual so that less emphasis is placed on implementing loans administratively right and more emphasis is placed on the right technical implementation.
- 7.6 The development for the RMMS should have been done through the support of a consultant which tailored a system for the Caribbean using the Department of Civil Engineering and the University of the West Indies. The system that was developed while useful is too expensive, and accordingly will not be sustainable, and was really designed for a North American road network.
- 7.7 The introduction of innovations either as concepts (comprehensive maintenance by contract) and technology (the RMMS) is always desirable to improve road management, but it is advisable to adapt the implementation schedule to the country conditions, because new concepts and technology require time for introducing and adjusting them to the existing more traditional schemes. Furthermore, new technologies are highly demanding on both data and resources.
- 7.8 Although a comprehensive monitoring plan was not dimensioned into the design of this operation had resources been made available to measure development indicators more frequently given the high cost associated with measuring the indicator the Bank would have realized that the development outcomes had been achieved sooner, allowing for a formal decision to be made to either (1) continue with the loan and improve a greater percentage of the road network while keeping the Bank in the sector for other business opportunities as what obtained or (2) partially canceling the proceeds once the targets were met. While this project in its later years of implementation was not classified as a problem project the lesson here might be that allowing projects to fester too long will actually hurt more than help the client and our relation with them.

**GOVERNMENT OF THE REPUBLIC OF  
TRINIDAD AND TOBAGO  
MINISTRY OF WORKS AND TRANSPORT**

**IDB LOAN NO. 932/OC-TT  
NATIONAL HIGHWAY PROGRAMME**

**COMPLETION REPORT**

**PROGRAMME IMPLEMENTATION UNIT  
MINISTRY OF WORKS AND TRANSPORT  
FEBRUARY 2010**

## **EXECUTIVE SUMMARY**

### **Introduction**

The Government of the Republic of Trinidad and Tobago and the Inter-American Development Bank executed a Loan Contract in July 1996 for the implementation of the National Highway Programme under Loan No. 932/OC-TT. The estimated project cost was US\$300.4Mn and the original implementation period spanned the period July 12, 1996 to July 12, 2002; however, several extensions to the implementation period were granted and the Programme was eventually completed in July 2009.

### **Programme Objectives**

The main objectives of the programme were as follows:

- (i) to improve the road services provided by the National Main Roads network which is administered by the Ministry of Works and Transport (MOWT) in Trinidad and by the Works Division of the Tobago House of Assembly (THA) in Tobago;
- (ii) to reduce transportation costs through effective planning and maintenance management thereby contributing to a more competitive and diverse economic base;
- (iii) to give higher priority in annual spending programmes to maintaining the existing road network rather than expansion and new construction by monitoring the programming of new investments based on project eligibility criteria agreed upon with the Inter American Development Bank; and
- (iv) to strengthen the technical and managerial capacity of the MOWT to meet the challenge of increased participation of the private sector in highway administration.

These objectives were translated into a Programme which included four main components. These were a periodic maintenance aspect comprising the rehabilitation of 586km of roads and reconstruction of 65 bridges, routine maintenance of 2,038km of roads, an institutional strengthening/technical cooperation component and a trunk roads expansion programme in which 44km of new roads were constructed. The extent to which these objectives were fulfilled will be discussed in the conclusion of this Executive Summary.

### **Bank Participation in Project Design**

The project design was based on the results of the Comprehensive Highway Maintenance Study (CHMS) which was undertaken by consultants Lea-Trintoplan between 1992 and 1994. Representatives of the Ministry of Works and Transport met with representatives of the Bank and discussed the contents of the Report, eventually conceptualizing the various components of the final Programme. Over a period of several days, the two teams worked together to estimate

the total cost of the Programme, using cost data from various sources. The relationship between the two teams could be described as collaborator, and they were thus able to arrive at a document which was satisfactory to both of them.

### **Technical Assistance and Training**

The Bank assisted the Executing Agency during the implementation of the project by ensuring that Administration Missions visited the project regularly, usually twice within each calendar year. These Missions included a technical expert who provided invaluable advice to the MOWT's project team, making it easier to ensure that the project met its objectives as stated in the Loan Agreement. Input from the technical expert was received through project review meetings with the MOWT team and representatives of other stakeholder groups where necessary.

