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PROJECT PERFORMANCE ASSESSMENT REPORT

NICARAGUA

SECOND ROAD REHABILITATION AND MAINTENANCE PROJECT

(CREDIT 3085-NI)

June 4, 2007

Sector, Thematic and Global Evaluations
Independent Evaluation Group

Currency Equivalents (annual averages)

Currency Unit = Córdoba (C$)

1998	US$1.00	C$09.99
1999	US$1.00	C$11.12
2000	US$1.00	C$12.40
2001	US$1.00	C$12.90
2002	US$1.00	C$13.76
2003	US$1.00	C$14.57

Abbreviations and Acronyms

COERCO	Regional Highway Construction Agencies
COV	Costo Operativo Vehicular (Vehicle Operating Cost)
DANIDA	Danish International Development Agency
DGP	Dirección General de Planificación (Planning Directorate)
DGTT	Dirección General de Transporte Terrestre (Road Transport Directorate)
DGV	Dirección General de Vialidad (Highway Directorate)
DRA	Directorate of Road Maintenance
ERR	Economic Rate of Return
FOMAV	Fondo de Mantenimiento Vial (Road Maintenance Fund)
GoN	Government of Nicaragua
HDM	Highway Development and Management Model
ICR	Implementation Completion Report
ICB	International Competitive Bidding
IDA	International Development Association
IDB	Inter-American Development Bank
IEG	Independent Evaluation Group
IRI	International Road Roughness Index
MCTE	Emergency Relief Community Module
MCTI	Earthquake Relief Community Module
MCTT	Flood Relief Module
MTI	Ministry of Transport and Infrastructure
NMT	Non-motorized Transportation
NPV	Net Present Value
PAD	Project Appraisal Document
PCU	Project Coordinating Unit
PMS	Pavement Management System
PPAR	Project Performance Assessment Report
RED	Road Economic Decision Model
RMF	Road Maintenance Fund
SIAF	Integrated Financial Administration System
TPDA	Tráfico Promedio Diario Annual (Average Annual Daily Traffic - AADT)
UA	Unidad Ambiental (Environmental Unit)

Fiscal Year

Government: January 1 to December 31

Director-General, Independent Evaluation	:	Mr. Vinod Thomas
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IEGWB Mission: Enhancing development effectiveness through excellence and independence in evaluation.

About this Report

The Independent Evaluation Group assesses the programs and activities of the World Bank for two purposes: first, to ensure the integrity of the Bank's self-evaluation process and to verify that the Bank's work is producing the expected results, and second, to help develop improved directions, policies, and procedures through the dissemination of lessons drawn from experience. As part of this work, IEGWB annually assesses about 25 percent of the Bank's lending operations through field work. In selecting operations for assessment, preference is given to those that are innovative, large, or complex; those that are relevant to upcoming studies or country evaluations; those for which Executive Directors or Bank management have requested assessments; and those that are likely to generate important lessons.

To prepare a Project Performance Assessment Report (PPAR), IEGWB staff examine project files and other documents, interview operational staff, visit the borrowing country to discuss the operation with the government, and other in-country stakeholders, and interview Bank staff and other donor agency staff both at headquarters and in local offices as appropriate.

Each PPAR is subject to internal IEGWB peer review, Panel review, and management approval. Once cleared internally, the PPAR is commented on by the responsible Bank department. IEGWB incorporates the comments as relevant. The completed PPAR is then sent to the borrower for review; the borrowers' comments are attached to the document that is sent to the Bank's Board of Executive Directors. After an assessment report has been sent to the Board, it is disclosed to the public.

About the IEGWB Rating System

IEGWB's use of multiple evaluation methods offers both rigor and a necessary level of flexibility to adapt to lending instrument, project design, or sectoral approach. IEGWB evaluators all apply the same basic method to arrive at their project ratings. Following is the definition and rating scale used for each evaluation criterion (additional information is available on the IEGWB website: http://worldbank.org/ieg).

Outcome: The extent to which the operation's major relevant objectives were achieved, or are expected to be achieved, efficiently. The rating has three dimensions: relevance, efficacy, and efficiency. *Relevance* includes relevance of objectives and relevance of design. Relevance of objectives is the extent to which the project's objectives are consistent with the country's current development priorities and with current Bank country and sectoral assistance strategies and corporate goals (expressed in Poverty Reduction Strategy Papers, Country Assistance Strategies, Sector Strategy Papers, Operational Policies). Relevance of design is the extent to which the project's design is consistent with the stated objectives. *Efficacy* is the extent to which the project's objectives were achieved, or are expected to be achieved, taking into account their relative importance. *Efficiency* is the extent to which the project achieved, or is expected to achieve, a return higher than the opportunity cost of capital and benefits at least cost compared to alternatives. The efficiency dimension generally is not applied to adjustment operations. *Possible ratings for Outcome:* Highly Satisfactory, Satisfactory, Moderately Satisfactory, Moderately Unsatisfactory, Unsatisfactory, Highly Unsatisfactory.

Risk to Development Outcome: The risk, at the time of evaluation, that development outcomes (or expected outcomes) will not be maintained (or realized). *Possible ratings for Risk to Development Outcome:* High Significant, Moderate, Negligible to Low, Not Evaluable.

Bank Performance: The extent to which services provided by the Bank ensured quality at entry of the operation and supported effective implementation through appropriate supervision (including ensuring adequate transition arrangements for regular operation of supported activities after loan/credit closing, toward the achievement of development outcomes. The rating has two dimensions: quality at entry and quality of supervision. *Possible ratings for Bank Performance:* Highly Satisfactory, Satisfactory, Moderately Satisfactory, Moderately Unsatisfactory, Unsatisfactory, Highly Unsatisfactory.

Borrower Performance: The extent to which the borrower (including the government and implementing agency or agencies) ensured quality of preparation and implementation, and complied with covenants and agreements, toward the achievement of development outcomes. The rating has two dimensions: government performance and implementing agency(ies) performance. *Possible ratings for Borrower Performance:* Highly Satisfactory, Satisfactory, Moderately Satisfactory, Moderately Unsatisfactory, Unsatisfactory, Highly Unsatisfactory.

Contents

This report was prepared by Cesar Queiroz (consultant), who assessed the project in December 2006. The task manager was Peter Freeman and Romayne Pereira provided administrative support.

Principal Ratings

	*ICR**	*ICR Review**	*PPAR*
Outcome	Highly Satisfactory	Highly Satisfactory	Highly Satisfactory
Institutional Development Impact**	High	Substantial	———
Risk to Development Outcome	———	———	Negligible to Low
Sustainability***	Highly Likely	Likely	———
Bank Performance	Highly Satisfactory	Highly Satisfactory	Highly Satisfactory
Borrower Performance	Highly Satisfactory	Highly Satisfactory	Highly Satisfactory

* The Implementation Completion Report (ICR) is a self-evaluation by the responsible Bank department. The ICR Review is an intermediate IEGWB product that seeks to independently verify the findings of the ICR.
**As of July 1, 2006, Institutional Development Impact is assessed as part of the Outcome rating.
***As of July 1, 2006, Sustainability has been replaced by Risk to Development Outcome. As the scales are different, the ratings are not directly comparable.

