

**CARIBBEAN DEVELOPMENT BANK**



**EXECUTIVE SUMMARY WITH MANAGEMENT RESPONSE**

**EX-POST EVALUATION REPORT**

**ROAD IMPROVEMENT AND MAINTENANCE PROJECT, NEVIS  
ST. KITTS AND NEVIS**

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**OFFICE OF INDEPENDENT EVALUATION**

**MARCH 2012**

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## EXECUTIVE SUMMARY

### 1. BASIC DATA SHEET

**Loan No.:** 12/SFR-OR-ST.K/N  
**Board Paper:** BD 90-97 and BD 90/97 Add. 1  
**Borrower:** Government of St. Kitts and Nevis (GOSKN)  
**Executing Agency (EA):** Nevis Island Administration (NIA)

<u>Loan and Disbursement Details:</u> (USD'000)	<u>Original</u>	<u>Additional</u>	<u>Total</u>
Loan Amount:	7026	3,750	10,776
Disbursed:	7,026	3,750	10,776
Cancelled:	-	-	-
Date of Loan Approval:	1997-12-11	2001-07-12	
Date of Loan Agreement:	1998-10-06	2001-09-03	
Date Conditions Precedent Satisfied:	1999-10-15		

	<u>Appraisal</u> <u>Estimate</u>	<u>Actual</u>	<u>Variance</u> <u>(months)</u>
Date of First Disbursement:	1998-06-30	1999-04-01	9
Date of Final Disbursement:	2000-09-30	2004-10-13	48

<u>Project Cost and Financing</u> (USD'000)			<u>Variance</u> (\$)
Total Project Cost – Revised	18,872	20,395	1,523
Caribbean Development Bank (CDB) Loan	10,776	10,776	
Borrower's Contribution	8,096	9,619	1,523

<u>Implementation Period</u>			
Commencement of implementation	1998-01-01	1998-01-01	1998-01-01
Start of road construction	1999-05-01	2001-01-17	2001-01-17
Completion of road construction	2000-04-31	2002-09-17	
Road Construction Period (months)	12	20	8
Implementation period (months)	28	57	29

Economic Rate of Return - original	29%
- revised	14%
- evaluation	22%

## **2. PROJECT DESCRIPTION**

2.01 In December 1997, the Board of Directors of CDB approved a loan to GOSKN of an amount not exceeding the equivalent of 7.026 million (mn) United States dollars (USD), which was funded by a mix of funds from CDB's Special Funds Resources and Ordinary Capital Resources (OCR), to assist in financing the reconstruction of approximately 17 kilometres (km) of the Island Main Road (IMR) and institutional strengthening of the Public Works Department (PWD) of the Ministry of Communications, Works, Public Utilities and Posts (MCWPUP)<sup>1</sup> to carry out effective road and bridge maintenance in the island of Nevis. In July 2001, the Board of Directors of CDB approved an additional loan to GOSKN of an amount not exceeding the equivalent of USD3.75 mn from CDB's OCR to address funding constraints arising from tender prices received, which were higher than the estimates at appraisal.

2.02 IMR served all centres of population and economic activity on the island of Nevis whether directly or indirectly through linkages and spurs provided by the secondary and other roads. At appraisal, the Average Annual Daily Traffic for IMR varied from 7,000 in Charlestown to 3,000 at the residential area of Market Shop and 1,400 at Newcastle. The international roughness index (IRI)<sup>2</sup> ranged from 8.68 to 7.19 metres (m)/km at Market Shop and Pinney's Estate, respectively, which was a road roughness representing poor ride conditions. The resurfacing of the road with an asphaltic concrete overlay was expected to initially reduce the IRI to a level of approximately 2 m/km.

2.03 The major expected outcome of the project was improved efficiency of road transport in the island of Nevis through a reduction of vehicle operating costs (VOC) and related savings in foreign exchange derived from a reduction in the frequency of repairs and the quantity of spare parts, petrol and lubricants consumed. The planned outputs of the project were the reconstruction of approximately 17 km of the IMR from Newcastle to Market Shop; and the strengthening of the capacity of the PWD to plan and execute the routine and recurrent maintenance of the road network and bridges.

2.04 The project, which was executed by NIA, was originally estimated to cost USD23.316 mn but was revised to USD50.953 mn based on bid prices for the roadworks. To expedite implementation and reduce delays associated with the time required to restructure the financing of the project, GOSKN decided to implement the project in two phases:

- (a) Phase 1 - approximately 6 km between Newcastle and Cotton Ground, was financed by NIA counterpart funding; and
- (b) Phase 2 - approximately 11 km between Cotton Ground and Market Shop was financed by CDB and NIA counterpart funding.