### **Bank Response to Executing Agency's Requests**

The Bank's Trinidad Country Office was responsible for meeting the day-to-day needs and dealing with routine requests from the Executing Agency. Generally, the Bank's responses were accommodating and delivered in a timely manner. These included 'no objection' responses to the various Reports submitted by the Executing Agency and the disbursement of funds from the Loan.

One particular occurrence demonstrated the flexibility of the Bank in showing sensitivity to the needs of the Borrower. During a period of extraordinary rainfall in December 1999, several critical landslips developed in various parts of the country. As the NHP was already being executed and there was urgent need to address these landslips, the Borrower approached the Bank to include the repair of these landslips within the Programme. After discussion on the possible mechanisms which could be employed, a new component called the "Reinstatement and Stabilization of Failed Slopes Project" was included within the Programme.

### **Lessons Learned**

As may be expected in a project of this size, there were issues which affected the smooth implementation of the project. In hindsight, it may well be concluded that some of these could have been better managed. Some of the main lessons learned are listed below;

- (i) The results of the CHMS led to the formulation of a programme of periodic rehabilitation comprising the rehabilitation of 586km of roads and reconstruction of 65 bridges. When the Loan Document was prepared, it was assumed that the road rehabilitation would essentially entail resurfacing works. It was later found necessary to increase the scope of the work to include repair of landslips, drainage works, waterline installation and deep patching and reconstruction in the pavement structure. Such increased scope meant that funds allocated in the Loan for this component became inadequate to deliver the expected output, which then had to be revised downward. In future, it is recommended that the Borrower consider the scope of the works carefully beforehand so that the full expected output could be delivered.



- (ii) The Loan Document envisaged that the MOWT would move toward the establishment of maintenance by contract as opposed to force account for the physical maintenance of its roads. The rationale behind this intention was that the efficiency of maintenance work would be increased through contract labour. While it was known that the Employees' representative Trade Union would have to be engaged in discussions on the matter, it was assumed that the Union would be persuaded to "buy in" to the idea of maintenance by contract. It is now common knowledge that the Union protested vigorously and the idea was eventually shelved. The MOWT eventually presented an alternative plan to increase efficiency which was based on a streamlined form of routine maintenance based on higher productivity levels, increased mechanization for vegetation control and specialized equipment to execute pothole patching. The lesson to be learnt is that plans which require the support of other entities should be agreed before being incorporated into a Loan Document.
- (iii) The Contractors invited to tender for the road rehabilitation and bridge reconstruction projects were all chosen through prequalification exercises undertaken by the MOWT. However, it was clear that at least three of the contractors engaged for these works lacked the experience and/or capacity required to successfully carry out the works, leading to some contracts being terminated by the MOWT for non-performance. The lesson here is that weaknesses in the prequalification system need to be identified and corrected.
- (iv) The contract periods given by the Client for the road rehabilitation contracts were 15 months (Year 2 contracts) and 12 months (Year 3 contracts). The vast majority of these contracts extended to 24 months and beyond. It is evident that the Client underestimated the potential for delays inherent in road rehabilitation works including the possible damage to underground utilities and conflicts with landowners over land ownership issues. In addition, the heightened activity within the construction sector during the execution of these contracts made it challenging to acquire suitable materials at times, leading to delays and lengthened construction periods. The lesson to be learnt here is that all pertinent factors must be taken into consideration before deciding on a realistic contract period.

## **Conclusion**

Due to the factors discussed above, the objectives of the Programme have only partially been met. The improvement in road services as manifested by the Roads and Bridges Rehabilitation Programme was only partially completed as the final output was 280 km of roads and 58 bridges, and consequently the reduction in overall transportation costs was lower than originally envisaged. Road Maintenance management has been improved through the implementation of a computerized Routine Maintenance Management System (RMMS) as well as a Bridge Management System (BMS) and Pavement Management System (PMS). However, some Districts need to improve their commitment to supplying data for these systems in order for the systems to achieve their full potential in improving the management of roads.