Key Staff Responsible

Project	*Task Manager/Leader*	*Division Chief/ Sector Director*	*Country Director*
Appraisal	Emmanuel Jones	Jeffrey Guttman	Jane Armitage
Completion	Emmanuel Jones	José Luis Irigoyen	D-M Dowsett-Coirolo

Preface

This is a Project Performance Assessment Report (PPAR) for the **Nicaragua: Second Road Rehabilitation and Maintenance Project** (Cr. 3085-NI), for which the World Bank approved a credit in an amount of US$47.4 million equivalent on June 4, 1998. The credit was closed fully disbursed on June 24, 2005, two years later than planned.

The project was selected for assessment because of the innovative stabilization technique introduced for rural roads and to verify the positive ratings for the project given in the Implementation Completion Report (ICR).

The report is based on a review of project documents, including the ICR, Staff Appraisal Report (SAR), Memorandum to the President, the Credit Agreement (and its revision) and project files, as well as on discussions with Bank staff involved in the project. An IEG mission visited Nicaragua in December 2006 to review project results and met with some 40 persons including national and local officials, transport experts, local residents, and project staff. The IEG mission made field visits to the project sites—the road to the airport, to El Rama, and the rehabilitation projects in Masaya, and reviewed on site the project results. The visits also gave the mission the opportunity to engage directly with final beneficiaries of the project under review.

IEG appreciates the courtesies and attention and the excellent planning and logistical support received from the Ministry of Transport and Infrastructure, and its Project Coordination Unit, as well as the Bank's country office in Managua. The cooperation of the General Directorates for Planning, and Environmental Management; the Road Maintenance Fund; the National Port Agency; El Rama Port Administration; the Embassy of Denmark; National Engineering University; consultants and contractors is also acknowledged.

Following standard IEG procedures, copies of the draft PPAR was sent to government officials and agencies for their review and comments. Comments received have been taken into account in the text and are attached as Annex B.

Summary

This is the Project Performance Assessment Report (PPAR) for the Nicaraguan Second Road Rehabilitation and Maintenance Project (Cr. 3085-NI), approved in 1998. Project implementation took place in extraordinary circumstances in the aftermath of civil and political unrest and three environmental disasters: Hurricane Mitch, an earthquake in Masaya, and a drought in Las Segovias.

The roads after these disasters were in a dire state—only 10 percent were in good to fair condition and only about half were open to traffic throughout the year. This poor road condition had also been exacerbated by the decline in the economy; the GDP was lower in 1996 than it had been a decade earlier. But in 1997, the new Government of Nicaragua (GoN) expressed a strong desire to restore the entire road network to a condition conducive to supporting economic growth, and at the same time to be financially sustainable, foster greater social cohesion, and develop the private sector.

The project objectives were thus relevant to improve both the road network and the institutions responsible for it. Soon after Board approval Hurricane Mitch struck and an additional development objective was added together with a reallocation of some credit funds to restore the damaged roads. For this, and the other objectives, the design was flexibly adapted to improve the sector implementation capacity through institutional restructuring and development, improved road management systems, and a financing mechanism for road maintenance built around private sector service delivery. The project provided for maintenance and rehabilitation of over 600 km of roads; the rebuilding and widening of the highly used main highway from the capital Managua to the international airport, which included a major interchange and supported traffic safety measures and environmental studies important to future project designs.

The project investments materially improved the condition of sections of the main roads, enabled a reduction in the extent of formerly impassable roads and introduced a new low cost technology for secondary roads previously used only on some urban streets; the ERRs were high and there were numerous beneficiaries. A pavement management system and road data bank were set up, norms and standards for road works were established, gender and employment factors were taken into account and a strong university training program for highway specialists was assisted. The project's monitoring and evaluation system enabled adequate monitoring of project and sector outputs and over the longer term the improved road data system has the potential for tracking future results.

The outcome of the Second Road Rehabilitation and Maintenance project (Cr3085) is rated **highly satisfactory**. The project achieved its objectives with no serious shortcomings, despite the extremely difficult circumstances surrounding implementation. Given the redesigned financing mechanism to ensure sufficient funding for roads, and particular care for environmental safeguards, the risk to the development outcome is rated **low**. Bank performance is rated **highly satisfactory**, due to strong project preparation, design and supervision as well as responsiveness to a series of natural disasters. Borrower performance is also rated **highly satisfactory**, for its strong commitment and the very good implementation of the project in a difficult environment.

This project shows evidence of a particularly positive working relationship between the Bank and the borrower. An important part of this partnership was the close, effective and consultative interaction throughout the project. The GoN, supported by IDA, established a project coordination unit, which demonstrated evolving confidence and ability at donor coordination.

The task team leader encouraged government professionals to introduce a successful experiment using adoquines stabilization (a special kind of manufactured paving stone). This innovative pilot scheme proved to be a more cost-effective and durable solution than conventional asphalt to improve rural accessibility and reduce vehicle operating costs with minimal environmental impact. It also proved to be an effective poverty reduction instrument as it provided employment and income to the rural poor.

Both the Bank and the borrower attached great importance to community participation. Social inclusion was an essential element to improve the effectiveness of the road administration and acceptance of budget constrained multi-year road programs. Micro enterprises and outsourced periodic maintenance, backed by a new law on road maintenance funding, proved highly successful. The new strategy will lead to the gradual replacement of the old inefficient departmental labor service delivery method. There was a strong training and institutional development program, carried out concurrently with the road works, which strengthened the capabilities of several directorates in the transport ministry in all aspects of planning and programming. Experience with this project highlights the following lessons:

- A combination of strong borrower commitment to attain agreed development objectives, coupled with innovation and a flexible approach, can lead to a successful project outcome despite the occurrence of a natural disaster.

- In highly vulnerable countries road system planning that better accounts for disaster eventualities needs to be promoted.

- A participatory approach supported by capacity strengthening initiatives can be highly successful in developing a new and evolving road management organization.

- Transforming a country's road administration is a gradual process and needs to be customized to the particular culture and circumstances prevailing in the country to be truly successful.

- The experience with the use of the pilot adoquines (manufactured paving stones) road sections shows that this technical solution can be highly cost-effective with unexpected benefits for employment and socioeconomic welfare. Its use should be further promoted and replicated.

