

PROGRAM FOR REHABILITATION OF THE ROAD BETWEEN SAN LORENZO AND MUHAN (MANAGUA-RAMA HIGHWAY)

(NI-0146)

EXECUTIVE SUMMARY

Borrower and guarantor:	Republic of Nicaragua	
Executing agency:	Ministry of Transport and Infrastructure (MTI)	
Amount and source:	IDB: (FSO)	US\$ 35,000,000
	Local:	<u>US\$ 7,000,000</u>
	Total:	US\$ 42,000,000
Financial terms and conditions:	Amortization period:	40 years
	Grace period:	10 years
	Disbursement period:	4 years
	Interest rate:	1% during first 10 years, 2% over the following 30 years
	Inspection and supervision:	1.0%
	Credit fee:	0.5%
Objectives:	<p>The general objective of the program is to reduce transport costs and facilitate the movement of passengers and freight between the Atlantic zone and the interior of the country. This will contribute to a revival of agriculture and livestock production in the area, and help integrate communities with the rest of the country. The program's specific objectives are to refurbish the road between San Lorenzo and Muhan on the Managua-Rama highway; modernize institutional organization in the highway sector; and implement a strategy to improve road maintenance.</p>	
Description:	<p>The program has three components: (i) an initial component will support refurbishment work on the 88.1 km stretch between San Lorenzo and Muhan, as part of the rehabilitation of the 287.9 km Managua-Rama highway—the main overland route to the Atlantic; (ii) the second component will support the strategy to execute an action plan agreed with the government guaranteeing the consolidation of sustainable improvements in the management and execution of road maintenance by the conclusion of this operation. The action plan is intended to consolidate the process that began with</p>	

legislation setting up the Highway Maintenance Fund (FOMAV); and (iii) the third component will support plans for MTI institutional reform being implemented by the government, including rationalization of MTI's institutional structure in order to enhance its efficiency and the changes needed as a result of the creation of FOMAV.

**The Bank's
country and
sector strategy:**

This program will continue the process initiated with current operations to improve Nicaragua's highway infrastructure, by refurbishing its network of highways and rural roads. This will be supported by institutional strengthening in the subsector and implementation of a mechanism to guarantee the future sustainability of road maintenance. Apart from rebuilding the road network affected by natural disasters, one of the country's priorities as defined in the national transport plan (PNT) is to rehabilitate the trunk road network in order to facilitate integration, both nationally and throughout Central America. The program will also lend continuity to the support needed in consolidating the modernization process that began by adjusting the sector's functions and organic structure and approval of the law creating FOMAV.

**Environmental
and social
review:**

The activities envisaged in this program are intended to reduce the adverse effects of inadequate road maintenance, so they are likely to be of positive environmental impact and high social benefit. The refurbishment works to be undertaken do not involve major construction difficulties, nor do they require population resettlement or alterations to the course of the road, given its excellent original construction and location on stable soil. Nonetheless, in order to minimize any possibility of environmental damage, the program contains general sustainability criteria and environmental control procedures that include verifying compliance with the country's environmental legislation and regulations. Environmental impact monitoring will be carried out by MTI's Environmental Control Directorate (DCA), and supervising firms will be required to employ an environmental specialist.

Benefits:

Both the refurbishment component and those relating to institutional support and maintenance sustainability are likely to generate significant benefits for users of the road network and lead to more efficient use of the financial resources channeled to the highway sector. Rehabilitation work on the road segment between San Lorenzo and Muhan will produce savings in vehicle operating costs, together with shorter journey times; in addition, people living in the hinterland of this road, who are mostly engaged in agricultural work, will enjoy better and possibly cheaper bus and light goods vehicle services. This population may also obtain better access to education and health services and to centers of employment. Moreover, by setting up

FOMAV to administer maintenance contracts, as well as restructuring State-owned enterprises affiliated to the Corporation of Regional Construction Firms (COERCO) and strengthening MTI's capacity to manage the contracting process, it should prove possible to streamline procedures and gain better control over the costs of civil works.