**TRINIDAD AND TOBAGO  
NATIONAL HIGHWAY PROGRAMME  
(LOAN-932/OC-TT)**

**Borrower Evaluation**



Inter-American Development Bank  
Project Completion Report –2006 PCR  
Borrower Evaluation

Project Name: National Highways Program (Loan-932/OC-TT-L0043)	
Executing Agency: The Ministry of Works and Transport	
Borrower: Government of the Republic of Trinidad and Tobago	
Date of Project Approval: June 26, 1996	Date of Contract Effectiveness: May 20, 1997
Date of Borrower Evaluation: May 10, 2010	Expected Date of Exit Workshop: March 17, 2010

**Borrower Project Performance Ratings**

Probability on Achieving its Development Objective(s):

☐ Highly Probable (HP)      ☒ Probable (P)      ☐ Low Probability (LP)      ☐ Improbable (I)

Project Implementation:

☐ Highly Satisfactory (HS)      ☒ Satisfactory (S)      ☐ Unsatisfactory (US)      ☐ Very Unsatisfactory (VU)

Sustainability of Project Results:

☐ Highly Probable (HP)      ☒ Probable (P)      ☐ Low Probability (LP)      ☐ Improbable (I)

**Comments:**

- Project has contributed to improving the quality of the road network and to the efficiency of routine road maintenance.

**Borrower Performance During Project Execution**

Please rate your own performance during Project Execution:

☒ Highly Satisfactory (HS)      ☐ Satisfactory (S)      ☐ Unsatisfactory (US)      ☐ Very Unsatisfactory (VU)

Comments:

**Notwithstanding the difficult challenges the project was completed as expected.**

**TRINIDAD AND TOBAGO  
NATIONAL HIGHWAY PROGRAMME  
(LOAN-932/OC-TT)**

**Bank Performance During Project Preparation**

Please rate the Bank's performance during project preparation. Factors to be considered include the extent to which the Bank facilitated a participatory project design, proposed adequate technical solutions to the problems identified, and responded to the needs of the Borrower (timeliness, selection of instrument type).

☐ Highly Satisfactory (HS)      ☒ Satisfactory(S)      ☐ Unsatisfactory (US)      ☐ Very Unsatisfactory (VU)

Comments:

**There was excellent collaboration and consensus between the bank and the Government of Trinidad and Tobago during the design of the projects.**

**Bank Performance During Project Supervision**

Please rate the Bank's overall performance during project supervision. Factors to be considered include technical assistance (including informal and formal training) to Executing Agency, timeliness of Bank response and the Bank's flexibility to respond to emergency situations during project implementation.

☐ Highly Satisfactory (HS)      ☒ Satisfactory(S)      ☐ Unsatisfactory (US)      ☐ Very Unsatisfactory (VU)

Comments:

**A very good spirit of partnership existed between the Bank and the Government of Trinidad and Tobago during the execution.**

**Additional Suggestions for Improving Bank Performance**

Additional comments/suggestions for improving Bank performance in the future.

**The Bank in making fiduciary decisions often does so in isolation and often at the expense of the technical requirements of the project.**

## Economic and Financial Analysis

### Economic Analysis

1. An analysis was conducted in order to compare as far as practical, end of project results with projected results at design. Among the parameters which were dimensioned into the analysis were road works characteristics, network traffic data, unit road maintenance costs, surface quality index, and vehicle operating costs, so as to establish some sensible economic and financial parameters at appraisal and at the end of the project. The analysis thought not exhaustive given the general approach done at the project design assessment stage still gives a useful insight into the project's comparative results.
2. 2.At design, the Net Present Value was determined from cost and benefits analysis for the optimum rehabilitation of the 1,181km of roads classified as bad and in disrepair and the internal rate of return (IRR) was calculated on a sample bases from the roads selected over a range of traffic classes. The analysis showed that the proposed investment over the entire road network had a NPV of TT\$3,752 million (1992 dollars),<sup>1</sup> and the IRR from the sample for various classes of roads were as shown in table #1 below<sup>2</sup>:

Table 1

Traffic Class	AADT	B/C	IRR %
1	237	1.2	19
1	237	1.38	24
2	759	1.28	18
2	759	4.21	133
3	1712	1.64	25
3	1712	9.51	282
4	3827	3.13	46
4	3827	18.99	446
5	7382	7.44	97
5	7382	22.09	321
6	15844	18.95	187
6	15844	63.44	1220

3. That is the IRR of the individual section with varying traffic volumes range from 18% to 1220% at appraisal.

<sup>1</sup> Ref: Figure 10- 4 Comprehensive Highway Maintenance Study – Lea Trintoplan – March 1994

<sup>2</sup> Ref: Figure 10-5 Comprehensive Highway Maintenance Study – Lea Trintoplan – March 1994

4. Accordingly, considering the sample of the first phase of actual road works executed each road selected was required to have an IRR of at least 12% according to the selection criteria outline in the loan operation. For each road selected traffic counts were conducted to validate the class of road and the results are as per the table 2 below for the first phase of the periodic maintenance and rehabilitation program.