Vinod Thomas
Director-General
Evaluation

1. Background and Context

1.1 When the project preparation started, Nicaragua was recovering from a long period of civil conflict. The country's GDP was less in 1998 (at just over US$400 per capita) than it was in 1986. Infrastructure had been neglected for a long period not only because of the conflict, but also because of insufficient funding due to fiscal crises and the lack of a maintenance culture. There was no private sector to deliver road sector services to the road administration; everything was carried out by state-run labor construction units. The country's road network on which the transport of goods and passengers relies was unable to support economic recovery and ensure social cohesion. Nicaragua's 17,000 km road network was in an appalling condition—in 1998 only 10 percent was classified in "good condition". The new government, which came to office in 1997, expressed a strong desire to develop the private sector and restore the entire road network into a condition that could support economic growth and be financially sustainable.

1.2 The project was and still is consistent with the Country Assistance Strategy (CAS) objectives, one of which is to improve the country's basic infrastructure as an essential component of broader private sector development to improve competitiveness. These priorities were emphasized in the 1998 Public Investment Review (16748-NI), which specifically mentions the Managua - El Rama road to the Atlantic Region and to the port at El Rama, and via Escondido River to the port at Bluefields at the Atlantic coast. The Atlantic ports are important because most of Nicaragua's exports go to the Atlantic side. The alternative is to use ports in Costa Rica or Honduras, but they have relatively poor road access and are distant and expensive. The rehabilitation of Managua El Rama road was divided among three donors: IDA funded the segment between Managua - San Benito (under the 2nd Road Rehabilitation and Maintenance Project), and Muhan - El Rama (completed under the 3rd Road Rehabilitation and Maintenance Project), the Danish International Development Agency (DANIDA) funded the San Benito-San Lorenzo segment, and the Inter-American Development Bank (IDB) the San Lorenzo–Muhan segment.

1.3 The Atlantic Region is also significant because of its indigenous population and a high degree of unemployment and poverty—improved road access strengthens support for economic development. The region is environmentally vulnerable and requires a sensitive approach to any infrastructure construction or improvement. Thus, there needs to be coordination of infrastructure improvements with environmental protection and management, taking into account the welfare of the indigenous people.

1.4 A single improved road would obviously have been insufficient to support broad-based economic growth. A more comprehensive approach was therefore agreed to improve roads throughout the country and to strengthen both the Ministry of Transport and Infrastructure (MTI) and the road maintenance financing mechanisms, so that they could better respond to the needs of the sector. The project was forward-looking in its approach, and its coverage extended beyond the road sector. In particular, the safeguard issues benefited from the project's cross-sectional cooperation as will be discussed later. The final important contextual matter is Hurricane Mitch, which hit Nicaragua just before

the start of project implementation and ravaged already deteriorated roads; the damage was compounded by an earthquake in the Masaya region and a drought in Las Segovias, in Northwest Nicaragua. Most of the roads were destroyed.

1.5 Consequently, a new development objective was added to the project and a sum of money was reallocated for emergency repairs of important roads in Northwest Nicaragua and the Masaya region (approved by the Board). While the urgent response was well-intentioned it is important to take note of the conclusions of the recent IEG report on natural disasters, which shows that such rebuilding needs to take into account the fact that recurrent natural events are eminently foreseeable. The frequent flaw in simply replacing what was destroyed is that the next disaster will doubtless have a similar effect (neighboring Honduras is a good example of this). Thought needs to be given about how to mitigate future recurrences through more appropriate designs and infrastructure location and a strategy for disaster preparedness is essential. Nicaragua is the 18th most disaster prone country in the world[1] so it is not a matter of whether there will be another disaster, but when it will occur.

2. Project

Objectives

2.1 The overarching development objective of the project was: *to improve the efficiency of road transportation in Nicaragua.* The full objectives and components are given in Box 1. The project objectives were relevant and appropriate, and remain so today. The road from Managua to El Rama and to the Atlantic port is of key importance to improving the efficiency of road transport in Nicaragua, because the great majority of Nicaragua's exports and imports go to the Atlantic coast, and because it also serves substantial traffic volumes to the international airport. It also improves access to an impoverished and isolated region.

2.2 The second objective of improving road management, (especially road maintenance and its delivery through the private sector) is also an important objective in a country, which has neglected maintenance for years and lost its "know-how" in this field. Furthermore, previous policy priorities led to the decimation of the capacity for private provision of infrastructure services. The third objective, strengthening the sector institutions and maintenance financing, is central to spending the road budget efficiently and in the right places. The studies were relevant and focused on issues of critical importance for domestic capacity development and future Bank involvement in the road sector.

2.3 Finally, the fourth objective of restoring roads damaged by Hurricane Mitch, subsequently aggravated by the earthquake in the Masaya region and the drought in Las

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1. Among countries that borrow from the World Bank that are subject to two or more hazards: *Hazards of Nature, Risks to Development* 2006. Washington DC: for a fuller discussion see also *Natural Disaster Hotspots: A Global Risk Analysis.* 2005. Washington DC, World Bank

Segovias, was a timely emergency measure that well-supported the incipient economic recovery; the stream of benefits from addressing this objective continues today. Although it may still be vulnerable to some degree in the next disaster, instead of using asphalt the design called for adoquins (small hexagonal cement blocks) to be used. Since they are highly durable it will be important to assess their performance in the next severe storm. Overall, the relevance of the objectives is rated high.

Box 1. Summary of Project Objectives and Components[2]

Second road rehabilitation and maintenance project (Cr.3085)	
Objectives	**Components *(with costs in US million)***
To improve the efficiency of road transportation in Nicaragua; To improve the management and implementation capacity in the sector; To strengthen MTI's planning and programming capacity; and To restore roads damaged by Hurricane Mitch. (As part of an emergency program). [The last objective was added after the initial Board approval, but was also approved by the Board].	Rehabilitation of sections of Managua - El Rama road, about 120 km: Managua - San Benito (incl. Managua Airport), and Muhan - El Rama. Appraisal estimate US$30.7m; actual US$14.9m (after restructuring). Muhan - El Rama section was postponed to the next credit and the difference (US$15m) was reallocated to the emergency program to the rehabilitation of important roads destroyed by the hurricane Mitch and the subsequent earthquake. [Other sections of the road were rehabilitated by DANIDA and IDB in parallel operations]. Road maintenance, including goods: (i) implementation of routine maintenance by expansion of the microenterprise component and by community organizations; and (ii) periodic maintenance by contract for about 600km of selected roads. Appraisal estimate US$11.8m; actual US$9.42m. Consultant services for institutional development, training, studies and technical assistance to: (i) prepare economically justified road programs; (ii) implement a pavement management system; (iii) establish and operate the Road Maintenance Fund (RMF); (iv) supervise the road works; (vi) staff training; and (vii) carry out road safety, road engineering, and a reforestation study. Appraisal estimate US$7.0m; actual US$8.2m. Emergency program to repair roads damaged by Hurricane Mitch. After restructuring US$17.6m; actual US$26.6m. US$15m from Muhan-El Rama section, the unallocated funds US$8.1m, and some funds from the road maintenance component also went to the emergency program. **Final cost:** US$48.19 m (appraised at US$47.4; the difference is due to SDR exchange rate changes). **Actual financing:** 82% IDA; 18% Govt.