Risks:

MTI has considerable experience as executor of programs and projects for a variety of multilateral development agencies; it has also been institutionally strengthened thanks to technical assistance from IDB and the World Bank (WB), and this will enable it to run new program adequately. In this it will be supported by consulting services to resolve specific problems arising in the course of the operation.

Lessons learned in previous transport projects show that highway sector sustainability requires a maintenance policy with stable financing mechanisms, together with private-sector participation to undertake construction and maintenance activities on the highway network. In the maintenance area, the approval and implementation of the FOMAV legislation and the action plan to restructure COERCO are intended to guarantee sustainability and encourage private-sector participation in road maintenance. To minimize the risk of delay in implementing FOMAV, contractual conditions have been agreed with the borrower to ensure that FOMAV is up and running before the first disbursement is made.

The government's invitation to the private sector, along with the execution of current highway programs, have generated a major revival and growth in local engineering and construction firms. No difficulties are foreseen in the capacity of local firms to respond to the larger quantity and size of the program's refurbishment and maintenance works and FOMAV implementation.

**Special
contractual
clauses:****A. Conditions precedent to the first disbursement**

The executing agency will present the following to the Bank: (i) a detailed action plan for program execution; (ii) evidence that FOMAV is up and running; that it has been allocated the necessary resources from the national budget to perform the maintenance activities included in the targets agreed for the first year of program execution; and that an agreement has been signed between MTI and FOMAV setting out the commitments indicated in paragraph 3.4; (iii) evidence that it has a suitable accounting-financial system in place to manage the proceeds of Bank and local counterpart funding; and (iv) evidence that FOMAV has executed at least 25% of its 2002 budget and is executing four contracts for sustainable maintenance of the highway network.

B. Other special contractual conditions

Before the program's civil works are awarded, the executing agency will present evidence of having contracted consulting services for their supervision.

The loan contract will also include the Bank's standard conditions, relating among other things to technical and environmental aspects, audit, reports, inspections, evaluations, maintenance, the hiring of consulting services and goods procurement.

Poverty-targeting and social sector classification:

The program qualifies as a social equity enhancing project as described in the indicative targets mandated by the Bank's Eighth Replenishment (document AB-1704). It also qualifies as a poverty-targeted investment (PTI) on geographic grounds, since about 61% of the population living in the hinterland of the San Lorenzo-Muhan highway have incomes below the poverty line. The borrower will be making use a portion of the 10 percentage points in additional financing corresponding to the PTI classification.

Exceptions to Bank policy:

No exceptions to Bank policies are envisaged.

Procurement:

Civil works contracting, procurement of goods and ancillary services and the hiring of consulting services will all be carried out in accordance with the corresponding Bank procedures and policies (paragraph 3.7), subject to the following limits:

	Civil works	Goods	Consulting services
International competitive bidding (ICB)	US\$3,000,000 and up	US\$300,000 and up	Over US\$200,000
Local competitive bidding (LCB)	Between US\$300,000 and US\$3,000,000	Between US\$100,000 and US\$300,000	Under US\$200,000
Three quotes	Under US\$300,000	Under US\$100,000	