Table 2

FIRST PHASE PERIODIC MAINTENANCE AND REHABILITATION PROGRAM						
Name/Location	Length (km)	Contract #	Traffic Class	Cost (M US\$)	NPV (M US\$)	IRR (%)
Western Main Road (Westmoorings to Macqueripe Bay)	6.4	3	4	8.81	112.49	46.5
North Coast Road (Maraval Rd to Maracas)	12.1					
Eastern Main Road (Valencia to Manganilla Beach)	26.2					
S.S Erin Road (Southern Main Rd to Dumfries Road)	5.1	4	6	8.91	155.77	63.6
S.S Erin Road (Silver Bridge to Palo Seco RC Church)	20.1					
Cedar Hill Road (Solomon Hochoy Highway to Mayo Road)	4.5	17	6	9.12	8.01	23.5
Couva Main Road(Solomon Hochoy Higway to 14.08km)	8.2					
Guaracara Tabaquite Road (2.5km to Morichal)	13.75	18	6	7.68	18.06	32.1
Moruga Road (Intersection with Naparima mayaro Road Burton Trace)	10	19	5	8.18	23.21	18.5
Mayaro Guayaguayare Road ( Intersection with Naparima mayaro Road to Galeota Pt)	15.9	20	6	8.56	28.67	31.4
Naparima Mayaro Road (Allamby Street to St. Croix Junction)	8.9	21	6	8.21	15.51	19.5
Southern Main Road #2 ( B1/61 to Bowen Trace 65 ¾)	7.9					
<b>Total</b>	<b>139</b>			<b>59.47</b>	<b>361.72</b>	<b>205.1</b>

5. Considering the actual road works executed on each road and their actual costs, the ex post NPV of the first year rehabilitation and periodic maintenance programs confirms that all projects undertaken had a positive return and were financially feasible and that the ex post internal rate of return conducted on the sample were all above 12%<sup>3</sup> as required by the project. Therefore, final figures are similar to what was estimated.

<sup>3</sup> HDM-4 Data sheets of analysis conducted by University of the West Indies Professor in Civil Engineering Dr. Raymond Charles.

### Unit Cost of Road Maintenance

1. The average cost of routine maintenance on road was approximately US\$ 10,000 per km at the time of appraisal. Figure 1 and table 3<sup>4</sup> below tracks the routine road maintenance costs over the life of the project (1997 – 2008 ) which shows that the cost was reduced by 50% indicative of an increase of efficiency.

Figure 1.