Design and Implementation

2.4 Project components (Box 1) comprised investments to improve the main road to the airport and other important roads destroyed by the hurricane and other disasters. The linking of the project, through disbursement conditionality, to the Atlantic Biological Conservation project and inclusion of a reforestation study for environmental protection in the Atlantic region (and for the welfare of the indigenous people living there), was meaningful and proved to be important. It remains to be seen in practice to what extent the usage of cement blocks (adoquines stabilization, see Box 2) will provide roads that will be less prone to damage by natural disasters. The annual maintenance component was carried out by micro-enterprises (*microempresas*) or community organizations and created incentives for private employment. Periodic maintenance was contracted to the

2. The DCA (and the ICR) have slightly differently worded objectives from those in the PAD. The difference is not material. The first PAD objective is, in essence, Component 1 of the project; and the second objective in the DCA (and the ICR) is slightly more encompassing ("improve management and implementation capacity in the sector" instead of "management and implementation of road maintenance"). The wording from the DCA (and the ICR) is used.

private sector and enabled it to re-emerge, develop skills and grow. Both were designed to develop the private sector and train personnel in road maintenance.

BOX 2: A brief about the Adoquines Stabilization Pilot

"Adoquines stabilization", a domestic adaptation from an old European technology, is labor intensive and has proved to be durable even for relatively high traffic flows. Adoquines are multifaceted, precast cement concrete blocks that are juxtaposed as a continuum on an appropriately compacted, untreated granular base. Adoquines stabilization was used after Hurricane Mitch to cost-effectively restore 60 km of secondary and tertiary roads under the project with a US$4.6m pilot component.

The pilot proved to be more than a cost-effective solution to improve rural accessibility and reduce vehicle operating costs with minimal environmental impact because it also demonstrated it was an effective poverty reduction instrument as it provided employment and income for the rural poor. A beneficiary assessment showed significant unexpected benefits: increase in the utilization of health and educational facilities; improved health by eliminating road dust in the dry season and muddy or impassable road surfaces during the rainy season; provision of direct employment and, through the usage of local materials, development of local businesses; and fostering of social cohesion by involvement of the community in the decision-making process and project design.

Adoquines cost about one third of the asphalt pavement (US$70,000/km for a 6m wide road) and require limited maintenance. They can be constructed quickly and without major equipment because the technology is simple and the requisite skills can easily be acquired, and they can also be used for building houses or in other community projects. Engineering-wise the supervision costs are about half of the traditional asphalt or gravel road rehabilitation. The GoN is as a result of this project proposing to rehabilitate a further 1,100 km of roads with the adoquines stabilization method. (Nicaragua Poverty Assessment Report No. 20488-NI, World Bank, 2001).

2.5 Nicaragua's poverty reduction strategy was a direct beneficiary of the labor intensive adoquines stabilization of secondary and rural roads because it generated immediate short-term employment in the post disaster situation. The project's initiative in using adoquines resulted in multiple other benefits; it strengthened national private contractors, including the small businesses that provide the adoquines; it enabled a better quality of maintenance; made usage of local materials possible; it had important gender implications—every micro-enterprise has female workers—and, caused minimal environmental impact. These results were appreciated by the MTI and road users, and adopted beyond the project. The GoN has subsequently expanded the adoquines stabilization program, while more municipalities are also now using this method.

2.6 The acceptance of the concept of the micro-enterprises and their success in carrying out maintenance figured notably in the legislative effort to establish a road maintenance fund (RMF, FOMAV) that now provides stable funding for the maintenance of the roads through the RMF, a government entity reporting to MTI. This strategy

enables accountability in the usage of the road fund money, including transparency of financial transactions as well as the mico-enterprises' work output. The consultancy services were designed to support the restructuring of the road management function. It provided for experiential learning for both the GoN and the private sector. A reforestation study and the project's links to the concurrent studies relating to the safeguards of the environment and indigenous population strengthened not only this project but also subsequent road sector projects in Nicaragua. The emergency program to repair roads destroyed by the natural disasters was designed expeditiously, especially in the reallocation of the credit monies.

2.7 The existence of a project coordinating unit (PCU) within the MTI as a ministry staff function, not a separately organized stand-alone "PIU", was significant because the capacity and learning in the ministry was thereby strengthened considerably. The Bank's and the PCU's ability to engage communities to set priorities for the emergency program, the flexibility of the micro-enterprise system, and the revitalizing of the emerging private contractors were all ingredients that contributed to a meaningful and successful project design. Finally, the strategy of cooperation and parallel financing with IDB and DANIDA to complete the entire road's rehabilitation from Managua to El Rama was sound. Overall the relevance of design is high.

2.8 The rehabilitation and expansion of the highly trafficked Managua to San Benito road segment of the Managua-El Rama road, also serving the airport road, was strongly justified. The employment of a local engineering company in cooperation with an expatriate firm transferred invaluable skills because the road has several features not previously used in Nicaragua such as the country's first traffic interchange at Portezuelo which introduced the keystone method of building retaining walls. Traffic safety was also improved. The Muhan – El Rama segment which was transferred to the next project in order to provide monies for the alleviation of the destruction from the three disasters has now also been completed satisfactorily.

2.9 The road maintenance component was a multidimensional undertaking involving staff training; development of multiyear road program priorities using engineering-economy methods; deployment of private sector capacity for routine and periodic maintenance; development of a predictable funding source through the organization of the RMF, which can utilize funds from the users and the donor organizations; restructuring the regional road construction offices (COERCOs) to use contractors to carry out road rehabilitation works; and adopting a low cost new technology, adoquines stabilization, to pave low to medium volume roads and bring them into maintainable condition. The combining of multiple ideas was highly satisfactory in an environment where roads had experienced a long period of no maintenance and were damaged by the natural disasters.

2.10 There was a strong training and institutional development program, carried out concurrently with the road works, which strengthened the capabilities of several directorates in MTI in all aspects of planning and programming. The training programs covered project design and evaluation, environmental and social assessments, planning, programming, and management. A Nicaraguan university developed a program for staff members to complete a master's degree in engineering and transport planning; 23 persons

participated. In addition, several staff completed courses in the Highway Development and Management Model (HDM) and Road Economic Decision-making (RED) models. These activities have provided the MTI with competent staff who have appropriate project development, analysis and appraisal skills. Introduction of poverty assessments and environmental screening as part of project prioritization were additional new areas for developing MTI capacity. Under the project, MTI developed manuals of practice that covered the environmental and social aspects of road projects. Technical tools such as geographic information and pavement management systems and other instruments for transport planning, budgeting and financial management were also either developed or improved during project implementation.

