

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

## **NICARAGUA**

### **ACOPAYA-SAN CARLOS-COSTA RICAN BORDER HIGHWAY INTEGRATION PROGRAM UNDER THE PUEBLA-PANAMA PLAN**

**(NI-L1006)**

### **LOAN PROPOSAL**

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### Annex I      Logical Framework

#### Proposed resolution

Electronic Links and References	
Basic socioeconomic data	<a href="http://www.iadb.org/RES/index.cfm?fuseaction=externallinks.countrydata">http://www.iadb.org/RES/index.cfm?fuseaction=externallinks.countrydata</a>
Portfolio in execution	<a href="http://ops/approvals/PDFs/PNsp.pdf">http://ops/approvals/PDFs/PNsp.pdf</a>
Evaluation of institutional capacity SECI-NI-L1006	<a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=785754">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=785754</a>
Annex II: Procurement plan	<a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=794942">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=794942</a>
Environmental and Social Evaluation for the program - Environmental and Social Management Report (ESMR)	<a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=795120">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=795120</a>
MTI Institutional Strengthening Strategy	<a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=795124">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=795124</a>
Map	<a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=795129">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=795129</a>
Economic evaluation review and design of logical framework indicators	<a href="http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=805371">http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=805371</a>

## **ABBREVIATIONS**

CABEI	Central American Bank for Economic Integration
CESI	Committee on Environment and Social Impact
CONASEV	Consejo Nacional de Seguridad y Educación Vial [National Council on Highway Safety and Education]
DGV	Road and Highway Administration
EIRR	Economic Internal Rate of Return
ESIA	Environmental and Social Impact Assessment
FOMAV	Fondo de Mantenimiento Vial [Highway Maintenance Fund]
MARENA	Ministry of the Environment and Natural Resources
MTI	Ministry of Transportation and Infrastructure
PCU	Project Coordinating Unit
PND	National Development Plan
RICAM	International Meso-American Highway System

## PROJECT SUMMARY

### NICARAGUA ACOPAYA-SAN CARLOS-COSTA RICAN BORDER HIGHWAY INTEGRATION PROGRAM UNDER THE PUEBLA- PANAMA PLAN (NI-L1006)

Financial Terms and Conditions					
Borrower: Republic of Nicaragua Executing agency: Ministry of Transportation and Infrastructure			Amortization period:	40 years	
			Grace period:	10 years	
			Disbursement period:	6 years	
Source		Amount (US\$)	%	Interest rate:	1% during the grace period, 2% thereafter
IDB (FSO)		49,500,000	82	Inspection and supervision fee:	1%
Local contribution	Government	600,000	1	Credit fee:	0.5%
	Cofinancing	10,600,000	17	Currency:	U.S. dollars
Total		60,700,000	100		
Project at a glance					
<b>Project objective:</b>					
The general objective of the project is to make Nicaragua more competitive by further integrating the Chontales and San Juan River region into the national economy and moving forward with the economic integration of Nicaragua, Costa Rica, and the other countries of the Meso American region. The specific objective of the project is to achieve a highway connection between Acoyapa, San Carlos, and the Costa Rican border that will allow a steady, constant, safe flow of traffic with lower transportation costs and shorter travel times.					
<b>Conditions precedent to the first disbursement:</b>					
(i) The MTI must adopt a resolution approving the medium-term institutional strengthening strategy, which was agreed upon as part of this operation (see paragraph 3.4).					
(ii) Evidence to the Bank’s satisfaction that the actions and outcomes of phase one of the institutional strategy have been fulfilled (see paragraph 3.4).					
<b>Execution conditions:</b>					
(i) Evidence to the Bank’s satisfaction that the actions and outcomes of the institutional strategy have been fulfilled for each semiannual period during program execution (see paragraph 3.4).					
(ii) During the disbursement period, the resources raised each year through the special tax for financing highway maintenance must be transferred to the Highway Maintenance Fund (FOMAV). Before the bidding on road improvements, these conditions must have been fulfilled in the year immediately preceding the scheduled date of the bidding (see paragraph 3.19).					
(iii) Before the bidding on road and highway improvements, construction designs must be completed with the Bank’s no objection, and the recommendations in the Environmental and Social Management Plan must be reflected in the bidding documents (see paragraphs 3.10 and 4.38).					
(iv) Before the bidding on section three of the highway, the borrower must demonstrate it has sufficient resources for the improvements on section three and for construction of the bridge over the San Juan River; the resources may come from cofinancing under a formal agreement or from any other source of financing (see paragraph 3.12).					
(v) The executing agency and the national police must have entered into an interagency agreement governing the use of the highway education program resources and specifying the national police will take part in the program (see paragraph 3.4).					
<b>Exceptions to Bank policies:</b>					
None.					
<b>Project consistent with country strategy:</b>		Yes [ X ]	No [ ]		
<b>Project qualifies as:</b>		SEQ [ ]	PTI [ ]	Sector [ ]	Geographic [ ] Headcount [ ]

**Procurement:** See paragraphs 3.8 to 3.12 and Annex II.

**Verified by CESI on:** The project was reviewed by the Committee on Environment and Social Impact on 9 June 2006 (DCP) and 8 September 2006, and all recommendations have been taken into consideration.

## I. FRAME OF REFERENCE

- 1.1 The Acoyapa–San Carlos–Costa Rican border highway is essential to the economic development of southern and southeastern Nicaragua, as well as a strategic element in the country's foreign trade, as it provides an overland connection with other countries in Meso-America. The government requested the Bank's participation in the project, within the framework of an investment plan for which financing began in 2002. This plan has been accompanied by actions aimed at making the Nicaraguan highway sector sustainable over the medium term.

### A. Socioeconomic context

- 1.2 Nicaragua suffered an economic collapse during the 1980s, and by the end of the decade its real per capita income had fallen to one-third its level ten years earlier. The economy began to recover in 1990 and continued until the end of that decade, when it faced new difficulties as a result of the banking crisis of 2000. After 2002, the government implemented significant reforms, and economic growth has resumed despite the political crisis of the last two years.<sup>1</sup>
- 1.3 While Nicaragua has become more competitive in recent years, the country faces many challenges in its effort to achieve sustained improvements in its business climate. Governance, transportation and energy infrastructure, and access to credit are issues that must be urgently addressed in order to maintain growth and take full advantage of the opportunities offered by the free trade agreement between the United States, the Dominican Republic, and the Central American countries.

### B. The Nicaraguan transportation sector

- 1.4 Nicaragua has nearly 300,000 vehicles in circulation and more than 10 million tons of freight move through the country every year, with the export sector accounting for more than 25%. Forty percent of these goods are moved to or from the city of Managua, and more than 70% of this activity is concentrated in the area north of Lake Nicaragua and in the northwestern part of the country. In the south—to the east of Lake Nicaragua—the movement of goods is much lower, due in part to the poor highways serving this area.
- 1.5 **Highway infrastructure.** The highway system in Nicaragua includes 18,712 kilometers of highways and rural roadways. Only 1,986 kilometers—10.6% of the total—are paved, and some of these have surpassed their useful life for which they were designed and built; 13,780 kilometers (73.6%) are rural dirt roads that were built to low specifications and are scarcely usable during rainy periods; and the remaining 2,946 kilometers are gravel and paving stone roads.
- 1.6 Neither the capacity of the road system nor its pace of development has kept up with the country's needs. Nicaragua's highway system ranks virtually last among highway systems in the region and in Latin America, as shown in Table I-1. Also,

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<sup>1</sup> Reforms focused on taxation, public expenditure adjustment, and regulatory enforcement in the financial sector. By 2003, macroeconomic performance was favorable, inflation was under control, and the economy grew by 5.1% in 2004 and 4% in 2005.

despite significant recent progress, more than 75% of the country's highways are in fair or poor condition.

**Table I-1**  
**Comparison of highway system indicators**

Indicators	Paved highways (km) per 1,000 people	Paved highways (km) per 1,000 km <sup>2</sup>	Total highways (km) per 1,000 people	Total highways (km) per 1,000 km <sup>2</sup>
Costa Rica	2.00	154.5	9.10	702.1
El Salvador	0.31	94.4	1.56	476.7
Panama	1.38	58.1	3.78	158.7
Mexico	1.07	55.2	3.27	168.3
Guatemala	0.41	44.7	1.18	129.7
Honduras	0.41	24.8	2.00	121.4
Belize	1.84	21.3	10.83	125.1
<b>Nicaragua</b>	<b>0.34</b>	<b>14.1</b>	<b>3.55</b>	<b>145.7</b>
Latin America and the Caribbean	1.51	38.9	5.64	145.0
Medium-(low-)income countries	1.31	60.5	2.47	114.2
High-income countries	13.25	394.5	13.89	413.5

- 1.7 To understand the state of Nicaraguan highways and its causes, it is important to review recent history. In 1990 the country began to rehabilitate its highway system, with initial investment focused on highway infrastructure in productive areas in northern and central Nicaragua. Projects were significant in terms of coverage but lacked relative technical complexity.<sup>2</sup> At the end of the 1990s, development continued with rehabilitation of the main highway system, particularly the north-south Pan-American Highway from El Guasule (on the border with Honduras) to Peñas Blancas (on the Costa Rican border). The Pan-American Highway helps integrate economic activity in northern and northwestern Nicaragua with the consumption hubs as well as the port of Corinto, and connects the country with Honduras and Costa Rica, whose ports handle most of Nicaragua's Atlantic coast trade.
- 1.8 Rehabilitation of the Pan-American Highway marked the beginning of more complex projects in Nicaragua, which require greater technical and financial capacity from the private sector, through the construction industry, as well as from the government highway agency, in this case the Ministry of Transportation and Infrastructure (MTI). For these works, Nicaraguan and foreign engineering firms had to make major investments to increase their capacity, and the MTI embarked on an institutional strengthening effort. However, this modernization process did not keep up with economic development, mainly due to the need to rehabilitate

<sup>2</sup> In 1940, the highway network opened with just 201 km. By 1979, the network had expanded to 18,137 km, but by 1989 the network had been reduced to 15,287 km as nearly 4,600 km had been lost owing to a series of internal conflicts. Between 1990 and 2001, road rehabilitation works were limited to gravel or asphalt resurfacing and it was not until the rehabilitation of the Pan American highway got under way in 1999 that the country entered the age of modern road construction.



highways following the destruction caused in October 1998 by Hurricane Mitch. It was not until 2001, with the completion of the National Transportation Plan, that investments were selected on the basis of a structured planning process. In addition, investment in regular routine maintenance was neglected, significantly reducing the useful life of rehabilitated roads in the early 1990s, and requiring greater rehabilitation efforts.