I. REFERENCE FRAMEWORK

A. Background

- 1.1 Nicaragua's highway sector has gone through a period of rapid change aimed at modernizing its institutions and refurbishing and improving the network of highways and rural roads. In 1998 the Ministry of Construction and Transport became the Ministry of Transport and Infrastructure (MTI) under Law 290 (the Executive Organization, Competency and Procedures Act), converting it into a planning and regulatory body for the transport and infrastructure sectors. On 29 June 2000, as part of these reforms, legislation was passed creating the Highway Maintenance Fund (FOMAV), and a strategy has been adopted to hire private-sector firms more frequently to perform highway maintenance tasks.
- 1.2 Supported by the Bank and other financial agencies and donors, the Government of Nicaragua has substantially increased its investments in the highway sector in recent years, and has restored a significant part of the road network. Even so, the proportion of the total network extension of 19,073 km that is in good condition is still less than 25%. The situation was made worse by hurricane Mitch, which caused major damage on approximately 1,500 km of highways and access roads to production areas, especially in the Natural Corridor and sections of the Pan-American highway and its hinterland.
- 1.3 MTI has made a study of the national transport plan (PNT), with Bank support, and the results define a strategy and action plan for the transport sector over the next 10 years. In the highway sector, the medium-term strategies set forth in the PNT focus on development issues that are essential for the country: namely, rural development, to integrate agricultural production more effectively into the national economy; national integration, to strengthen national identity and sovereignty over remote areas; and regional integration into the Central American corridor in response to globalization and coordination with external trade routes to streamline access to foreign markets.
- 1.4 Most of the civil works proposed in the PNT aim at refurbishment, improvement, maintenance and reconstruction of pre-existing roads, and these have been prioritized using indicators of environmental, social, economic and financial impact. The PNT assigns major importance to the country's trunk roads, which, despite accounting for only 9.3% of the total road network, carry between 80% and 90% of all traffic. Investments and expenditure in the highway sector for 2000-2005, as envisaged in the PNT, are on the order of US\$600 million, and include priority refurbishment and reconstruction work aimed at permanently restoring transitability on the main highway arteries and on a number of collector roads.
- 1.5 The strategies for the trunk network include rehabilitating the east-west highway corridor, by restoring the Managua-El Rama trunk road, of which 59% is in regular

state and 41% in very poor condition. This artery is crucial to the Atlantic region's social and political integration with the center and west of Nicaragua. At the request of the Nicaraguan government, in order to speed up refurbishment on this 287.7 km road, the Danish International Development Agency (DANIDA), together with the World Bank and IDB, agreed in 1997 to jointly finance the work. The proposed operation will help finance one portion of the refurbishment work, namely the San Lorenzo-Muhan segment. The operation will also support the sustainable highway maintenance strategy, which the PNT emphasizes as one of the key components of highway sustainability.

B. The context of the project

1. Socioeconomic setting

- 1.6 Nicaragua's gross domestic product (GDP) grew by 4.3% in 2000 (7.4% in 1999). The consolidated public-sector deficit, including grants, is estimated at 6.3% of GDP (3.8% in 1999). Inflation in 2000 was 10% (12% in 1999), and the local currency devalued by 6%. In the balance of payments, the trade account was in deficit by US\$1.009 billion, while the current-account deficit amounted to US\$918 million, equivalent to 38% of GDP. At the end of 2000, the country's international reserves amounted to US\$187 million.
- 1.7 In response to the devastation caused by hurricane Mitch, the Bank reassessed its strategy with the country, in order to address the increased scale of poverty and the damage caused to infrastructure and natural resources. The Bank's strategy for 2000-2002 aims at rationalizing social expenditure, pressing ahead with the reform and strengthening of infrastructure, and maintaining support for ongoing reforms in the financial sector and the State. This strategy puts the emphasis on strengthening institutional capacity to prepare and execute projects, and on pension reform and support for the Superintendent of Banks and Financial Institutions.

2. Institutional structure

- 1.8 Under the Executive Organization, Competency and Procedures Act (Law 290, of 27 March 1998), MTI is responsible for organizing and directing the execution of sectoral policy and coordinating indicative planning in the traffic and transport sectors, including transport infrastructure. The MTI organizational structure consists of a higher division and advisory bodies (legal, internal audit, technical, public relations and legal), together with other general directorates and divisions. It has a vice-ministry, a general secretariat and seven operating dependencies. These include the General Highway Directorate (DGV), responsible for construction and conservation of the highway network; and the General Planning Directorate (DGP), which is in charge of developing transport policies and strategies and drawing up sectoral plans and programs, among other things.