2.11 A particular mention is appropriate of the reforestation study, which was carried out in an environmentally sensitive area near Bluefields in the Atlantic region. Because the access to the Atlantic coast is a crucial matter to Nicaragua, the study informed the Bank and the GoN of important environmental issues that must be carefully considered and weighed if an all-season road is built to Bluefields or another location at the Atlantic that might prove to be an advantageous location for a port. GoN has also subsequently carried out the recommendations of the reforestation study. A related technical assistance initiative was the strengthening and training of the environmental unit within MTI; as a result, all major investments in the sector now include an environmental evaluation. Previously, this was a weak area, with few staff, an inadequate budget and insufficient facilities. It was, moreover, not integrated into the project preparation and implementation cycle.

2.12 The road sector reconstruction through an emergency program was competently handled. The reconstruction program was formulated quickly and prioritized with the assistance of the affected communities after Hurricane Mitch. Traffic was restored rapidly in key corridors. Debris was removed; design and rebuilding of several bridges and extensive road rehabilitation took place on key main roads. Secondary roads essential to agricultural production and other activities were restored. Private companies and many community organizations participated in the execution of works generating substantial short-term employment.

Summary of Results

2.13 The project was cofinanced by the IDB, in parallel with DANIDA, and IDA as well as a contribution from the GoN, while the feasibility study for the improvements to the Managua-El Rama road was financed by DANIDA. The first and most trafficked section of the road, Managua to San Benito, a segment in the Inter-American road, was rehabilitated under the IDA-supported Second Road Rehabilitation and Maintenance Project (subject of the PPAR); San Benito (km 36) to San Lorenzo Bridge (km 114), was rehabilitated under a DANIDA grant; San Lorenzo to Muhan (km 210) under an IDB credit; and Muhan to El Rama (km 300), under the IDA-supported Third Road Rehabilitation and Maintenance Project. The entire road is now rehabilitated, save for completing pavement markings in the segment financed by IDB.

2.14 The Managua to San Benito section is in good condition and the grade separated interchange built at Portezuelo is performing well. This interchange also

improved traffic safety. The entire road from Managua to El Rama is now completed and in good condition. A truck weighing station at Chilamatillo helps control overloading. There are a few concerns, however. Routine maintenance on most of the road should be improved to prevent deterioration due to insufficient attention to unblocking drains and clearing vegetation. This deficiency has been identified by one of the donors, DANIDA, which has now mobilized grant funding for maintaining the San Benito-San Lorenzo section; the RMF also provides funding for routine maintenance of the other sections. Another aspect is bridge rehabilitation. Inspection of several bridges during the field visit showed longitudinal steel beams with a high degree of oxidation, deterioration of support rollers, and structural concrete in need of repair. A serious bridge failure was observed by the IEG mission between San Lorenzo and Muhan. In spite of these matters, which are now being diligently attended to, this major road is in general performing well, especially the section financed through the IDA credit.

2.15 In the road maintenance component, the goal was to maintain 600 km of road. Eleven new micro-enterprises were formed, serving slightly over 660 additional km per year. The micro-enterprises carry out timely cleaning of the roadway, the clearing and building of road drains, channeling of run-off water, the cleaning of bridges, the control of vegetation and the clearance of gutters and landslides—all of which are extremely important not only after a hurricane, but on a continuous basis. The micro-enterprise program employs 352 people; an important side benefit of the program in a poor country. Previously all periodic maintenance was carried out in Nicaragua by direct labor, the COERCO, so this concept was a major shift in philosophy. Furthermore, a segment of the Southern Highway was selected on a trial basis for periodic maintenance by a private contractor. After these works were concluded satisfactorily the concept of outsourcing such periodic maintenance became much more widespread.

2.16 The establishment of the RMF was an important outcome and there has been a noteworthy improvement in road financing and practice. Locally generated road funding started to become available in 2006, when a road fund law became effective. Funding is derived from a tax of US$0.08 per gallon of fuel, expected to increase to US$0.16 by 2009. RMF funding amounted to about US$8 million equivalent in the first three quarters of 2006. Funding for 2007 is estimated at US$24 million. Such funding from earmarked taxes for roads is additional to the regular budget of the MTI and its General Roads Directorate (DGV – Direccion General de Vialidad). The RMF funds micro-enterprises and contractors to undertake road maintenance. This practice, with adequate financial auditing, supported by road condition surveys, enables transparency and accountability.

2.17 The innovative adoquines stabilization and paving method, introduced on rural roads under the project, was positively assessed with regard to user acceptance, cost, employment generation, and use of local resources, environment, and durability. It has been observed by the IEG mission that even for five year old pavements on steep grades of up to 12 percent, this paving solution has been effective against erosion when the edges of the adoquin pavement are finished with cement concrete.

2.18 Institutionally, there were also several good results. (i) Establishment of a pavement management system and a road data bank, for monitoring about 2,000 km (or 25 percent of the main road network); (ii) preparation of norms and specifications for

road works (NIC-2000), effective in 2000; (iii) reduction of works awarded to the state enterprise COERCO (wholly owned by MTI) and increased awards of road work contracts to private enterprises (which has helped reduce MTI staff from 12,000 in the 1990s to its current level of 700); (iv) establishment of social norms to carry out resettlement, which were successfully applied on the Managua-San Benito road; (v) gender considerations in road works—all micro-enterprises include women on their staff (there is one enterprise totally comprised of women); (vi) construction of the first traffic interchange (formerly a highly congested and hazardous intersection on the Managua-San Benito road); and (vii) a strong training program, including a university program for highway specialists through the National University of Engineering.

Monitoring Indicators and Evaluation

2.19 The Logframe matrix for the project was a straightforward output listing for the project components as was standard at the time of the appraisal. A similar table was prepared for the emergency component during the project. These tables were useful for monitoring the progress in the project and to correct any deficiencies or fall-backs. However, for evaluating the results and outcomes of the project, the logframe matrix was insufficient by today's requirements. Fortunately, the project also developed a traffic and road data system for a large part of the road network. Although the natural disasters seriously affected the base case, available results from the road condition surveys suggest that the project outcomes are very good. Table 1 below shows that the condition of the paved roads that carry most of the traffic has improved substantially, and that also the overall network condition has improved.

Table 1: Condition of the Road Network

Type of surface	*Year*	*Kilometers*			
		Length	*Good*	*Fair*	*Bad*
Paved	1998	1,717	103	464	1,150
	2004	2,096	985	657	554
Unpaved-Trafficable	1998	7,152	418	1,936	4,798
All year	2004	9,033	78	1,610	7,345
Unpaved-Trafficable	1998	8,277	-	-	8,277
In dry season	2004	7,429	-	614	6,815
Total	**1998**	**17,146**	**521**	**2,400**	**14,225**
	2004	**18,658**	**1,063**	**2,881**	**14,714**

2.20 Traffic safety has improved in the project locations. For example, the interchange at Portezuelo not only reduced congestion and travel time in the vicinity, but also reduced accidents at the site despite significant increase in traffic volume. MTI statistics show an annual average of 11.8 accidents between 1997 and 2002, and 3.0 from 2004 to 2005.