- 1.9 In 2003, the National Development Plan (PND) was developed, which serves as the framework for prioritizing highways to be improved in accordance with strategic economic and social targets (see paragraph 1.24). The proposed investment plan would more than double annual investment from the MTI by rehabilitating and rebuilding paved highways and continuously investing in maintenance and expansion of highway capacity through strategic projects such as the paving of the Acoyapa–San Carlos–Costa Rican border highway, which is the focus of this project.
- 1.10 In summary, the sector has achieved notable gains in having a portfolio of viable investments that were selected according to technical criteria and are the result of a careful preinvestment process. Added to this achievement are the substantial financial resources that have been secured for the highway sector (more than US\$400 million since 2000), and considerable progress in maintenance (see paragraph 1.16). However, physical execution of investments has not been consistent with these achievements, mainly due to difficulties in furthering the institutional strengthening of the MTI.
- 1.11 **Institutional situation.** In accordance with Law 290 of 1998 on the powers of the Nicaraguan government, the MTI is responsible, together with the Ministry of the Interior and the municipios, for transportation and highway infrastructure planning, organizing and managing policy in the sector, and leading, managing, and supervising conservation and development in transportation infrastructure. To fulfill its mandate, the MTI directly or indirectly leads, administers, and supervises conservation and development of transportation infrastructure. The MTI is organized into departments and units, which have various responsibilities within a project cycle. The MTI shares responsibility for highway development and maintenance with the Highway Maintenance Fund (FOMAV). FOMAV was created by Law 355 of 2002 as a permanent, autonomous government body with legal standing and its own assets. It is responsible for maintaining the maintainable highway system.<sup>3</sup>
- 1.12 Although the MTI is well structured, its organization is vulnerable to political changes and its technical capacity is limited. This had led to problems in managing highway projects and executing its portfolio (see paragraph 1.28). For example, there have been problems with the bidding processes in several Bank operations, with some of them being declared void due to budget overruns, while others have faced numerous protests from participating companies, along with resulting delays

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<sup>3</sup> The maintainable network includes highways in good state of repair not needing rehabilitation that MTI has transferred to FOMAV.

- in awarding the contracts. There have also been problems in the quality of some projects under the responsibility of the MTI, including works by the contractor of the Bank-financed San Lorenzo–Muhan highway (1088/SF). The works for this highway could not be received by the MTI due to various types of damage, including cracks in the highway surface, which if left unfixed could force the MTI to make further investments in rehabilitation. An arbitration process is now under way for this case.
- 1.13 While some of these problems could have been avoided by paying greater management attention to the institutional strengthening process, they are due not only to institutional weaknesses at the MTI, but also to structural reasons. The MTI's development as an organization has been hampered, like much of Nicaragua's institutional structure, by several crises that have limited highway investment and, along with it, the development of skills for managing the sector. The current political situation, in which the work of the government has been hindered in recent years by a lack of consensus between the legislative and executive powers, is another cause of traffic problems. All of this has also jeopardized the effective development of a local construction industry with sufficient capacity to meet future investment demands, particularly for maintenance.
- 1.14 To help solve these problems, the MTI has allocated significant resources to institutional strengthening. In approved operations, resources have been allocated for about US\$3.85 million for institutional strengthening of relevant areas of the MTI that have to do with project preparation and execution, of which a significant percentage are pending execution. Support was also provided to establish FOMAV. This technical assistance was aimed at commissioning specialized technical resources, procuring transportation equipment for use by the project executing unit in monitoring work on the projects, and procuring minor pieces of office equipment. In late 2004, as part of the preparation for the Puebla-Panama Plan highway plan for zone III, consulting services were engaged to perform a diagnostic assessment of the MTI, and this assessment was the basis for the terms of reference for the institutional strengthening program in the projects financed through loans 1530/SF and 1599/SF. This program, which began in May of this year, includes a detailed analysis of the project cycle and the capacities of each department of the MTI, a review of the organizational structure, and the design of information systems for managing and implementing projects.
- 1.15 In addition, the project team has targeted its efforts to supporting the work of the MTI. It has provided direct support to the senior management of the MTI in evaluating short-term plans for improving key departments, such as the Procurement Division, the Planning Office, the Environmental Management Division, and the Bank's Project Coordinating Unit, which is responsible for coordinating execution of the loans and is in turn part of the Road and Highway Administration (DGV). Lastly, in preparing this operation, the team helped MTI design an institutional strategy for the medium term (two years) that was detailed to the activity level. This strategy is a development of the aforementioned assessment efforts. It is being implemented gradually and in stages, with priority given to the

processes of highway project management (procurement, project execution and supervision), maintenance, planning, weight and size control, and highway safety (see paragraphs 3.3 and 3.4 and paragraphs 4.21 to 4.30).

- 1.16 **Maintenance.** Progress has also been made in highway maintenance. In December 2005 the Legislative Assembly passed a law establishing a special tax for FOMAV, which is helping it along toward financial sustainability. This law provides for gradual increases in the tax until 2010.<sup>4</sup> Until then, FOMAV had only been able to function to the extent allowed by the seed funds from Bank and World Bank lending operations. This achievement is the result of efforts by the Government of Nicaragua with the support of international financial institutions participating in the sector. With the enactment of this law, US\$12 million are expected to be raised in 2006. This is a significant step forward for the highway sector, one that will allow 2,000 km of the country's maintainable highways to be conserved during 2006. Once the tax revenue collection target is reached in 2009, coverage is expected to total 7,800 km.
- 1.17 **Weights and sizes.** The weight and size control system is governed by Law 524 and its regulations (Decree 42-2005). This law and its regulations determine the need to certify weights and sizes; allowable size, load, and weight limits per axle; and applicable penalties. The system's infrastructure consists of seven scales, each of which is operated by six people. The system is administered by the Road and Highway Administration through the Department of Weights and Measures within the Highway Conservation Office. The MTI recently estimated that stretches of highway are severely overloaded to the point where their useful life may be reduced by up to 50%. Although records do exist, there are no consolidated statistics or systematic studies on the extent of excess weight, types of cargo and vehicles involved, and economic, regulatory, or technical incentives to encourage compliance by freight transporters and originators.
- 1.18 **Highway safety.** An estimated 450 people were killed and approximately 4,000 injured in the 13,000 reported accidents on Nicaraguan highways in 2005. The economic impact on total costs, as estimated by the World Health Organization, is approximately 1% of gross domestic product, or at least US\$15 million per year. The problem has multiple causes, and several agencies are involved in managing highway safety: the National Council on Highway Safety and Education (CONASEV); the MTI; the National Traffic Safety Administration; the Ministry of Education, Culture, and Sports; the Ministry of Health; FOMAV; the Office of the Mayor of Managua; the National Police, and the Nicaraguan Municipios Association.
- 1.19 Thus, the recently established CONASEV, with the support of the Danish program PAST-DANIDA, has prepared a National Highway Safety Strategy for the 2005-2010 period. CONASEV consists of representatives of ministries, development organizations, and highway transportation organizations. The objectives of the

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<sup>4</sup> The tax established by law was initially set at US\$6 in December 2005. It is being gradually increased, eventually rising to US\$16 per gallon in December 2009.

strategy are to reduce traffic fatalities by 7% between 2005 and 2010, and by 15% by 2015. The strategy will focus on the problems in six particular areas that have been targeted for the next five years: (i) critical accident-prone locations in urban and rural areas; (ii) pedestrian safety, with an emphasis on children; (iii) professional driver behavior; (iv) speed control; and (v) reduction of drunk driving. Countermeasures to increase safety in each of these areas are: driver education, law enforcement, engineering efforts, and improved emergency care. Efforts are currently under way to secure financing for the strategy, and this operation is one such source of financing, as it provides resources to support this strategy.

### **C. The Puebla Panama Plan and the proposed project**

- 1.20 In an increasingly globalized world, the Central American countries have taken action to maintain sustainable development in their economies by promoting regional economic integration to become more competitive and by signing free trade agreements with European and Asian countries, the United States, and other countries in Latin America. The Puebla-Panama Plan, established by the presidents of Mexico and the Central American countries, is a vital part of the integration strategy.<sup>5</sup>
- 1.21 The Meso-American Transportation Initiative includes programs covering four subsectors: land transportation, water transportation, air transportation, and cross-cutting issues (transportation logistics and concessions). The road transportation subsector includes projects and works for construction, rehabilitation, and improvements to highways in the International Meso-American Highway System (RICAM). Included in the RICAM are 11,815 kilometers of highways, including 8,596 kilometers of primary integration corridors and 3,219 kilometers of secondary roads and regional connectors. In Nicaragua, the RICAM includes 1,297 kilometers, of which 342 kilometers make up the Pacific corridor, 503 kilometers the Atlantic corridor, and 349 kilometers are branches and secondary connectors.
- 1.22 The Acoyapa–San Carlos–Costa Rican border highway, currently<sup>6</sup> 153 kilometers in length, crosses over flat and rolling land. It was built with a gravel surface along almost its entire length (only 5.7 kilometers are paved) and is in very poor condition, hindering the flow of traffic throughout the year. The highway is part of the Atlantic Corridor and is complemented by the project to build the 230-meter Santa Fe bridge (currently non-existent) over the San Juan River near the border with Costa Rica. To finance this bridge, the government has been working with the Government of Japan. This bridge is to replace the private ferry service now available only to users authorized by the service provider. The highway being financed by the Bank is also complemented by a rehabilitation project for feeder

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<sup>5</sup> The strategy of the Puebla-Panama Plan revolves around eight initiatives and related projects: (1) sustainable development; (2) human development; (3) natural disaster prevention and mitigation; (4) promotion of tourism; (5) trade facilitation; (6) transportation; (7) energy interconnection; and (8) integration of telecommunication services.