**2.05** At appraisal, several deficiencies in PWD were identified in respect of the effective maintenance of the road network. These included a lack of trained personnel, low availability and poor condition of maintenance equipment; and inadequate financial controls, management information systems and operational procedures.

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<sup>1</sup> The Ministry was subsequently given additional responsibilities for Physical Planning, Natural Resources and Environment and was renamed Ministry of Communications, Works, Public Utilities, Posts, Physical Planning, Natural Resources and Environment.

<sup>2</sup> The IRI gives an objective appreciation of the actual road roughness experienced by a vehicle driver and occupants of a vehicle as the vehicle moves along a road surface at speeds between 30 km/h and 100 km/h.

## **EVALUATION OF PERFORMANCE AND OVERALL ASSESSMENT**

### **Overall Assessment**

2.06 The overall project performance rating is *Satisfactory*. The project achieved the objective of improving the efficiency of road transport in Nevis.

### **Relevance**

2.07 The relevance criterion of the project has been assessed as *Highly Satisfactory*. The project is consistent with GOSKN's strategic objective of providing improved economic infrastructure in support of economic and social development and with CDB's strategic objective of fostering more rapid growth in its Borrowing Member Countries (BMCs).

### **Effectiveness**

2.08 The project is assessed as being *Highly Satisfactory*, in terms of efficacy, on the basis that the expected outcomes have largely been achieved. The efficiency of road transport in Nevis has been improved. The institutional strengthening component has not fully achieved the objectives expected at appraisal, but has achieved some success.

### **Efficiency**

2.09 The cost efficiency criterion of the project has been assessed as *Satisfactory*. Total project costs are estimated at \$55.1 mn, which was approximately \$4.1 mn or 8 per cent (%) higher than the revised project costs. The major benefits associated with the improved road network were the expected savings in VOC and travel time savings. At appraisal, the Economic Rate of Return (ERR) of the project was calculated using the Highway Design and Maintenance Standard Model (HDM-III) to be 29%. The ERR for the revised project was estimated at 14%. The post-completion ERR, based on post-construction traffic volumes, was calculated at 22%.

### **Institutional Development Impact**

2.10 The institutional development impact of the project has been rated as *Marginally Unsatisfactory*. There has been some improvement in the capacity of PWD to carry out effective road and bridge maintenance in Nevis as a result of the institutional strengthening component of the project, but not to the extent anticipated when the project was formulated. While additional staff was recruited, there is no evidence that staff of PWD were provided with the recommended technical training on road maintenance.

### **Sustainability**

2.11 The sustainability criterion of the project has been assessed as *Marginally Unsatisfactory*. The major concern about the sustainability of the project is that a road maintenance management system has not been implemented. As a consequence, a section of the Island Main Road that was reconstructed under the project has not been adequately maintained.

## **OTHER ASSESSMENTS**

### **Socio-economic Impact**

2.12 A social impact assessment of the project was not undertaken as part of the validation but, based on formal and informal interviews with stakeholders, the project is assessed as having made a positive contribution to economic and social development in Nevis.

### **Environmental Impact**

2.13 An assessment of the environmental outcomes of the project was not undertaken as part of the validation exercise but discussions were held with representatives of NIA; the consulting engineers; and the contractor on the environmental impact of the project. A major issue during the construction phase was the nuisance of atmospheric dust. The absence of monitoring data would have precluded a structured assessment of the extent and severity of the impact on affected communities, but dust generated during construction was cited as having had an adverse impact on some communities for several months.

### **Performance of CDB**

2.14 The performance of CDB is assessed as *Satisfactory*. The quality of project appraisal was basically sound but the estimated cost of the road works was way below the bid prices received from the prequalified contractors that submitted tenders. The revised project costs, which were based on actual costs (contracts that had already been entered into by NIA; and detailed estimates prepared by consultants for similar reconstruction projects in other BMCs) were much closer to the final project cost. The time and cost associated with land acquisition and relocating utilities were also underestimated. CDB staff should also have worked more closely with the EA to ensure that the overall project was successfully implemented, given the institutional weaknesses of PWD. There is little evidence to suggest that the Bank actively monitored the implementation of Phase 1 of the project.

### **Performance of the Borrower**

2.15 The Borrower's performance is assessed as *Satisfactory*. The Borrower was not directly involved in the implementation of the project as this was the responsibility of NIA. However, the Borrower gave its full support to the implementation of the project.