2.21 The monitoring and evaluation (M&E) design was adequate to monitor progress, as noted above. Nevertheless, there were some difficulties. One of the project targets was to have 20 percent of the network in 'good' condition by 2001, without specifying what 'good' was. As it turned out, by the definitions employed in 2005, only 6 percent of the network was in good condition, but 21 percent was in good to fair condition—a reasonable achievement when most of the network was in poor condition at project commencement. The target of 20 percent in 'good' condition was nonetheless unrealistic given the frequency in Nicaragua of the occurrence of natural disasters and in future the risk of a disaster must be factored in and appropriate contingency plans drawn up. In general, however, the project's M&E data were sufficient and appropriately utilized in the project.

Other Issues: Safeguards, Unintended Impacts, Fiduciary

2.22 Safeguards issues were dealt with effectively. The reforestation study and the interaction with the Atlantic Biological Conservation project served to inform the GoN and the Bank about the scope and location of the environmentally sensitive areas, when future roads to the Atlantic are improved or built. For example, it is now known that environmental issues associated with such a road could arise from the likely crossing of two protected forests, Cerro Silva and Cerro Wawashan, plus a protected wetland area classified as a Ramsar site[3]; in addition attention will need to be paid to the social aspects that could arise from unresolved land claims and title issues with the indigenous people (for the Rama and Creole groups). These factors to a large extent will help to define the environmental and social management plans of the future projects that may link the Atlantic region near Bluefields.

2.23 The unforeseen (unintended) impacts have already been mentioned: laying foundation for public awareness about the importance of the environment, and acceptance of environmental and social management plans that emerged from the reforestation study and the studies under of the Atlantic Biological Conservation project; the impressive success of the adoquines stabilization program; and the employment effects of the micro-enterprises.

2.24 There was satisfactory progress to improve fiduciary relationships in the country. Moreover, the environmental studies fostered the building of trust between the affected population and the GoN. There was increased private sector participation especially because of the micro-enterprises, and the application of customized low cost technologies established a perception among the population about the GoN's willingness to work with the people. Lastly, the establishment of the RMF and supporting legal framework established a funding stream based on open, competitive contracts with credible financial audits and road condition surveys. These were considerable steps forward in a country where in the past rent-seeking and corruption was not uncommon.

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3. The Ramsar site refers to the Convention on Wetlands, signed in Ramsar, Iran, in 1971. It is an intergovernmental treaty which provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. There are presently 153 Contracting Parties to the Convention, (http://www.ramsar.org/).

Ratings

2.25 The **overall outcome** of the project is rated as ***Highly Satisfactory.*** The project achieved its objectives and, over and above this, realized several other positive benefits. There were no efficiency shortcomings on the civil works and there was solid institutional development and restructuring of the sector. The decision not to create a separate PIU was also a sound move in strengthening the MTI. All technical assistance and the studies were beneficial, and the safeguard studies were outstanding. **Relevance and efficiency** are rated ***High***— the ERRs are very high, as indicated in Table 2, and appropriate technology was employed; the two closing date extensions were fully justified. The **efficacy** in achieving the objectives is rated ***Substantial.*** There was strong local ownership and there is continued utilization of new skills and technology. The **risk to development outcome** is rated ***negligible to low*** based on sufficient funding and capability to maintain the assets, although it is recommended that more attention be given to disaster mitigation planning. The manufactured cement blocks were not only half the cost of conventional asphalt, but have proved to be highly durable, which will be important in future disaster situations. The micro-enterprises have also demonstrated flexibility in responding to emergency situations. **Bank performance** was strong in project preparation, responsive in the restructuring after Hurricane Mitch, and continued to perform well and innovatively throughout to the entire project making the overall rating ***Highly Satisfactory***. **Borrower performance** is also rated ***Highly Satisfactory***. There was exceptionally strong ownership and cooperation among all the parties, there was effective financial commitment under difficult circumstances, and openness to learning about the new methods, and continuing with the application of new technology in a new situation. Donor coordination by the Borrower was effective.

Table 2. Outcome ratings, by objective

Objective	Relevance	Efficacy	Efficiency	Outcome
To improve the efficiency of road transportation in Nicaragua;	High	High	Substantial ERR 71%	**Highly Satisfactory**
To improve the management and implementation capacity in the sector;	High	Substantial	Not calculated	**Highly Satisfactory**
To strengthen MTI's planning and programming capacity; and	High	Substantial	Not calculated	**Highly Satisfactory**
Emergency program for restoring roads damaged by Hurricane Mitch.	High	Substantial	High ERR 45%	**Highly Satisfactory**
Overall Outcome Rating				**Highly Satisfactory**
Risk to development outcome				**Negligible/Low**
Bank Performance				**Highly Satisfactory**
Borrower Performance				**Highly Satisfactory**

3. Conclusion and Lessons

3.1 The project has made gradual but impressive progress in modernizing Nicaragua's road sector institutions. The organizational roles—owner, administrator, manager, supplier—have been clarified and road management methods and data support systems developed. Parallel to these organizational and technical developments, staff is being effectively trained to apply the new techniques.

3.2 This project provides an impressive array of accomplishments in institutional development. The transformation process from a large force account entity to a modern road administration with private sector supply of most services is not, however, complete. While every country must find its own development path, some precursors to a successful future evolution are visible. The first is the articulation of the relationship and division of responsibilities between the RMF, the road administration (consolidated directorates dealing with roads and highways), and the ministry. The second, perhaps concurrent task is the dismantling of the government-owned Regional Highway Construction Agencies (COERCOs). There may be alternatives; the COERCOs can first be corporatized and then privatized, or they may be transformed into the road administration's regional offices. The continued reorganization of the road sector is a sensitive undertaking in which the consultative approach employed in the first and second road projects will be of great service. The third is to increase the coverage of the road data information system to all roads, whether maintainable or not and to make provision for a bridge management system. This is necessary for the effective use of the budget and the provision of equitable road access.

In general terms, the project experience highlights the importance of two factors:

Government Commitment Crucial

3.3 The IDA-Government partnership improved MTI's performance and its ability to be proactive in the transport sector. An important part of this partnership was the close and effective supervision of the project. Through this partnership government professionals carried out a successful experiment using adoquines stabilization in long road segments in rural areas. A similar supportive approach was used in developing environmental awareness within the GoN and gaining acceptance of the scope of activities needed to appropriately address environmental safeguard issues. A further facet of GoN's commitment and high principles was the establishment of an integrated project coordination unit, which evolved in confidence and showed solid ability in achieving donor coordination. The project's success, in part, is due to this strong cooperation—GoN with IDA, IDB, DANIDA—which ensured the effective utilization of assistance.