<sup>6</sup> The new project will reduce its extension to 146 km.

roads to the main route along a 87.3 kilometer stretch. The investments for this project are to be made with the Central American Bank for Economic Integration (CABEI).

- 1.23 Improvements to the highway will help develop the Chontales and San Juan River regions in a 408,800 hectare project area and will have a direct impact on users. It will also help improve the region's economic foundation in agriculture, fishing, and tourism. This is also a strategic integration project. Once communication becomes reliable and the flow of traffic ensured, a new option will be available for international traffic. Cargo from Nicaragua, and particularly Managua, which have an outlet on the Atlantic, will have another option with ports in Costa Rica (Puerto Limón), and Honduras (Puerto Cortez).

**D. The country's sector strategy**

- 1.24 The Government of Nicaragua—in consultation with social and productive sectors, and in the context of the National Development Plan (PND)—identified infrastructure needs that, if addressed, will lead to investment, productivity, and the generation of more and better jobs in the production of goods and services, both for domestic and export markets. As part of its basic philosophy, the PND aims to promote the formation of clusters of companies in various areas as part of its strategy of promoting, strengthening, and developing competitive companies.<sup>7</sup> Based on the geographic location of these clusters, investment and conservation interventions were planned for highway systems in four areas of the country with high productive potential, and these interventions were incorporated into the PND.
- 1.25 In the last five years the government has consistently strived to focus its scarce financial resources on these efforts. The Bank and other international financial institutions are participating in road projects located in the four areas of the country. The Bank's value added, in addition to financing, has been aimed at technical support in internal and external discussion and consultation on the PND and at providing technical analysis specifically for highway management, identification of highways being improved or built with this strategy, and support for institutional development in the sector. For this particular operation, the Bank's support has focused at the government's request on assisting throughout the entire project cycle, including support for managing potential cofinancing resources, as well as the review of and assistance for preinvestment studies. Also, during execution close dialogue will support the government in its dealings with contractors and supervisors, to ensure that project objectives are met, and this assistance will extend to the beginning of the maintenance phase.

**E. The Bank strategy with the country and the sector**

- 1.26 The project is consistent with the Bank's strategy with the country approved on 12 February 2003 (document GN-2230-1) and is included in the latest update to this strategy (document GN-2251-8 of 22 June 2005). The strategy is aimed at

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<sup>7</sup> They stand out as the country's main industry clusters (meat and dairy products, tourism, and coffee), accounting for one third of national GDP.

economic growth and focuses on competitiveness and production as a primary objective and a necessary precondition for poverty reduction. To achieve this objective, priority is given to improving basic infrastructure, especially transportation infrastructure. The proposed project supports this strategic approach.

- 1.27 Over time, the Bank has been adjusting its strategy in Nicaragua's highway sector by seeking to adapt interventions to the needs of economic development, while gradually promoting institutional progress in highway management. The Bank financed the Rural Highway Rehabilitation and Improvement Program with two loans—756/OC-NI and 902/SF-NI (US\$47 million)—which were completed in 1999. The Bank also approved loan 1036/SF-NI in 1999 to finance the rehabilitation of a portion of the Pan-American Highway, strengthen the institutional capacity of the MTI, and support the creation of FOMAV. In 2001 the Bank approved loan 1088/SF-NI for US\$35 million to rehabilitate the San Lorenzo–Muhán section of the Managua–Rama highway.
- 1.28 Later, following adoption of the new strategy with the country, a loan (1530/SF-NI) was approved in February 2004 to finance the Puebla-Panama Plan Highway Project for Competitiveness – Zone II. The Puebla-Panama Plan Highway Project for Competitiveness – Zone III, (1599/SF) was approved in December 2004. In December 2005 a loan operation entitled “Support for the Implementation of the National Development Plan” (1702/SF) was approved, and investments under this operation included rehabilitation of the Sébaco–Matagalpa highway, in Zone III. In all, the highway sector has outstanding loans totalling US\$125 million, of which US\$30 million have been disbursed and just over US\$6 million more have been committed. The low disbursement level in these operations is primarily due to the lengthy approval in the legislature and for eligibility conditions to be fulfilled for the three operations approved under the Bank's new strategy. As part of these operations, some 10 bidding processes have been conducted, commitments are expected to increase by an additional US\$7 million by late 2006, and the rate of disbursement is expected to increase in 2007 until the MTI's targets are met.
- 1.29 This operation concludes the financing strategy set out in the country strategy for the period. It makes resources available for the improvement of the main highway in Zone IV, which would strengthen the longitudinal access that integrates the entire zone and connects it to the rest of the Nicaraguan highway system. Also, as part of the RICAM, the project helps strengthen Nicaragua's highway integration with Costa Rica and the rest of Meso-America, complements the loans already approved by the Bank for zones III and IV, and supplements financing for the Bank's operation in support of the national development plan (1702/SF). One of the elements of this plan is investment for tourism development on the San Juan river (training and technical assistance, tourism MSME development, promotion, etc.). The operations under way in the highway sector have now rehabilitated 88 km of road and have awarded contracts for the rehabilitation of 90 km for year-end 2006 and a further 236 km in the first half of 2007. This means that rehabilitation works will have been completed on 350 km of road by the end of 2007.

- 1.30 **Lessons learned.** Limited financial and execution capacity has been a barrier for large-scale construction projects in Nicaragua. The strategy of combining several loans with targeted conditions coordinated with other donors, first on achievements, followed by progress in financing highway maintenance, has worked well in Nicaragua. This strategy allowed for a timely response to the more urgent demands for highway investment (rehabilitation and maintenance). For Nicaragua, where there are major institutional weaknesses, the preparation of design and environmental studies at the same time as the loan is a factor that facilitates the incorporation of the Bank's additionality in the same preinvestment process, reduces execution risks for the future, and helps strengthen the work of the MTI. This lesson has been applied to the Acoyapa–San Carlos–Costa Rican border highway project.
- 1.31 **Coordination with other institutions.** Also helping to finance the sector are the World Bank, the Central American Bank for Economic Integration (CABEI), the Nordic Fund, Denmark, Spain, the Organization of Petroleum-Exporting Countries, and the United States Millennium Fund. The Bank maintains effective coordination with these institutions in project selection and execution. For this specific project, coordination efforts included site visits by the CABEI, the Andean Development Corporation, and the IDB on financing of concurrent highway projects along the Nicaragua–Honduras border. Also, activities have been coordinated with the CABEI and the Government of Japan, which are reviewing the viability of cofinancing works that are complementary to this project (see paragraph 2.4). These activities consist in holding meetings to coordinate efforts and exchange information, including technical and environmental studies. Also, the institutional strategy that has been prepared as part of this operation (see paragraph 4.22) includes actions to identify areas where progress may be made toward greater harmonization of specific procedures for financing these institutions in the highway sector. The Bank will lead support for the MTI in this process.

**F. Program strategy**

- 1.32 The program seeks to remedy the low level of economic and physical integration in the departments of Chontales and Río San Juan by developing productive potential and trade with consumption hubs in Nicaragua and with international markets. The program will also expand trade opportunities for these departments and for western Nicaragua to Costa Rica and other countries in the region, by expanding potential markets and cutting costs of exports and imports passing through Costa Rican ports. Improved access to Costa Rica will also open up the country's Atlantic coast trade. This will be achieved by improving connectivity and reducing transportation costs along the Acoyapa–San Carlos–Costa Rican border highway. The project will also continue supporting the institutional development of the MTI, which will help make the Nicaraguan highway system more sustainable.

## II. THE PROJECT

### A. Objectives and description

- 2.1 The general objective of the project is to make Nicaragua more competitive by further integrating the Chontales and San Juan River regions into the national economy and moving forward with the economic integration of Nicaragua, Costa Rica, and the other countries of the Meso-American region. The specific objective of the project is to achieve a highway connection between Acoyapa, San Carlos, and the Costa Rican border that will allow a steady, constant, safe flow of traffic with lower transportation costs and shorter travel times.
- 2.2 **Component 1.** This component consists in improving the main highway from Acoyapa (Lóvago junction) to San Carlos to the border with Costa Rica (Las Tablillas sector), for a total length of approximately 146 kilometers, by paving the highway with a 5-centimeter asphalt surface, replacing or building bridges, and adjusting the route. The main highway is the primary route through the southwestern part of the San Juan River region and, based on the improvements that the project should bring, includes three well-defined sections:
- (i) Section I: **Lóvago junction to Pájaro Negro**, with an approximate length of 62.3 kilometers, which will primarily include the rehabilitation of the highway by paving and structural reinforcement of various concrete bridges (bridges that are in good condition but were designed for smaller loads than they are currently carrying). This section will not require route changes.
  - (ii) Section II: **Pájaro Negro to San Carlos**, for an approximate length of 64.1 kilometers, which will include the rehabilitation of the highway by paving, with minor route adjustments to relocate a bridge (Tule) and, in any event, to avoid crossing through villages currently located in the right of way (environmental and social mitigation). Investment in major drainage in this section involves replacement of three bridges (old wooden structures) that are short in length (less than 20 meters long) and construction of a new bridge on the Tule River (approximately 40 meters long). This section includes access of the main highway to San Carlos.
  - (iii) Section III: **La Argentina sector to Las Tablillas**, for an approximate length of 19.8 kilometers, to include construction of a new highway bed 8.3 kilometers long and improvement to 11.5 km of the existing roadway, as well as construction of a new 230-meter bridge over the San Juan River, which is to be cofinanced by the Government of Japan.
- 2.3 Project financing includes maintenance works for the 146 kilometers of highway for a two-year period following acceptance of the works. After this period, maintenance will be the responsibility of FOMAV. The financing will also include technical and environmental supervision of construction works. The bidding guidelines for these services will set forth specific technical conditions to ensure



fulfillment of appropriate international quality standards for execution of the project works.