### **Performance of Executing Agency**

2.16 The performance of the EA is assessed as *Marginally Unsatisfactory*. NIA was unable to acquire the lands required for the project or make arrangements, satisfactory to CDB, for entry into possession of such lands for the purposes of the project in a timely manner. NIA has not complied with all of the loan conditions. In particular, it has not furnished the Bank with a Project Completion Report (PCR) or annual reports listing the costs of the roads maintained by PWD and detailing PWD's maintenance programmes.

### **Performance of the Contractors**

2.17 The overall performance of the contractor for Phase 2 is assessed by the evaluation team as being *Marginally Unsatisfactory*. The evaluation team was unable to fully assess the performance of the contractor for Phase 1 of the project because NIA was unable to locate the relevant files. The contract period for the completion of Phase 1 was January to October 2001. However, construction was not actually completed until April 2002. In addition, a condition survey of the roadworks under Phase 1 found that the quality of the construction work on some sections of the project road was sub-standard. The

visual condition survey of Phase 2 of the project found the road section to be mainly in a good condition, with the exception of occasional distressed areas which were in need of some maintenance and the clearance of drainage systems. However, the Contractor was assessed to have not followed the work process specified in the contract documents; and dust caused by the road works was a major health hazard during project implementation.

### **Performance of the Consulting Engineers**

2.18 The overall performance of the consulting engineers was assessed by the evaluation team as *Marginally Unsatisfactory*. Evidence suggests that some of the designs produced by the consulting engineers were inappropriate for the amount of rainfall in Nevis; more complete construction details should have been provided to the contractor; and the soil investigation method used for the design of the road and bridges was not appropriate for the entire length of the road. In addition, the estimated cost of the road reconstruction component of the project was also grossly underestimated; the consultants performed poorly in addressing the failure of the contractor to adequately water the road during project implementation; and did not fully comply with the requirements of the consultancy to strengthen the institutional capabilities of PWD.

**TABLE 1: SUMMARY RATINGS OF CORE EVALUATION CRITERIA AND OVERALL ASSESSMENT OF PROJECT**

<b>Criteria</b>	<b>Score</b>	<b>Rating</b>
Relevance	4	Highly Satisfactory
Effectiveness	4	Highly Satisfactory
Efficiency	3	Satisfactory
Sustainability	2	Marginally Unsatisfactory
<b>Overall Assessment</b>	<b>3.25</b>	<b>Satisfactory</b>
Borrower Performance	-	Satisfactory
EA Performance	-	Marginally Unsatisfactory
Contractor Performance	-	Marginally Unsatisfactory
Consulting Engineers' Performance	-	Marginally Unsatisfactory
<b>CDB Performance</b>	-	Satisfactory

### **LESSONS**

- (a) CDB must adopt a more rigorous approach in respect of project cost estimates.
- (b) Utility companies must be fully involved in the design of road projects, including deriving estimates of the time and cost of relocating utilities.
- (c) The initiation of land acquisition and relocation activities should be undertaken in advance of Board presentation to reduce delays in the satisfaction of conditions precedent and overall project implementation.
- (d) CDB needs to pay greater attention ensuring EA's compliance with reporting requirements.
- (e) Local conditions must be factored in road designs. The passage of Tropical Storm Cindy in 1999 exposed a number of weaknesses in the design of some culverts along long lengths of the Island Main Road.



- (f) An effective monitoring mechanism is critical to ensuring that mitigation measures that are stipulated in construction contracts are actually followed, such as measures to mitigate the amount of dust caused by the road works.

### **RECOMMENDATIONS**

- (a) NIA needs to adequately provide for annual expenditure on road maintenance.
- (b) PWD should develop a pavement repair/reconstruction schedule to arrest the progressive failure of the road pavement.
- (c) NIA also needs to improve the monitoring of annual expenditure on road maintenance.
- (d) NIA should adhere to a transparent procurement policy so that contracts are awarded on the basis of competitive bidding. Consideration should be given to establishing a tenders committee for contracts above a certain size.
- (e) CDB supervision of projects should include project components not funded by CDB but which may impact project outcomes.
- (f) Monitoring and evaluation (M&E) should be an integral part of project design. The inclusion of M&E frameworks in project documents will facilitate the reporting of relevant project data and serve to inform stakeholders during project implementation.

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## MANAGEMENT RESPONSE

1.01 The independent evaluation function is invaluable in providing the Caribbean Development Bank (CDB) with an objective assessment of the impact of its interventions in its Borrowing Member Countries (BMCs). The findings of independent evaluations can normally be used by CDB to enhance its development effectiveness by learning from its past experience. Management recognises the need for the evaluation function to maintain its independence.