Participatory Approach

3.4 Both Bank and borrower had already attached great importance to community participation in the preceding road project in Nicaragua. Social inclusion was seen as a key element to develop the effectiveness of the road administration to gain acceptance of

budget-constrained multi-year road programs and the GoN fully supported this approach. Micro-enterprises were established, at first as an experiment under this project, but these enterprises proved to be a highly successful and culturally appropriate method for routine maintenance. The use of micro enterprises was thus substantially expanded. They combined frequent surveillance of road conditions, timely and cost-efficient maintenance actions, an effective emergency response system, as well as an income-generating employment opportunity. For periodic maintenance, the participation of "conventional" road construction and maintenance companies was initiated, and the new strategy is gradually leading to the replacement of the old labor construction unit service delivery.

3.5 In summary the main lessons learned from this project are:

- A combination of strong borrower commitment to attain agreed development objectives, coupled with innovation and a flexible approach, can lead to a successful project outcome despite the occurrence of a natural disaster.

- In highly vulnerable countries road system planning that better accounts for disaster eventualities needs to be promoted.

- A participatory approach supported by capacity strengthening initiatives can be highly successful in developing a new and evolving road management organization.

- Transforming a country's road administration is a gradual process and needs to be customized to the particular culture and circumstances prevailing in the country to be truly successful.

- The experience with the use of the pilot adoquines (manufactured paving stones) road sections shows that this technical solution can be highly cost-effective with unexpected benefits for employment and socioeconomic welfare. Its use should be further promoted and replicated.

Annex A. Basic Data Sheet

SECOND ROAD REHABILITATION AND MAINTENANCE PROJECT (CREDIT 3085-NI)

Key Project Data *(amounts in US$ millions)*

	Appraisal estimate	*Actual or current estimate*	*Actual as % of appraisal estimate*
Total project costs	54.5	59.17	108.6
Loan amount	47.4	48.19	101.7
Cancellation	0	0	0

Project Dates

	Original	*Actual*
Appraisal	03/25/1998	03/25/1998
Negotiations	04/15/1998	04/15/1998
Board approval	06/04/1998	06/04/1998
Signing	07/08/1998	07/08/1998
Effectiveness	11/09/1998	11/09/1998
Closing date	06/30/2003	06/24/2005

Staff Inputs *(staff weeks)*

Stage of Cycle	*Actual/Latest Estimate*	
	No. Staff weeks	*US$ (000)*
Identification/Preappraisal	11.3	62.2
Appraisal/Negotiation	2.8	8.7
Supervision	61.64	310.42
ICR	9.93	58.03
Total	85.67	439.35

Mission Data

	Date (month/year)	No. of persons	Specializations represented	Performance Rating Imple.Prog.	Dev.Object.
Identification/ Preparation	11/24/1997	3	Sector Leader (1); Country Director (1); Consultant (1)		
	01/19/1998	1	Highway Engineer (1)		
	02/02/1998	1	Consultant (1)		
Appraisal/ Negotiation	03/25/1998	2	Task Manager (1); Lead Counsel (1)		
	05/10/1998	2	Mission Leader (1); Consultant (1)		
	06/06/1998	1	I.T. Transport (1)		
	05/17/1998	1	GIBBS Consultant (1)		
	05/25/1998	1	Consultant (1)		
	06/23/1998	1	Consultant (1)		
Supervision	01/16/1999	2	Task Manager (1); Procurement Analyst (1)	S	S
	05/14/1999	1	Task Manager (1)	S	S
	06/22/1999	2	Task Manager (1); Projects Asst (1)	S	S
	10/10/1999	1	Task Manager (1)	S	S
	04/01/2000	1	Task Manager (1)	S	S
	02/09/2001	1	Task Manager (1)	S	S
	06/15/2001	2	Task Manager (1); Procurement Specialist (1)	S	S
	05/17/2002	1	Engineer (1)	S	S
	11/15/2002	3	Engineer (1); Sociologist (2)	S	S
	04/28/2003	4	Financial Analyst (1); Consultant (3)	S	S
	12/05/2003	3	Financial Analyst (1); Consultant (3)	S	S

	08/18/2004	2	Financial Analyst (1); Consultant (1)	S	S
	11/12/2004	2	Task Manager (1); Environmental Specialist (1)	S	S
ICR	04/14/2005	1	Consultant (1)		

Annex B. Borrower Comments

(Unofficial Translation)

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05/23/2007 10:11 PM

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Subject Comments on the CR-3085-NI Report

Managua, Nicaragua
Wednesday, May 23, 2007.

Mr. Peter Freeman
Independent Evaluation Group
The World Bank Group

Ref.: Comments on the Report of the Second CR-3085-NI Project

Dear Mr. Freeman:

Further to correspondence from Mr. Alain Barbu, Manager of the Sector, Thematic, and Global Evaluation Group regarding the report on the second Road Maintenance and Rehabilitation Project, CR-3085-NI, we hereby submit the World Bank Coordination Unit's comments on same.

This report evaluates the processes and verifies the expected results of the CR-3085-NI. It also assesses whether the objectives have been achieved and whether they are consistent with the country's current development priorities, the Bank-driven sectoral assistance strategies, and the goals of the Nicaraguan society. The report further seeks to determine the validity of the objectives in relation to the return on investment, with a cost-benefit analysis. Furthermore, it assesses the performance of the Bank as well as the Borrower in terms of their achievement of the Program's objectives.

Once the Managua – San Benito Highway was rehabilitated, the Managua – El Rama road was improved and was a complete success, as parallel financing from several financial institutions such as the IDB, DANIDA, and the Bank facilitated the completion of a vital corridor for the improved economic development and competitiveness of the private sector. This sector uses the Atlantic Ports, as most of the country's export activity takes place in the Atlantic Region. This objective was fully realized based on the economic benefits that it brought to the country.

The achievement of this objective was clearly essential to the development of the country's economy because the road infrastructure had been neglected. A program was implemented in the sector to improve project planning, programming, and implementation capacities. This has been reflected in particular in the efficient handling of the budget along with the careful selection of roads, taking into account the profitability of each segment based on its importance and impact on the country's economic development.

An institutional development training program designed to improve staff's technical knowledge, as well as their programming and planning capacities, was implemented with excellent results. The Road Maintenance Fund [*Fondo de Mantenimiento Vial* FOMAV] was involved in this exercise, and a culture of environmental awareness was developed in the infrastructure sector.

The repair of roads damaged by Hurricane Mitch (as well as the Masaya earthquake and the drought in las Segovias) was extremely important and essential for the country's economic recovery. This objective was relevant for reopening roads to prevent economic stagnation in the country. The socioeconomic implications of this natural disaster were minimized by the implementation and achievement of this objective.