- 2.4 The works are to include specific highway safety measures, including: (i) two 3.6-meter- wide lanes along the entire length of the highway; (ii) design of the highway profile including 1.8-meter-wide shoulders along the entire length of the highway, which has not been a standard practice in Nicaraguan highways; (iii) redesign of the Lóvago junction, avoiding head-on intersections through a triangular rotunda arrangement with one-way side lanes (including special lanes for buses and bus-stop bays); (iv) inclusion of bus-stop bays along the entire highway; and (v) complete horizontal and vertical signage along the entire highway.
- 2.5 During execution of the works on the three sections and subsequently during operation, the environmental and social mitigation measures developed under the Environmental Management Plan of the project's Environmental and Social Impact Study, which were included in the designs, will be incorporated in the planning, construction, and operation phases. In particular, a highway safety education program will be financed for schools in the project area, which will be carried out with the support of the national police.
- 2.6 The Bank-financed main highway is being complemented by works to improve the secondary highway system. Cofinancing from the CABEI is being sought for this purpose.
- 2.7 **Component II.** An institutional strengthening component has been included to provide continuity to ongoing efforts to improve the planning, contracting, and execution systems by designing and implementing an institutional strengthening strategy (see paragraphs 3.3 and 3.4). As stated above, to develop this strategy the MTI has resources in current Bank-financed loans. This operation includes complementary resources to continue pursuing other areas of highway operation that also require strengthening. Within these areas, progress is to be made in issues related to highway safety, weight and size control, and new alternatives for highway maintenance.
- 2.8 As for weight and size limits, an action plan will be carried out with the support of specialized consultants to first characterize the excess weight currently found on the highways, provide forecasts for the medium term, evaluate the control system currently being used and propose a strategy to make the current system more effective. Actions will be evaluated to automate the recording of weights and sizes, introduce adjustments to regulations and the penalty system, design communication strategies, and conduct campaigns to raise awareness in the trucking industry. Project funds will also be used to finance a highway safety pilot project, which will examine and implement solutions for ten critical locations along the main highway. Also to be financed is a study to evaluate the viability of FOMAV use of results-based maintenance contracts.

## **B. Cost and financing**

- 2.9 The total cost of the program is US\$60.7 million, which will be financed with a loan from the Bank for US\$49.5 million drawn on the Fund for Special Operations,

with US\$600,000 in local counterpart funding, and US\$10.6 million to finance part of section three and the Santa Fe bridge, which is to be financed by the government, with cofinancing, a supplemental loan, or any combination of the three. The Nicaraguan government has been discussing the construction of the Santa Fé bridge with the Japanese government, and the discussions are at an advanced stage. Also, discussions are being conducted with the CABEI to include the feeder network as part of the project.<sup>8</sup> Should the agreement with the CABEI materialize, CABEI-financed investments will be included in the project through parallel cofinancing.

**Table II-1**  
**Cost and financing (US\$ millions)**

Category	IDB	Local		Total(*)
		NI- Gov.	Cofin.	
<b>1. Administration</b>	<b>3.2</b>	-	<b>0.6</b>	<b>3.8</b>
1.1 Technical and environmental supervision and engineering	2.9	-	0.6	3.5
1.1.1 Section I	1.1	-	-	1.1
1.1.2 Section II	1.3	-	-	1.3
1.1.3 Section III	0.5	-	0.6	1.1
1.2 Evaluation and audit	0.3	-	-	0.3
<b>2. Direct costs</b>	<b>44.5</b>	-	<b>10.0</b>	<b>54.5</b>
2.1 Investment in highways and bridges	43.9	-	10.0	53.9
2.1.1 Section I	18.1	-	-	18.1
2.1.2 Section II	20.4	-	-	20.4
2.1.2.1 Conventional works	18.0	-	-	18.0
2.1.2.2 Special socioenvironmental mitigation works	2.4	-	-	2.4
2.1.3 Section III	4.2	-	10.0	14.2
2.1.3.1 Conventional works	4.2	-	4.2	8.4
2.1.3.2 San Juan river bridge	-	-	5.8	5.8
2.1.4 Social and Environmental Management Plan (**)	1.2	-	-	1.2
2.2 Institutional strengthening	0.6	-	-	0.6
<b>3. Financial expenses</b>	<b>1.8</b>	<b>0.6</b>	-	<b>2.4</b>
3.1 Commitment fee	-	0.6	-	0.6
3.2 Interest	1.2	-	-	1.2
3.3 Inspection and supervision	0.6	-	-	0.6
<b>Total</b>	<b>49.5</b>	<b>0.6</b>	<b>10.6</b>	<b>60.7</b>

\* Paving costs with asphalt surfacing

\*\* Investment in indirect impact mitigation measures

<sup>8</sup> The cost of rehabilitating the secondary (feeder) highway system is estimated at US\$9.5 million, assuming reconstruction of the granular pavement along its entire length and a bituminous surface treatment along approximately 50% of these highways.

### **III. PROGRAM EXECUTION**

#### **A. Borrower and executing agency**

- 3.1 The borrower will be the Republic of Nicaragua, and the executing agency will be the Ministry of Transportation and Infrastructure (MTI). The MTI will act through the Bank's Project Coordinating Unit (PCU), which will report to the Road and Highway Administration (DGV). The DGV's general role is for planning, programming, construction, contracting, supervision, and improvement of highways and bridges in the highway system. The DGV currently includes three departments: the Highway Construction Office, which includes the executing agencies for projects financed by the World Bank, the Inter-American Development Bank, the CABEI, and other financing agencies; and the Highway Conservation Office.

#### **B. Program management**

- 3.2 The DGV, acting through the Project Coordinating Unit (PCU) in charge of Bank projects, will be responsible for managing the operational relationship with the Bank for this operation. The PCU has the structure and capacity to coordinate execution of the new operation. The duties of the PCU include: (i) verifying and approving project budgets; (ii) proposing, developing, reviewing, and approving studies and bidding documents; (iii) planning, coordinating, directing, and evaluating execution of the works; (iv) coordinating efforts with the Ministry of Finance to secure timely allocation of local counterpart funding and approval of disbursements of loan funds; (v) opening separate bank accounts for managing the proceeds of the loan and the local counterpart funding; (vi) monitoring day-to-day program execution, including coordinating with the DGA on environmental and social issues; (vii) submitting disbursement requests and supporting documentation to the Bank; (viii) maintaining effective procurement administration systems, and accounting and financial records of program transactions; (ix) preparing and submitting to the Bank the program's annual financial statements, duly audited by independent auditors acceptable to the Bank, as well as semiannual reports on the status of the revolving fund; (x) maintaining an internal control system acceptable to the Bank; (xi) coordinating within the MTI and in close collaboration with DGA the resettlement plan, and compliance with the Environmental and Social Management Plan guidelines with the entities concerned.
- 3.3 This operation provides continuity to the institutional strengthening efforts of loans 1088/SF-NI, 1530/SF-NI, and 1599/SF-NI, and provides additional resources as described in Component II to complement the activities begun in these operations. The operation also includes an agreed institutional strengthening strategy, to include specific actions with a timetable, on the various processes of highway management identified as critical to proper implementation of the road investment plan. These actions have been initiated and will be carried out in a two-year period and have short- and medium-term impacts. Under the agreed strategy, these institutional actions should translate to the fulfillment of specific targets in

executing Bank projects, which have also been agreed to with authorities from the MTI and FOMAV (see Table III-1). These targets are divided into two phases for monitoring purposes and will be reviewed every six months during the 2007-2008 period. They relate to the number of highways put out to tender or in the bidding process; contracts signed; loan disbursements made; contracted works paid for; physical progress and highways contracted. Below is a summary of strategy targets.

**Table III-1 (\*)**  
**Institutional strengthening strategy**  
**Targets and actions**

Targets and actions						
Execution targets Bank-financed programs and cofinancing <sup>9</sup>	TOTAL	PHASE I <sup>10</sup>	PHASE II			
		1 <sup>st</sup> half 2007	2 <sup>nd</sup> half 2007	1 <sup>st</sup> half 2008	2 <sup>nd</sup> half 2008	
		Bidding	10	2	2	
		Contracts signed	6	5	3	
		Disbursements made (US\$ million)	94.5	17.76	34.2	24.44
		Payments for works (US\$ millions)	94.5	17.76	34.2	24.44
		Highways rehabilitated (km)	372.44	106.24	193.2	48.0
		Highways contracted (km)	350	324.2	25.8	
Institutional strengthening		Phase I <sup>11</sup>	Phase II			
		1 <sup>st</sup> half of 2007	2 <sup>nd</sup> half of 2007	1 <sup>st</sup> half of 2008	2 <sup>nd</sup> half of 2008	
		Rate of advance of institutional strengthening strategy actions for each process				
Process to be strengthened						
Selection and contracting of works	100%	40%	50%	10%		
Planning	100%	60%	20%	20%		
Execution of road works	100%	30%	50%	10%	10%	
Supervision and quality assurance	100%	40%	40%	20%		
Highway maintenance	100%	50%	50%			
Information technology	100%	50%	50%			
Training	100%	40%	20%	20%	20%	
Environmental and social management	100%	60%	40%			
Weight and size control, and highway safety	100%	0%	25%	25%	50%	

- 3.4 As a condition precedent to the first disbursement, the MTI must adopt a resolution approving the medium-term institutional strengthening strategy and must have submitted, to the Bank's satisfaction, evidence that the actions and targets of Phase I of the strategy<sup>12</sup> have been fulfilled. As a special execution condition,

<sup>9</sup> Loan contracts 1088/SF-NI, 1530/SF-NI, 1599/SF-NI, 1702/SF-NI (Sébaco-Matagalpa highway), 846/OPEP, 1061/OPEP, and the present contract.

<sup>10</sup> May include targets met in the last quarter of 2006.

<sup>11</sup> May include activities completed in last quarter of 2006.

<sup>12</sup> The Bank will decide whether the resolution approved is satisfactory, using as a reference the annex describing in detail the institutional strategy (see <http://idbdocs.iadb.org/wsdocs/getDocument.aspx?DOCNUM=795124>). The table showing the phases, processes, targets, and rates of advance of planned strategy activities will be an integral part of the loan contract.

evidence must be submitted, to the Bank's satisfaction, that actions and outcomes agreed to in the institutional strategy for each semiannual period<sup>13</sup> have been fulfilled. This evidence will be submitted at the time of the semiannual project monitoring reports (see paragraph 3.14). Also, in order to use the resources of the highway education program, the executing agency and national police must have signed an interagency agreement setting the terms and conditions of national police participation in the program.