1.02 Many of the lessons arising from the implementation of the Road Improvement and Maintenance Project, Nevis, have already been incorporated into the Bank's processes. At original appraisal, the Project encompassed the entire 18 kilometre stretch of road from Newcastle to Market Shop. However, it is now clear that at the time of the Additional Loan the Project should have been re-scoped to remove the section from Newcastle to Cotton Ground (Phase 1) for the following reasons:

- (a) Phase 1 construction works had already commenced utilising a finance/design/construct contract which greatly reduced the level of oversight provided by Nevis Island Administration (NIA).
- (b) CDB had no input into the procurement process used for the selection of the contractor.
- (c) Absence of independent consulting engineers to verify the quality of the construction and compliance with the design standards.

1.03 Generally, Management notes the contents of the Report presented. The specific responses provided below are restricted to the areas highlighted in the "Lessons" and "Recommendations" Sections of the Executive Summary of the Ex-Post Evaluation Report and the references reflect the numbering in the Executive Summary.

CONSULTANTS' LESSONS AND RECOMMENDATIONS	MANAGEMENT RESPONSE
<b>1.1 LESSONS</b>	
(a) <b>Paragraph 28:</b> CDB has adopted a more rigorous approach in respect of project cost estimates than when this particular project was appraised in 1997. It now requires, where practical, engineering designs to be fully developed with detailed cost estimates prior to project appraisal. This reduces the likelihood of there being significant variances between bid prices for contracts and appraisal estimates.	Noted.

CONSULTANTS' LESSONS AND RECOMMENDATIONS	MANAGEMENT RESPONSE
<p>(b) <b>Paragraph 29:</b> The consulting engineers reported that NIA was not provided with an optimal design for the project because of funding constraints. The consultants pointed out that there were insufficient funds within the project to carry out all the works which would ideally be carried out to relocate the four utilities. CDB recognises the need for utility companies to be fully involved in the design of road projects that require the relocation of utilities. At appraisal, greater attention is now given to the time and cost of relocating utilities as well as to financing the cost.</p>	<p>Noted. Projects are assessed for providing the least cost solution to achieving the project objectives and not the optimal "technical" design. Management accepts that utilities should be included as stakeholders within the design process and that the cost of utility relocation should be included within the project costs. CDB now requires consultation with all utility providers at the time of appraisal and the inclusion of representatives of relevant utilities within the Project Steering Committee for the project.</p>
<p>(c) <b>Paragraph 30:</b> CDB actively encourages the initiation of land acquisition and relocation activities to be undertaken in advance of Board presentation. In practice, these activities are not completed prior to Board presentation so there is need for conditions precedent to first disbursement of loans in Loan Agreements in respect of land acquisition and the relocation of persons for the purposes of road projects. Delays in satisfaction of such conditions precedent have traditionally delayed the implementation of many road projects.</p>	<p>The condition precedent to first disbursement of this loan required that the Bank be "furnished with evidence satisfactory to it that the EA has acquired the lands required for the Project, or has made arrangements satisfactory to the Bank, for entering into possession of such lands for the purpose of the Project". Documentation satisfying this requirement was submitted to the Bank. This form of condition provides the necessary legal coverage for the contractor to take possession of the site and commence work.</p>
<p>(d) <b>Paragraph 31:</b> In assessing the performance of the EA it was noted that it had not fully complied with all of the loan conditions of the Loan Agreement, particularly those in respect of the reporting requirements. As a consequence, it has not been possible to accurately ascertain the total investment cost of the project. CDB should have utilised more leverage during project implementation to elicit greater compliance by the EA in submitting the requisite reports and should do so if a similar occurrence obtains in other projects.</p>	<p>Noted. Management acknowledges that the reporting requirements under this project were not fully complied with during implementation. The lack of capacity within Project Management and the line ministry of NIA is part of the reason for this. In recognition of this deficiency the ongoing Nevis Water Supply Enhancement Project includes a dedicated Project Implementation Unit which has led to improved reporting.</p>
<p>(e) <b>Paragraph 32:</b> Local knowledge is often absent from road designs. The evaluation team were advised that more water settled on some properties after completion of the</p>	<p>The weather event referenced pre-dates the construction of both Phases of the IMR and its relevance is thus unclear.</p>