The Adoquin (Paving Stone) Stabilization Pilot Program has helped significantly to improve rural roads. It has also contributed to other areas such as increased accessibility, job creation, poverty reduction, the use of local resources, the possible participation of national enterprises, improvements in health by eliminating dust clouds in the dry season, increased accessibility in the winter, and low investment and maintenance costs when compared with paved roads, by using asphalt mixtures and contracting microenterprises to carry out routine maintenance.

This program has been extended in subsequent agreements such as the CR- 3464-NI and will continue in the Fourth Credit Agreement, CR-4185-NI, because of the advantages that it has brought to the country.

In summary, we believe that the objectives of the CR-3085-NI have been achieved very satisfactorily, as it has been used for the development of the infrastructure sector, and forms the basis for the sustainability of subsequent Agreements. The rehabilitation of the Managua – El Rama road, which was necessary for the development of the private sector, is now a reality. The Road Maintenance component carried out by microenterprises was effective as a program that has provided sources of employment geared toward poverty reduction. The creation of the FOMAV as the entity in charge of road maintenance strengthened the infrastructure sector and helped to establish a program aimed at extending the useful life of the country's highways. The Adoquin (Paving Stone) Stabilization Pilot Program has enabled the private sector to venture

into infrastructure work, and facilitated the use of a method with economic and environmental advantages.

The ongoing collaboration between Bank officials and the Government of Nicaragua has undeniably been a determining factor in the successful achievement of the objectives of the CR-3085-NI project. The creation of an executing unit within the Ministry of Transportation and Infrastructure (MTI), which operates in collaboration with all the stakeholders in the Agreement, has truly been an indispensable component in the achievement of the stated objectives.

Yours truly,

Vicente Mairena Mendez
MTI – WB Project Coordinator

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	Subject	Comentarios del Informe CR-3085-NI

Managua, Nicaragua
Miércoles 23 de Mayo del 2007

Señor
Peter
Freeman
Comentarios del Informe del
The Independent Evaluation
Group
The World Bank Group
Su Oficina

Ref.:

Segundo Proyecto CR-3085-NI

Estimado Señor Freeman:

De acuerdo a comunicación del Señor Alain Barbu, Gerente del Sector de la División de Evaluación Temática y Global referente a comentarios al informe del segundo Proyecto de Rehabilitación y Mantenimiento Vial CR-3085-NI, por este medio le estamos enviando consideraciones al mismo del personal de la Unidad coordinadora del BM.

En este informe se están evaluando los procesos y verificación de resultados que se esperaban con el CR-3085-NI. Así mismo la evaluación del cumplimiento de los objetivos y si estos son consistentes con las prioridades actuales de desarrollo del país, con las estrategias de la ayuda sectorial impulsada por el Banco Mundial (BM) y las metas de la sociedad Nicaragüense. También se persigue determinar la eficacia de los objetivos en relación al retorno de la inversión comparando Costo-Beneficio. Adicionalmente se evalúa también la actuación tanto del BM como del Prestatario en el cumplimiento de los objetivos del Programa.

Con la Rehabilitación de la Carretera Managua – San Benito llevada a cabo se contribuye con el mejoramiento de la vía Managua – El Rama que fue todo un éxito ya que al unirse

varios Organismos Financiadores como son: El BID,DANIDA y el BM se completa tan necesaria ruta en el mejoramiento del desarrollo económico y la Competitividad del sector privado por la utilización de los Puertos del Atlántico ya que la mayoría de las exportaciones del País se realizan en la Región Atlántica. Este objetivo se cumple en su totalidad por los beneficios económicos que trajo al país.

En cuanto a este objetivo definitivamente su cumplimiento ha sido fundamental en el desarrollo de la economía del país ya que la infraestructura de caminos había sido descuidada. Se implemento dentro del Sector un programa para mejorar la capacidad de planeación, programación y ejecución de proyectos. Esto se ha reflejado especialmente en manejo eficaz del presupuesto ligado con la elección oportuna de caminos, considerando la rentabilidad de cada tramo según la importancia e incidencia en el desarrollo económico del país.

Se implemento con notables resultados un programa de Capacitación encaminado al desarrollo institucional para mejorar no solamente los conocimientos técnicos sino también la capacidad de programación y planeación del personal. Incluido el Fondo de Mantenimiento Vial (FOMAV) así como la implantación de una cultura ambiental en el sector de Infraestructura.

La reparación de caminos dañados por el Mitch (incluyendo el terremoto de Masaya y la sequedad de las Segovias) fue trascendental y fundamental en la recuperación del desarrollo Económico del país. Este objetivo resulto pertinente en la activación de las vías que evito el estancamiento productivo del país. Las implicaciones Económicas- Sociales que trajo consigo este desastre natural se minimizaron con la implantación y cumplimiento de este objetivo.

El Plan Piloto de Estabilización de Adoquines ha resultado notorio en el mejoramiento de las vías rurales del país, manifestando solución en la mejora de las condiciones de accesibilidad, generación de empleos, reducción de la pobreza, uso de los recursos locales, posibilidad de participación de las empresas Nacionales, mejoras en la salud al eliminar el polvo del camino en la estación seca y las condiciones de difícil acceso en la temporada de invierno, bajo costo de inversión y mantenimiento, comparado con los caminos pavimentados mediante el uso de mezcla asfálticas aunado a la implementación de pequeñas microempresas de mantenimiento rutinario.

Este programa se ha extendido en los siguientes convenios como es el CR 3464 NI y se continuará con el IV Convenio de Crédito CR 4185-NI por las ventajas que ha traído al País.

EN Resumen Los objetivos que se plantearon con el CR 3085 NI consideramos que se han cumplido muy satisfactoriamente ya que ha sido utilizado tanto en el desarrollo del Sector Infraestructura como de base en la continuidad de los siguientes Convenios. La Rehabilitación de la Vía Managua – El Rama que era necesaria para el desarrollo del Sector Privado es todo una realidad. El componente Mantenimientos de Caminos llevado a cabo

por las Microempresas tuvo resultados efectivos como un programa que ha producido fuentes de empleos encaminado a la reducción de la pobreza. La Creación del FOMAV como órgano encargado del mantenimiento de caminos vino a reforzar tanto el sector de Infraestructura como el establecimiento de un programa encaminado a alargar la vida útil de las carreteras del País. El Programa piloto de estabilización de Adoquines ha permitido el despegue del sector privado relacionado a la Infraestructura así como la utilización de un método con muchas ventajas Económico- Ambientales .

El trabajo en conjunto que se ha venido desarrollando entre los principales responsables BM y el Gobiernos de Nicaragua ha sido indiscutiblemente determinante en el éxito que ha tenido el CR-3085-NI en el cumplimiento de sus objetivos. La Creación de una Unidad Ejecutora dentro del MTI que funciona en Coordinación con todas las partes integrantes del Convenio ha sido de hecho un factor imprescindible en el logro de las metas planteadas.

Le saludamos con muestra de consideración y estima.

Atentamente,

Ing. Vicente Mairena Mendez
Coordinador de Proyecto MTI – BM