**C. Bank account, revolving fund, and auditing**

- 3.5 *Special account.* The MTI will open two "special accounts", one for the proceeds of the financing and the other for the local counterpart funding.
- 3.6 *Revolving fund.* To carry out program disbursements, a revolving fund equivalent to 5% of the loan amount (US\$2.6 million) will be established in accordance with Bank procedures. The MTI will control the use of the fund and will prepare disbursement requests on the borrower's behalf.
- 3.7 *External audits.* Throughout the execution period the MTI will submit the program's financial statements to the Bank on an annual basis. The program will be externally audited by a firm of independent auditors acceptable to the Bank in accordance with Bank requirements and the guidelines in the terms of reference for external audits of Bank-financed projects (document AF-400). In selecting and hiring the auditing firm, the procedures set forth in the external audit bidding document (AF-200) will be followed. The costs of the audits will be part of the program costs and defrayed out of the Bank financing.

**D. Procurement**

- 3.8 Procurement will be carried out in accordance with Bank policies GN-2349-7 and GN-2350-7, which were approved in February 2006.
- 3.9 Annex II includes the Procurement Plan and details the procurement procedures to be followed, the thresholds for each procedure, and other specifics of the operation. For works on Sections I and II of the highway, simultaneous bidding processes are planned whereby bidders will be asked to submit bids for each section. The option of submitting a single bid for works on both sections will be offered only to bidders that can demonstrate they possess the capacity for both sections. Both sections will be awarded to a single bidder if the proposal is technically acceptable and is the least cost solution for the two sections combined, compared to the sum of lower-cost bids for construction of each section individually. A single contract will be awarded for supervision of Sections I and II, and another for supervision of Section III.
- 3.10 Engineering designs are at an advanced stage, sufficient for approval of the loan. Before the bidding on any of the sections, the construction designs for the corresponding section must be completed and must receive the Bank's no objection,

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<sup>13</sup> The progress will be evaluated according to the resolution adopting the institutional strengthening strategy.

and the recommendations of the Environmental and Social Management Plan for the corresponding section must be reflected in the bidding documents.

- 3.11 In addition to what is stated in the Environmental and Social Management Plan, project activities will be carried out according to the following general environmental criteria: (a) all potential environmental effects of project activities will need to be evaluated in accordance with the legislation in effect in the Republic of Nicaragua and its respective procedures, in a timely manner, in order to prevent, mitigate, or compensate for adverse environmental effects; (b) the support and participation of the affected communities will be needed and every effort must be made to ensure they have been consulted on the projects; and (c) the community must be kept informed on a regular basis of the use to which program resources have been put as well as contracts awarded and the results achieved.
- 3.12 Also, before the bidding on the third section of the highway, the borrower must demonstrate to the Bank that it has the resources to finance the entire section three and to build the bridge over the San Juan river. These resources may be in the form of cofinancing, local counterpart funding, or a loan from the Bank itself.

#### **E. Monitoring and evaluation**

- 3.13 **Bank supervision.** The program will be supervised by the Bank's Country Office in Nicaragua, which will work closely with the authorities and technical departments of the MTI, assisting with the procurement process and the technical and financial decision-making.
- 3.14 Due to the MTI's institutional weaknesses and the number of operations being executed, the Country Office in Nicaragua will be reinforced with the personnel and resources needed to meet the extraordinary technical demands that arise in Nicaragua. For monitoring the PCU will prepare semiannual progress reports, for submission to the Bank within 60 days after the end of each semiannual period and describing the outcomes of the project's two components based on the monitoring indicators in the logical framework. These reports will also contain the following information: (i) progress in relation to the execution indicators and disbursement timetable agreed to for the program; (ii) updated execution and disbursement timetables; (iii) in the case of the second semiannual report, the detailed work plan and action plan for the following year, including an updated procurement plan; (iv) the status of the revolving fund; and (v) progress in execution and outcomes of the 2007-2008 institutional strengthening strategy, along with evidence that actions and targets have been fulfilled.
- 3.15 Also, with the participation of the project team, at least one administrative and monitoring meeting is expected to be held each year to review progress in implementation and annual investment plans. This meeting will be held after the report for the second half of each year is received.
- 3.16 **Highway Maintenance.** The executing agency will submit to the Bank: (i) for the latter's no objection, by 15 September of each calendar year beginning in 2007, the draft annual maintenance agreement between MTI and FOMAV for the following year; (ii) by 15 March of each calendar year, beginning in 2008, the annual

maintenance agreement between MTI and FOMAV for the present year; and (iii) an annual maintenance report for the previous year prepared by FOMAV and submitted through the MTI's Project Coordinating Unit during program execution as part of the progress report for the second half of each year, at the time of the annual administration mission. This report will be submitted within the first quarter of each year for four years after the date of the last disbursement.

- 3.17 The annual maintenance agreement between MTI and FOMAV will need to specify that FOMAV is responsible for preparing the annual maintenance plans and, after completion of the works and maintenance contract for each project-financed section of road, the agreement will need to identify the corresponding section within the maintainable road network.
- 3.18 The objective of the Annual Highway Maintenance Report is to perform a sufficiently thorough evaluation of maintenance activities. This report will contain, at a minimum: (i) general information on the structure and responsibility of the body or bodies charged with highway maintenance, and number of maintenance contracts awarded; (ii) updated inventory of the condition of the maintainable road network for which FOMAV is responsible; (iii) evaluation of the execution of the maintenance plan for the previous year; (iv) FOMAV's annual report indicating progress made; and (v) highway maintenance plan for the following fiscal year, with the rationale for priorities, types of activities, execution timetable, and financial and physical resources.
- 3.19 As a special execution condition during the loan disbursement period, the resources raised each year from the special tax to finance highway maintenance must be transferred to FOMAV. Before the bidding on the three sections of the highway, this condition must have been fulfilled in the year immediately preceding the bidding date.
- 3.20 **Monitoring and evaluation.** The quantitative and qualitative indicators or indices have been developed in relation to expected outcomes. Also, a witness area has been designated in the Nueva Guinea area<sup>14</sup> to monitor these indicators over time. These indicators are measurable for both areas and are not expensive. Only relevant indicators have been taken as key baseline parameters. These indicators refer to increased production yield, increased tourism activity, fishing, and cross-border traffic. The goal and purpose indicators have been based on the findings of the economic feasibility study. These indicators will be evaluated through a midterm evaluation and final evaluation, both of which will awarded to outside consultants and financed with project resources. The midterm evaluations will be performed when 50% of the loan has been disbursed and the final evaluation when 90% has been disbursed.
- 3.21 At the end of the project, a project completion report will be prepared. The objective of this report is to review the outcomes of program execution and fulfillment of proposed targets. The need for an ex post evaluation of this program was discussed with the authorities, and it was decided that MTI would perform the

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<sup>14</sup> The Fonseca and Ciudad Darío roads are in this zone.

evaluation eight years after the completion of the works. As part of its institutional strengthening efforts, the MTI is implementing the information systems needed to collect data for this evaluation. The baseline will be the same as the one in the logical framework.

**F. Execution period and disbursement timetable**

- 3.22 The program will have a disbursement period of six years, from the effective date of the loan contract. Table III-1 shows the estimated disbursement timetable.

**Table III-1**  
**Disbursement timetable (in US\$ millions)**

Source	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total	%
IDB	4.9	23	20.9	0.5	0.1	0.1	49.5	82
MTI	0.3	0.1	0.1	0.1			0.6	1
Cofinancing	-			4.9	5.7		10.6	17
Total	5.2	23.1	21	5.5	5.8	0.1	60.7	100
%	9	38	35	9	10	0	100	



## **IV. VIABILITY AND RISKS**

### **A. Technical viability**

- 4.1 The proposed design for improving the main highway involves: (i) paving and keeping the current route of Sections I and II (Acoyapa–San Carlos), except for small adjustments in Section II to relocate the bridge over the Tule River and environmental and social mitigation measures to avoid affecting existing villages; (ii) construction of new highway for most of Section III (La Argentina–Las Tablillas). The process of preparing the route designs, cross sections, and initial pavement estimates has been closely monitored, and it was found that satisfactory technical criteria have been used that reflect industry standards, and quality is expected to be sufficient to allow the project to be put out to tender and executed.
- 4.2 To review technical viability, lessons learned on highway projects in previous MTI projects were taken into account. This project involved highway works and bridge construction works similar to other works previously performed in Nicaragua. Thus, the project engineering does not present special technical difficulties for contracting by the MTI or execution by international contractors that operate in the region with easy access to the Nicaraguan market.
- 4.3 Works have been budgeted for the following types of pavement structure: (i) gravel pavement with bituminous surface treatment; (ii) gravel pavement and asphalt surfacing; and (iii) hydraulic concrete pavement. In every case, work volumes are available for each category of work. The estimated volumes and unit costs were reviewed for this specific project, and were found to be consistent with typical works and market costs in competitive bidding processes.
- 4.4 The project will be executed through three contracts, one each for Sections I, II, and III, by selecting the construction firms through international bidding. Relatively homogenous sections have been chosen as regards traffic forecasts, and this will facilitate the adjustment of the pavement structure for each section. A work volume is established for each contract to leverage economies of scale. Also, consolidated bids for work on Sections I and II may be requested as an alternative (see paragraph 3.9).
- 4.5 Project execution will be supervised by two specialized consulting firms hired by the MTI, one for Sections I and II and the other for Section III. The bidding timetable for these services will be adjusted according to the sequence of the bids. In light of lessons learned in previous experiences, the bidding guidelines for supervision services will include the responsibility to perform quality control of input materials and products developed by the contractor, and all equipment needed by the supervising companies shall be made available.

### **B. Economic viability**

- 4.6 The studies on the highway improvements, in preparation for the MTI, include the technical project to determine the engineering designs and the economic evaluation for determining feasibility. The economic feasibility study was reviewed, and the overall methodology was found to be correct; however, the project team requested

that the MTI adjust its cost estimation criteria and make other adjustments to its calculations (especially the sensitivity analysis), to maximize the reliability of the final outcomes.