CONSULTANTS' LESSONS AND RECOMMENDATIONS	MANAGEMENT RESPONSE
<p>reconstruction of the project road. The passage of Tropical Storm Cindy in 1999 exposed a number of weaknesses in the design of outlets and some culverts as there was extensive flooding due to the absence of proper drainage along long lengths of the Island Main Road. It does not appear that design amendments under the project or by work subsequently undertaken by the Public Works Department (PWD) have adequately addressed the drainage problems.</p>	<p>Drainage infrastructure for Phase 2 was designed to provide adequate capacity and this may have contributed to the better wearing condition of the CDB-financed Phase 2 sections compared to Phase 1 sections.</p> <p>The Nelson Springs section referenced in the report, constructed under the NIA-financed Phase 1 of the project, had been identified at the time of project appraisal as "wetlands", requiring special procedures during construction to maintain the integrity of the wetland drainage basin. Under normal circumstances this would have been supervised by CDB staff, however, in this case there was no opportunity for CDB oversight under Phase 1.</p>
<p>(f) <b>Paragraph 33:</b> The project demonstrates that it is important for there to be an effective monitoring mechanism to ensure that mitigation measures that are stipulated in construction contracts are actually followed. The contractor for Phase 2 did not adequately address the dust problem caused by the road construction which created a health hazard for communities. The contractor had a contractual obligation to mitigate the amount of dust caused by the road works by watering the road but did not fulfil this responsibility. The consulting engineers reportedly held meetings with the Minister of Works and the Premier of Nevis to address the dust problem because it was such a major environmental issue during project implementation. The consulting engineers should actually have taken action to ensure that the contractor complied with this condition of the contract.</p>	<p>Management accepts this recommendation. In more recent times CDB staff, during the course of supervision, actively engage consultant, contractor and EA to ensure that appropriate environmental mitigation measures are undertaken.</p>

CONSULTANTS' LESSONS AND RECOMMENDATIONS	MANAGEMENT RESPONSE
<b>1.2 RECOMMENDATIONS</b>	
<p>(a) <b>Paragraph 34:</b> The condition of the pavement of the Island Main Road is poor on sections of the reconstructed road, particularly in the Nelson Spring area (Phase 1). It is recommended that PWD develop a pavement repair/reconstruction schedule to arrest the progressive failure of the road pavement. Most importantly, NIA needs to allocate adequate funds annually to meet the cost of a proper road maintenance schedule. The NIA also needs to keep better records on how much is spent annually on road maintenance.</p>	<p>Management notes the recommendation. The Bank has been concerned for some time about the sustainability of infrastructure built in its BMCs, especially as it relates to roads. To address this problem the Bank has engaged BMCs at all levels with a view to assisting with the efficient utilisation of funds allocated to maintenance. This is even more critical in the context of fiscal challenges which impact the maintenance allocations. BMC Government officials have been exposed to the latest approaches in maintenance through a series of CDB-sponsored workshops with leading experts. In addition, CDB has sponsored the participation of representatives from BMC line ministries at International Road Federation specialised technical workshops in Performance-Based Contracting (PBC). The "Action Plans" developed could form the basis of at least two BMCs "piloting" the PBC approach for road maintenance.</p>
<p>(b) <b>Paragraph 35:</b> The NIA should adhere to a transparent procurement policy so that contracts are awarded on the basis of competitive bidding. Consideration should be given to establishing a tenders committee for contracts above a certain size.</p>	<p>Procurement of all components financed with CDB resources was undertaken in accordance with CDB's Guidelines for Procurement. With respect to components not financed by CDB resources (Phase 1), NIA's procurement arrangements would have been applicable.</p> <p>The Financial Instructions and the Stores Rules for St. Kitts &amp; Nevis provide for the establishment of a Central Tenders Board responsible for awarding contracts. However, this Board has not been established as a permanent body. In Nevis, the oversight responsibility for procurement, including supervision, monitoring and control, is exercised by Ministry of Finance. Government is in the process of drafting a new Financial and Procurement Act.</p>

<b>CONSULTANTS' LESSONS AND RECOMMENDATIONS</b>	<b>MANAGEMENT RESPONSE</b>
<p>(c) <b>Paragraph 36:</b> CDB supervision of projects should include project components not funded by CDB but which may impact on project outcomes. Monitoring and evaluation should be an integral part of project design. The inclusion of monitoring and evaluation frameworks in project documents will facilitate the reporting of relevant project data and serve to inform stakeholders during project implementation</p>	<p>It is the norm for all components of a CDB-financed Project to be supervised by staff of the Bank. The inclusion of a Results Monitoring Framework is now a requirement for all CDB-financed projects.</p>