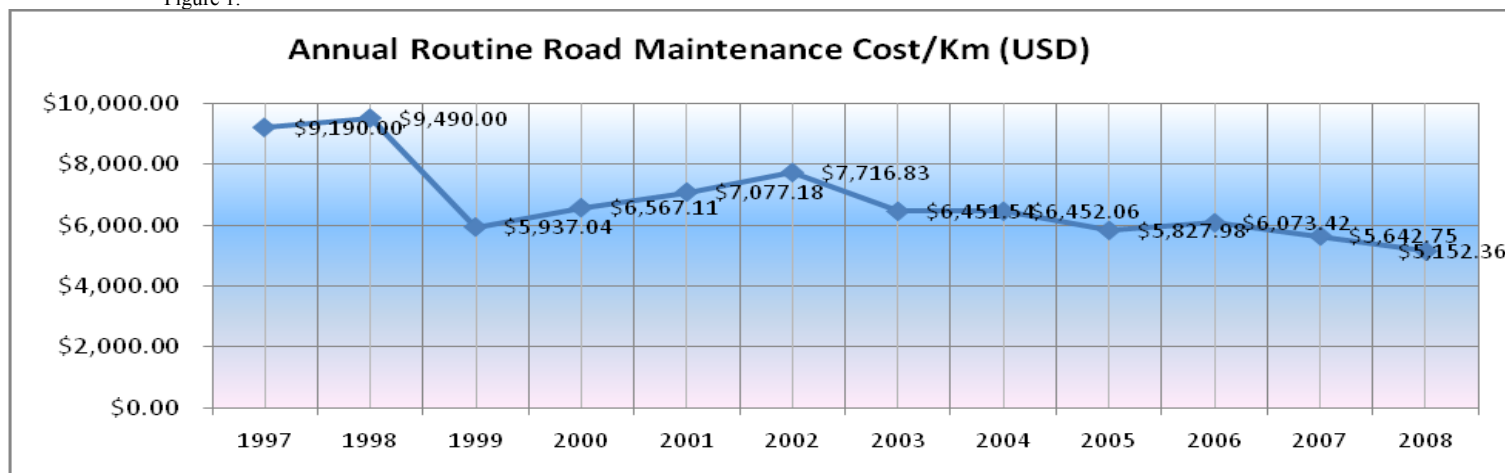


Table 3

Cost per Km (USD)	\$9,190.00	\$9,490.00	\$5,937.04	\$6,567.11	\$7,077.18	\$7,716.83	\$6,451.54	\$6,452.06	\$5,827.98	\$6,073.42	\$5,642.75	\$5,152.36
Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008

2. The baseline cost of routine maintenance was US\$9,190 per Km in 1997. This cost increase marginally to US\$9,490 per km in 1998 which preceeded a drastic drop to US\$5,937 in 1999 when daily paid workers were laid off in an effort to comply with the loan conditionalities. From 1999 the graph shows a steady climb in the unit cost of routine road maintenance back up to US\$7,716 by 2002 consistent with increased wage agreements which had been outstanding for some time and were settled with the unions for daily paid workers. Following this the cost of routine maintenance steadily declined due to program initiatives and the resultant efficiency gains which leveled off at US\$5,152 by the end of the project in 2008.

<sup>4</sup> Annual Monitoring Reports.

### Road Condition Survey

At project completion, the condition of the main road network in Trinidad and Tobago had improved from over 85% classified in aggregate as either poor or in critical condition at the time of appraisal in 1994 to less than 25% classified in this condition by the end of the project. The following table shows the entire road network length by condition in 1994 and in 2009.

Table 3<sup>5</sup>

Trinidad and Tobago Main Road Network and Traffic (km)						
Year	Classification	Road Condition				Total
		Good	Fair	Poor	Critical	
1994	Highways	70	0	123	8.8	201.8
	Main Roads	4	14	900	150.44	1068.4
	Secondary Roads	60.26	109.67	316	104.11	590
	Tertiary Roads	19.19	34.18	119.09	81.32	253.7
	Total	153.45	157.85	1458.09	81.32	2114
	<b>Percent</b>	<b>7.2</b>	<b>7.4</b>	<b>70</b>	<b>16.4</b>	<b>100</b>
2009	Highways	176.267	24.514	0.0	1.0	201.78
	Main Roads	461.33	363	148.72	95.39	1068.4
	Secondary Roads	137.26	209.67	138.96	104.11	590
	Tertiary Roads	37.8	52.19	82.94	80.85	253.78
	Total	812.66	649.37	370.62	281.36	2114
	<b>Percent</b>	<b>38</b>	<b>30</b>	<b>18</b>	<b>14</b>	<b>100</b>

<sup>5 5</sup> Comprehensive Highway Maintenance Study – Lea Trintoplan – March 1994 , 2009 figures provided by Program for the Upgrade of Road Efficiency (PURE) with respect to their 2009 road condition survey.

**OPERATIONS PROCUREMENT OFFICE**  
**NOTE FOR**  
**TT-0043 (932/OC-TT)**

**Financial Management 932/OC-TT**

1. The Project Implementation Unit (PIU) within the Ministry of Transport and Works was responsible for the financial management of the National Highways Program (Loan 932/OC-TT). In general, the internal controls, accounting procedures and financial management structure of the project was deemed satisfactory. This can be attributed to the fact that there was a dedicated, experienced and adequately staffed PIU that was well placed and integrated within the Ministry.
2. The accounting system of the project was partially automated and capable of generating financial information in an accurate and timely manner. During the execution of the project, the PEU produced disbursement requests and financial reports that were well prepared and supported by adequate and well organized documentation. In a few instances, Audited Financial Statements (AFS) were submitted late to the Bank, thereby leading to the Bank threatening the suspension of disbursements. Late submission of the AFS was mainly attributed to delays experienced in the consolidation and subsequent audit of the financial statements for the projects managed by the Project Implementation Unit, of which the Highways project was 1 of 3 projects.