- 4.7 The project will have an effect on part of the Chontales and San Juan regions, and the area of influence was determined to be 408,800 hectares, as with the environmental impact assessments. The economy of the project area is primarily based on livestock farming (particularly beef and cow's milk), and crop farming (corn, beans, bananas, rice, cassava, quequisque, and oranges); other activities are fishing associated with Lake Nicaragua and tourism related to visits to natural areas.
- 4.8 The investment costs for the project were estimated for three basic choices in pavement structure: (i) gravel and double bituminous treatment; (ii) gravel and asphalt surfacing; and (iii) hydraulic concrete. The costing of each alternative was considered with a homogenous design for the entire highway.
- 4.9 The estimation of project benefits relied on a mixed methodology of analysis, quantifying the benefits for the users (consumer surplus) and benefits for the producer (producer surplus), which can be used for rural road projects in underdeveloped areas, as the improvements to the road may affect the technical quality of production. The vehicle operating cost module of the Highway Design and Maintenance Standards Model was used to quantify the costs of the operation with and without the project and the Rural Road Model to quantify the value of production with or without the project and integrate the outcomes of the vehicle operating cost. It was found that the use of this methodology does not involve the accounting of duplicate benefits (consumer surplus benefits were applied exclusively to traffic that is not related to products for which producer surplus benefits are quantified).
- 4.10 The estimate of producer benefits focused on quantifying the effects of mechanized agricultural production (as it currently relies on traditional methods), supported by the increased yield on existing productive areas. Also, increases are quantified in fishing production and in tourism services, due to changes in the route. The contribution of these benefits is between 25% and 30% (based on the project evaluated) of the total benefits identified.
- 4.11 There is some uncertainty in the estimate of user benefits (this was considered in the sensitivity analysis), as current traffic measured through traffic counts is less than that recorded in 2003. Some data point to excessive deterioration of the highway in recent years that limited highway usage. For the evaluation, initial traffic was adopted based on 2003 records and 2005 origin/destination surveys, with projections based on historical growth rates. The initial TPDA adopted for the route is 454 vehicles per day (weighted average for the sections), and a 5.2% average annual growth rate was projected. The contribution of road user benefits is between 70% and 75% (based on the project evaluated) of all benefits identified.
- 4.12 There are also benefits that were not quantified. The most important one is the potential international connection with Costa Rica (virtually inexistent now due to

the highway conditions), remembering that the access highway in Costa Rica is under construction. This connection is strategic for regional integration over the medium and long terms, and could have an impact on productive development (e.g., by providing a new access route to Puerto Limón in Costa Rica) and development of the tourism sector with aggregate demand from Costa Rica and other countries. Also, the project provided additional benefits associated with ongoing traffic (day and night), and highway safety (in any weather conditions), by considering the current state of the highway.

- 4.13 The economic evaluation (economic and social costs) concluded that the proposed project is profitable, both in considering the complete project (main highway and feeder highways), the main highway project (Sections I, II, and III) and the partial main highway project (Sections I and II). The sensitivity analysis was performed in light of variables involving the greatest risk: (i) projected traffic volume and growth rate, considering uncertainty regarding recovery and development of traffic on the route; and (ii) construction costs, allowing for future increases in the cost of materials. The project remains cost-effective, even in difficult conditions, for the options of gravel pavement with bituminous treatment and gravel with asphalt surfacing.
- 4.14 The following table summarizes the estimates of the Economic Internal Rate of Return (EIRR) for the various cases examined:

**Project cost-effectiveness (EIRR)**

Alternative	Baseline EIRR	EIRR (1)	EIRR (2)
<b>Main highway and feeder highway project</b>			
Gravel and double bituminous treatment	19.5%	15.6%	15.7%
Gravel and asphalt surfacing	18.3%	14.6%	14.5%
Hydraulic concrete	14.3%	11.2%	11.0%
<b>Main highway project (Sections I, II and III)</b>			
Gravel and double bituminous treatment	21.6%	17.1%	17.4%
Gravel and asphalt surfacing	20.0%	15.7%	15.9%
Hydraulic concrete	15.0%	11.4%	11.5%
<b>Proyecto Ruta Troncal Parcial (Tramos I y II)</b>			
Gravel and double bituminous treatment	23.8%	19.3%	19.4%
Gravel and asphalt surfacing	21.7%	17.5%	17.5%
Hydraulic concrete	15.3%	12.0%	11.9%

(1): 3% traffic growth and 25% reduction in initial traffic volume.

(2): 3% traffic growth and 20% increase in investment amount.

- 4.15 A sensitivity analysis was also performed for a possible delay in executing the works. Considering the project for the main highway and feeder highway system (complete project), a two-year delay in execution would reduce the EIRR to 17.3%, 16.3%, and 13.0%, respectively, for the bituminous treatment, asphalt surfacing, and hydraulic concrete alternatives.

- 4.16 The proposed alternative is to pave the highway with gravel and asphalt surfacing (5 cm), which gives a high return (it passes the most stringent sensitivity analysis) and involves low risks for conserving highway assets. The cost of the works is US\$41.5 million (excluding taxes).
- 4.17 The most cost-effective alternative offering the highest return is paving with gravel and double bituminous treatment; this option costs US\$36.7 million (excluding taxes). However, since this involves more intense maintenance, it carries greater risks in future asset conservation, in view of the weaknesses of the MTI.

**C. Financial viability**

- 4.18 Based on the review of the MTI's financial program performed in preparing the project, the MTI was found to have maintained a high level of performance in its investment program. In addition to Bank projects, it has been executing major projects financed by the World Bank, CABEI, DANIDA (Danish funds), Japan, the Organization of Petroleum-Exporting Countries, and the European Community. In 2004 and 2005 the institution had an execution level equivalent to US\$80.5 million and US\$81.5 million, respectively. Of these amounts, US\$20.4 million and US\$9.8 million, respectively, were for Bank-financed projects; the remainder were projects financed mainly by the World Bank, the CABEI, and DANIDA. Also, as shown in Table IV-1, a substantial increase is expected in the items to be executed in the coming years that mainly stem from an increase in funds approved by the Bank, the CABEI, and the World Bank. Increases in the case of the Bank are from the beginning of works under contract that have been put out to tender and awarded in recent months and are soon to begin. As for the World Bank, the fourth recently approved highway rehabilitation and maintenance project is to begin in 2007, and the procurement process is currently under way for this project. The CABEI has also approved the corresponding funds, the eligibility conditions have been fulfilled, and determination of the source of financing is pending, which will allow it to advance toward the bidding and execution stage. The budgetary ceilings for both these loans and local resources depend on the annual budgetary allocations proposed by the government through the Ministry of Finance, and the corresponding approvals from the Legislative Assembly. The MTI has been receiving the budgetary resources needed to cover the local counterpart funding for Bank-financed projects.
- 4.19 Also, the increased investments in the next two years represent an approximate 20% increase over average investment levels in previous years. This increase, in addition to the financial requirements, requires strengthening the institution's works contracting and execution process (see paragraph 4.21).
- 4.20 As for FOMAV, in December 2005 the Legislative Assembly passed the law establishing a special tax for the Highway Maintenance Fund. This institution is receiving the funds generated by this law, and thus its financial sustainability is legally ensured. For 2006, resources have been allocated for maintenance contracts for 2,000 kilometers of network.

## D. Institutional viability

- 4.21 The proposed project in itself entails no major institutional challenges. The first component deals with highway projects of relatively low technical complexity and the work required for this specific project is similar and even less than that of other projects financed by the Bank or other financial institutions. The most important action of the second component is the execution of the highway safety pilot plan. The project team deems the MTI Highway Safety Administration to have sufficient capacity to benefit from the planned institutional strengthening efforts.

**Table IV-1**  
**Execution and financial projections 2004-2008**  
**(US\$ millions)**

Financial institution	2004	2005	2006	2007	2008	Total
<b>Preinvestment</b>	<b>0.25</b>	<b>2.02</b>	<b>2.04</b>	<b>10.0</b>	<b>10.2</b>	<b>24.4</b>
IDB	0.03	0.02	0.9	0.5	0	1.5
CABEI	0.02	0.6	0.4	0	0	1.02
DANIDA	0	0.4	0.2	9.0	9.2	18.8
JAPAN	0.2	1.0	0.3	0.5	0	2.1
ORD. RESOURCES	0	0	0.01	0	0	0.01
W/O FINANCING	0	0	0	0	1.0	1.0
<b>Investment</b>	<b>80.3</b>	<b>79.5</b>	<b>74.9</b>	<b>93.2</b>	<b>79.2</b>	<b>407.3</b>
IDB	20.4	9.8	23.7	26.8	23.2	103.90
CABEI	11.3	15.7	24.0	13.5	15.6	80.1
WORLD BANK	26.3	18.0	8.5	22.3	18.5	93.6
OPEC	2.6	2.4	3.7	4.8	0	13.5
VENEZUELA	0	0.09	0	0	0	0.09
DANIDA	7.3	6.5	0	0	0	13.8
JAPAN	0.5	0	0	0	0	0.5
SPAIN	5.3	12.5	9.9	5.0	0	32.7
EUROPEAN UNION	0.4	0.8	1.2	7.2	3.3	12.9
SUPP. SOC. FUND	0.9	0	0	0	0	0.9
LOC. RESOURCES	5.3	13.6	3.9	13.6	18.9	55.3
<b>Total</b>	<b>80.5</b>	<b>81</b>	<b>77.0</b>	<b>103.2</b>	<b>89.7</b>	<b>431.7</b>

- 4.22 Also, in the current context for an investment plan, which involves a significant increase in investment, the institutional challenge of the highway sector increases and should be addressed to avoid difficulties in executing this operation. In general, institutional viability in the highway sector is determined, on the one hand, by MTI capacity to move ahead with the works described in the investment plan and, on the other hand, by the capacity of the construction industry to meet these demands. Over the medium and long terms, institutional viability is also determined by ensuring sustainability in the highway system, which mostly depends on maintenance policies and strategies of the MTI and FOMAV.
- 4.23 In preparing the operation, an institutional evaluation of the MTI and FOMAV, as the agencies responsible for the highway sector, was performed. This evaluation included the use of the Institutional Evaluation System for organizations and executing agencies. In parallel, and in coordination with the previous analyses, the

- MTI, with support from the Bank, is performing consulting services for the institutional strengthening of the two entities, which is aimed at targeting the assessment in a more specialized manner in the highway sector. As a result of these analyses, it was found that the MTI and FOMAV have the structure to achieve the objectives pursued with Bank-financed projects currently being executed and the Acoyapa–San Carlos–Costa Rican Border Highway Integration Program. However, to achieve the execution targets, ongoing and specific strengthening efforts are required, with short and medium term effects.
- 4.24 For the short-term effects, strengthening efforts are required mainly in the processes of: (i) selection and contracting of large-scale works; (ii) execution of highway works; (iii) supervision; (iv) environmental and social management; and (v) quality assurance. For short-term needs, the strategy includes actions involving ministerial-level decisions on the allocation or redistribution of resources, the development and implementation of information systems for supervising and monitoring the processes, improvements to the quality control system for the asphalt used and quality standards in the bidding documents and work contracts and supervision, preparation of manuals for supervising and monitoring projects and supply of logistical equipment for project management (vehicles, computer and communication systems). To support the decisions in allocating or redistributing resources, the processes for selecting and hiring personnel are to be evaluated, and the viability of using the services of human resource management firms to assist the MTI in selecting personnel will be examined.
- 4.25 In the medium term, and in order to achieve comprehensive sustainability of the highway sector, the MTI should also take actions to strengthen the processes for (i) both strategic and tactical planning; (ii) highway maintenance promoted by FOMAV; (iii) information technology development; (iv) training; (v) weight and size control; and (vi) highway safety. The main medium-term actions for strengthening these processes consist in hiring specific consulting contracts, including one to develop a proposal for policies and strategies for future development of highway infrastructure, and another to carry out the medium-term investment and highway maintenance plan. Also included are actions to design and implement a management information system for the entire project cycle; preparation of a training plan with specific activities (workshops and seminars), such as study grants for MTI professionals in areas of specialization (at the master's degree level) that include transportation economics, traffic engineering, and pavement design.
- 4.26 The actions under the strategy translate into increased capacity for execution, as they are aimed at making each of the processes involved in highway management more productive. The priority in the time given to selection and contracting processes, execution and supervision of works, which are the primary determining factors for execution capacity. These actions are supported with financial resources provided for various Bank operations in progress. The following table shows allocations for the purpose of institutional strengthening in loans approved by the Bank and currently being executed.

**Table IV-2**  
**Bank allocations for institutional strengthening**  
**(US\$)**

<b>Institutional strengthening</b>	<b>Phase I (1)</b>	<b>Phase II</b>
<b>Process to be strengthened</b>	<b>Amount</b>	<b>Amount</b>
Works selection and contracting	150,000	150,000 <sup>2</sup>
Planning	150,000	150,000 <sup>2</sup>
Execution of road works	150,000	150,000 <sup>2</sup>
Supervision and quality assurance	150,000	100,000 <sup>2</sup>
Road maintenance	150,000	100,000 <sup>2</sup>
Information technology development	100,000	125,000 <sup>3</sup>
Training	100,000	100,000 <sup>3</sup>
Environmental and social management	50,000	100,000 <sup>3</sup>
Weight control, size, and road safety		75,000 <sup>4</sup>
<b>TOTAL</b>	<b>1,000,000</b>	<b>1,000,000</b>

<sup>1</sup> Source of financing: Project 1088/SF-NI

<sup>2</sup> Source of financing: Project 1530/SF-NI

<sup>3</sup> Source of financing: Project 1599/SF-NI

<sup>4</sup> Source of financing: component II of the present loan

- 4.27 The highway maintenance process would steadily increase resources allocated to FOMAV (see paragraphs 1.16 and 3.19), finance a consulting contract for reviewing FOMAV's organizational structure and preparing the agencies' corresponding functions and procedures manuals. Also, as part of component 2 of this operation, a study will be conducted to assess the viability of implementing a standards-based maintenance program.
- 4.28 For weight and size control, and based on diagnostic assessment by the project team (see paragraph 1.17), the MTI has proposed an increase in fines for excess loads, while increasing coverage of the control system through better use of existing mobile scales. Also, component 2 would include a consulting contract to help determine an action plan for improving system management. Lastly, with other resources, a feasibility study is to be performed for establishing a network to connect the weigh stations to improve the system's capacity for controlling and monitoring the system. For highway maintenance, the project team reviewed the terms of reference of the strategy developed by CONASEP and found them to be appropriate. The strategy is reinforced by the terms of reference envisaged in component 2. In addition, the engineering design of the Acoyapa–San Carlos–Costa Rican border project includes specific highway safety measures (see paragraph 2.4).
- 4.29 Carrying out these actions requires, first and foremost, a commitment from the MTI senior management, as well as the availability of financial and human resources. To achieve this commitment at the highest level, these actions (both short- and medium-term) have been included in the institutional strengthening strategy agreed to by the Bank and the MTI (see paragraphs 3.3 and 3.4), which covers a two-year period. The institutional strategy will be adopted by ministerial resolution.

- 4.30 This strategy can be fulfilled because it consists entirely of actions that are feasible within the decision-making powers of the MTI and it has sufficient financial resources, both in other Bank operations being executed and in the loan recently approved by the World Bank. PAST–DANIDA is specifically supporting some of the actions that make up the strategy. The strategy itself is not a unique solution, but rather a contribution to an institutional development process that is gradual over the medium and long terms, and the Bank's support through contributions from the various loans reflects this gradual nature.
- 4.31 As mentioned above, institutional viability is not only determined by the MTI and FOMAV, but it also includes the construction industry. The supply of services related to highway construction from Nicaraguan contractors is severely limited. These contractors do not have the capacity to execute construction or rehabilitation projects for the main highway system that include asphalt or hydraulic concrete due to a lack of equipment and financial capacity. This situation is due, in large part, to the effects of political and social events in Nicaragua in the 1980s. Only since the mid-1990s has a new private structure made up of domestic companies begun to be created; currently these companies can take on small works and maintenance tasks. As a result, the Nicaraguan private sector is currently weak and strengthening it to the point where it has skilled, regionally competitive companies will take several years.
- 4.32 The supply of international contractors is extensive, with apparently no significant limits. The region has a considerable number of contractors with technical capacity (especially heavy equipment) and financial capacity, so that Nicaragua can take on works as large as this project without major problems. International companies have participated in bidding processes for works called by the MTI in 2005 and 2006 (five to eight firms submitted a bid for each contract, while the number of those expressing prior interest was considerably higher). This demonstrates the existence of a competitive market, with sufficient supply to carry out the works in the MTI's project portfolio, including this project. Also, no constraints in the supply of consulting services or supervisory services for project execution are anticipated, as these activities can be carried out by companies from various countries without mobility problems.

**E. Proposal for environmental and social management**

- 4.33 The potential direct and indirect impacts that were identified in preparing the operation may be prevented, mitigated, or offset through actions at each phase of the project. Given the scopes (rehabilitation and improvement by paving an existing roadway), Nicaraguan law requires an environmental and social strategy. The Bank recommends an Environmental and Social Impact Assessment (ESIA) for this type of intervention. Thus, the MTI, in conjunction with the Bank, agreed to specific terms of reference, which served as the basis for engaging the services of an environmental firm with recognized international experience. The outcomes of the ESIA were published locally and in the Bank's Public Information Center on 22 June 2006.



- 4.34 **Potential environmental and social impacts.** The ESIA considered an analysis of the physical, biological, and social environment of the project area and its environment, as well as identification and assessment of the potential impacts associated with construction and operation. In particular, the following variables were examined: geomorphology, hydrology, soil, air, landscape, biotic community, protected areas, population, employment, rights-of-way holders, economy, infrastructure, and services. Based on the current state of the aforementioned environmental factors, the possible interaction between these factors and project activities in each phase was examined.
- 4.35 The risk analysis was also incorporated in the face of natural and anthropic threats, with the potential of affecting the relationship between the environment and the project. Natural threats are associated with events such as earthquakes, hurricanes, mudslides, flooding, tsunamis, and fire. Anthropic factors refer mainly to polluting substances, based on the possibility of accidental spills of liquids and particulate-type solids, such as fuels, lubricants, sealants, paints, additives, and cement.
- 4.36 Generally, the project for the highway in question has moderate impacts, as the road already exists along most of the sections examined, and thus the environment has been previously impacted. The main direct impacts of the project may occur during construction, mainly as a result of the movement of dirt, disturbance of natural materials, and the consequent generation of noise and dust. There is only one section expected to have a new route, between La Argentina and the La Azucena intersection, as well as some parts along the San Miguelito–La Argentina section with variations to the current route, as a mitigation measure for pedestrian safety, avoiding the towns of El Tule, Cruz Verde, and Nueva Jerusalén. These measures have reduced the number of people to be resettled. These openings are routed through agricultural lands without sensitive ecosystems. The possibility of resettling 114 families has been identified (most of them scattered about) who are illegally living in the right of way.
- 4.37 The current layout of the highway goes through the San Miguelito wetlands and Los Guatuzos Wildlife Refuge, and the proposed improvement maintains the current route, and as a result there will be no additional impacts. Land in the vicinity of the highway in both areas is agricultural, and accordingly there should be no direct effects on a sensitive ecosystem. In the project area, no protected areas, cultural heritage areas, or indigenous populations are affected.
- 4.38 **Environmental and Social Management Plan.** The Environmental and Social Management Plan was prepared, and its main recommendations have been incorporated into the designs and will be included in the construction company's bidding documents. During construction measures are proposed that are mostly for preventing direct impacts and contingencies, as mitigation measures are incorporated into the design, and the construction company's obligation to take these measures as they were designed is implicit. For resettlement, Bank policy OP-710 is to be implemented, with financing from project resources. Section II includes construction works (by pass) to avoid crossing through groups of villages

- that it has been considered better not to relocate, for a total of 6 kilometers of new route.
- 4.39 Although the project does not generate impacts on the San Miguelito Wetlands, the management plan includes investments for intensifying the number of sewers to increase the flow and ensure uninterrupted service, by improving current conditions in the wetlands. Also, project resources are to be used to carry out a management plan for the entire wetlands, to complement the management plan used by the Ministry of the Environment and Natural Resources (MARENA) for the Los Guatuzos Wildlife Refuge.
- 4.40 Also, to manage the potential indirect impacts, planning actions were considered, based on experience with other highway projects in Nicaragua and other countries in the region. These projects are primarily aimed at planning and organizing actions or projects in the area of influence, and they in turn may lead to growth potential as a result of improvements to the highway. The responsibility for implementing these recommendations falls to the Environmental Management Office (DGGA) of the MTI, which will coordinate implementation with other institutional actors.
- 4.41 For the operational phase, proposed actions are of two types: first, monitoring certain variables that present uncertainty; and second, verifying effective implementation of the instruments of the Land Ordinance and other recommendations of the planning phase. The DGGA is also responsible for overseeing these monitoring activities.
- 4.42 **Summary of the environmental and social management framework.** The Nicaraguan Constitution establishes the general principles governing environmental policy in Nicaragua. As for biodiversity and protected areas, Law 217 on Natural Resources describes these areas as national heritage. The domain and use of these areas are to be controlled by this law, the special laws and their respective regulations. As for forestry resources, according to the Conservation, Promotion, and Sustainable Development of the Forest Sector Act, the National Forest Institute is the authority with the power to manage forest-related activity. Regulations in protected areas are the jurisdiction of MARENA, while control over Municipally Protected Forest Areas falls to local governments.
- 4.43 Article 26 of Law 217 states that “public or private activities, works, or projects for domestic or foreign investment during the phase of preinvestment, execution, expansion, rehabilitation, or restructuring will be subject to environmental impact assessment studies, as a requirement for granting an environmental permit”. The environmental permit is issued by MARENA and is a mandatory administrative document for projects requiring an environmental impact assessment. While the regulations do not require an environmental impact assessment for highway rehabilitation, Article 25 of the law states that projects not included in the specific list must submit to the appropriate municipality the environmental form that MARENA requires for the permit in question. For this rehabilitation project, MARENA, in a letter of 14 October 2002 signed by the General Director for Environmental Regulation, stated that an environmental and social impact assessment was not required.

## **F. Benefits and beneficiaries**

- 4.44 The primary benefits of the proposed program are expected to be: (i) decreased costs of vehicle operation and shorter travel times due to improved tread surfaces and improved condition of rehabilitated sections of highway; and (ii) increased production yield in the Chontales and San Juan regions due to easier access to modern technologies, as well as increased revenues from tourism services as a result of continuous safe access.
- 4.45 The main benefits will be producers in the livestock-farming, crop-farming, and fishing sectors in the Chontales and San Juan regions, who will see increased productivity and will have improved access to domestic markets and the Costa Rican market, by improving the conditions in which they market their products and reducing the costs of their inputs. The decreased travel times and lower costs will also benefit users of the highway other than the aforementioned producers.

## **G. Risks**

- 4.46 The following table summarizes the critical risks associated with the program and the planned mitigation measures:

<b>Risk</b>	<b>Mitigation measure</b>
Delay in execution due to institutional weaknesses at the MTI.	Institutional development is a gradual process that is closely related to economic development. The MTI is pursuing an institutional development strategy to move forward in this direction that includes actions for improving performance of the various highway management processes. This strategy enjoys the support of other Bank programs being executed. Also, disbursement for this operation is conditioned on the adoption of a ministerial resolution approving the medium-term institutional strengthening strategy.
Inadequate maintenance of highway infrastructure is a generalized risk in Latin American countries for sustainability of the transportation system.	The allocation of funds to FOMAV allows for a stable maintenance policy. A viability study will be used enter into service level maintenance contracts, which will help complete the maintenance strategy with new practical options for the short and medium terms.
The beginning of a new administration in 2007 poses a risk to implementation of a highway project, as it could affect the continuity of the MTI's technical personnel in the transition. The change in administration might also jeopardize continuity in the institutional strengthening measures currently in progress, which require a clear commitment from senior management.	This risk cannot be completely mitigated. However, the program is financing improvements to a highway that is strategic for development of an important region and will have significant impacts on Nicaragua's foreign trade. In addition, the Bank, acting through its Country Office in Nicaragua, has been pursuing dialogue with the electoral candidates to ensure consensus on the project and the highway program currently being pursued by the country through the MTI.

**LOGICAL FRAMEWORK**  
**Acoyapa–San Carlos–Costa Rican Border Highway Integration Program under the Puebla-Panama Plan**

Descriptive summary	Performance indicators	Means of verification	Assumptions
<b>Goal</b>			
Improve the economic integration of Nicaragua and Costa Rica, and within the Chontales and San Juan River regions	<ol style="list-style-type: none"> <li>As a result of the program, by 2010 and 2013 agricultural production in the Chontales and San Juan regions will increase to 49,000 and 64,700 tons per year, respectively (2006 baseline=34,600 tons).</li> <li>As a result of the program, by 2010 and 2013 revenue from tourism in the Chontales and San Juan regions will increase to US\$4.2 million and US\$5.2 million per year, respectively (2006 baseline=US\$3.1 million).</li> <li>As a result of the program, by 2010 and 2013 fishing production in the Chontales and San Juan regions will increase to 900 tons per year and 1,000 tons per year, respectively (2006 baseline=750 tons).</li> <li>By 2010 and 2013, cross-border traffic between Nicaragua and Costa Rica will increase to (i) 45,000 tons per year and 100,000 crossings per year in 2010; (ii) 51,000 tons per year and 120,000 crossings per year in 2013.</li> </ol>	<ol style="list-style-type: none"> <li>Ministry of Agriculture statistics</li> <li>INTUR statistics</li> <li>Statistics from the Fisheries Administration (ADPESCA)</li> <li>Ministry of Industry and Commerce foreign trade statistics, and from MTI origin-and-destination surveys</li> </ol>	
<b>Purpose</b>			
Land transportation system between Acoyapa, San Carlos, and the Costa Rican border operates more efficiently and more sustainably.	<ol style="list-style-type: none"> <li>Six months after rehabilitation works are completed, automobiles are allowed to flow constantly.</li> <li>After all three sections of highway have been improved and the Santa Fé bridge has been built, travel time between Acoyapa and the Costa Rican border is reduced from 7 hours to 2.5 hours.</li> <li>At the end of the project, the average cost of operating a vehicle is reduced by 13% for automobiles, 20% for buses, and 14% for tractor-trailers.</li> <li>The targets of phase 1 of the institutional strengthening strategy are met by the end of the first half of 2007, and the activities and targets of phase 2 are completed and attained by the end of the second half of 2008.</li> </ol>	<ol style="list-style-type: none"> <li>MTI Planning Office traffic reports</li> <li>Midterm and final evaluations</li> <li>Semiannual progress reports</li> </ol>	<p>The macroeconomic context and the political situation in Nicaragua encourage economic growth and the competitiveness of the agricultural and tourism sectors.</p> <p>The economic integration process in the Meso-American region and Costa Rica continues to progress.</p>

Descriptive summary	Performance indicators	Means of verification	Assumptions
<b>Components</b>			
1. Main highway from Acoyapa (Lóvago junction) to San Carlos to the Costa Rican border (Sector de Las Tablillas) is rehabilitated and improved.	1. At the end of the project in 2012: 146 km of paved highway completed, with two 3.60 m lanes, 1.8 m shoulders, and a design speed of 80 or 60 km per hour, depending on whether the land is flat or hilly; and the bridge over the San Juan river is operational and maintenance activities have been under way for two years. 2. By the end of 2009, paving works on road sections I and II have been completed. 3. By the end of 2010, the paving works on road section III have been completed.	1. Final acceptance report on the works 2. Inspection reports 3. Semiannual progress reports	Weather does not affect execution of the works. Budgetary allocations required for programming are made.
2. The institutional capacity of the MTI is strengthened.	1. By the end of 2008, the action plan for improved weight and size control designed and by the end of 2010, the action plan is being implemented. 2. By the end of 2008, the road safety pilot plan has been designed. 3. By the end of 2010, road safety works and measures are being implemented and are reducing accidents at the critical points identified in the pilot plan study.	1. Midterm and final evaluation 2. Executing agency semiannual reports 3. Reports final study on weights and sizes action plan design 4. Report on final design of road safety pilot plan	The government continues to have political will to keep on promoting the institutional development of the MTI on a sustained basis.
<b>Activities</b>			
Component 1:			
1.1 Selection, contracting, and implementation of works	1.1 Works are executed with investments of US\$50.1 million.	Copies of contracts submitted to the Bank, MTI reports, PPMR system, technical and financial audits	Resources are budgeted and transferred in the amounts and at the times needed for execution.
1.2 Execution of the Environmental Management Plan	1.2 The Environmental and Social Management Plan is executed for US\$1.2 million.		
Component 2:			
2.1 Works and studies are completed.	2.1 Contracts in an amount of US\$600,000 are awarded for works and strengthening studies.	Copies of contracts submitted to the Bank, MTI reports, PPMR system, technical and financial audits	Resources are budgeted and transferred in the amounts and at the times needed for execution.  The MTI validates the strengthening strategy.
2.2 Monitoring of the strengthening strategy.	2.2 The strengthening strategy was implemented: (i) Phase 1 activities are completed before the end of the first half of 2007; (ii) Phase 2 activities are completed before the end of the second half of 2008.		

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

PROPOSED RESOLUTION DE-\_\_\_/06

Nicaragua. Loan \_\_\_/SF-NI to the Republic of Nicaragua.  
Acoyapa – San Carlos – Costa Rican Border Highway  
Integration Program under the Puebla-Panama Plan

The Board of Executive Directors

RESOLVES:

That the President of the Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, to enter into such contract or contracts as may be necessary with the Republic of Nicaragua, as Borrower, for the purpose of granting it a financing to cooperate in the execution of the Acoyapa - San Carlos - Costa Rican border highway integration program under the Puebla-Panama Plan. Such financing will be for the amount of up to US\$49,500,000 or its equivalent in other currencies, except that of Nicaragua, which is part of the Bank's Fund for Special Operations, and will be subject to the Financial Terms and Conditions and the Special Contractual Clauses of the Project Summary of the Loan Proposal.

(Adopted on \_\_\_ 2006)

LEG/OPR/RGII/IDBDOCS812012  
NI-L1006