- 1.9 As part of the process of institutional change in MTI, the Environment Unit has been strengthened and upgraded into an Environmental Control Directorate (DCA). The new structure reflects the view that the environmental dimension should be integrated and controlled in the different projects and in the institutional plan, alongside technical, financial or contractual aspects. The DCA's functions include those of regulation, control, and monitoring, and also support for all ministry dependencies in incorporating the environmental dimension into projects, and providing technical information for decision-making.
- 1.10 The MTI budget covers everything relating to the nation's highways, except for the urban network which is the responsibility of municipal bodies. Maintenance of production roads has traditionally been financed by the private sector (coffee planters), and more recently with resources from the Emergency Social Investment Fund (FISE) and the Rural Development Institute (IDR), albeit in small amounts from these sources.
- 1.11 The parastatal Corporation of Regional Construction Firms of Nicaragua (COERCO), was set up in 1998 as a mechanism of transition from a system of direct works execution, using MTI staff, materials and equipment, to a system whereby maintenance is contracted out to the private sector. COERCO comprises seven regional semi-autonomous firms under MTI control. Many of these firms suffer from high debt, financial difficulties and low levels of efficiency as a result of managerial problems. Until 1999, nearly all highway maintenance was carried out by COERCO firms.
- 1.12 FOMAV was legally established under Law 355 of 1 August 2000, as an autonomous state body, with its own legal status and assets, indefinite lifetime and full capacity to acquire rights and enter into obligations. Among other things, FOMAV is responsible for the following: (i) administration of maintenance work on the maintainable highway network; (ii) ensuring adequate highway maintenance services in order to raise productivity and enhance competitiveness in industry, commerce and agriculture; and (iii) contracting maintenance services for the maintainable highway network with private sector firms, using public bidding processes to guarantee transparency and efficiency in the use of financial resources. FOMAV consists of a directing council and an executive board, together with support and advisory operating units.

3. The highway network and the Managua-Rama corridor

- 1.13 The size of the territory and the geographic concentration of the more developed regions, largely explain the current predominance of road transport over other means of transport in Nicaragua. The highway network managed by MTI is approximately 19,073 km long, of which 2,039 km (10.7%) are paved, 5,992 km (31.4%) are terraced and 11,042 km (57.9%) are rural dirt roads. A variety of factors have affected the highway network, including its extended length of service,

the postponement of preventive maintenance strategies in earlier years, and huge growth of traffic and freight.

- 1.14 The Managua-Rama highway forms part of the trunk route to the Atlantic, and its rehabilitation is considered a priority in the PNT. As result of coordination between Nicaragua and multilateral agencies, it was agreed that DANIDA would finance feasibility studies for the road and that final engineering on the San Lorenzo-Muhan segment would be financed by the World Bank. Details of the financing of refurbishment and improvement works on the Managua-Rama highway are as follows: (i) the segment between Managua and San Benito (29 km) will be financed by the World Bank with the proceeds an already approved loan; 42% of the works have already been carried out; (ii) the San Benito-San Lorenzo segment (80.3 km) is currently being executed with a grant from DANIDA and is now 50% complete; (iii) the stretch from San Lorenzo to Muhan (88.1 km) will be financed by the Bank in the present operation, with execution set to begin in mid-2002; and (iv) the Muhan-Rama segment (90.3 km) will be funded by the World Bank using the proceeds of a new US\$75 million loan approved on 7 March 2001; at the present time bids are being evaluated and execution is expected to start in early 2002.

4. Financial situation of the highway sector

- 1.15 The MTI budget allocates resources for the nation's highway network, excluding urban roads. The annual amount of funding for the interurban highway sector in 1996-2000 was about US\$420 million, as shown in table I-1, equivalent to an annual average of US\$84 million. This average reflects exceptional expenditures made in 1998 and 1999 to re-establish traffic flows on roads affected by hurricane Mitch, together with an expansion of refurbishment and maintenance programs supported by IDB and the World Bank. Of these funds, 58% has come from external sources, with the Bank contributing over 50% and the remainder being provided by WB, the Central American Bank for Economic Integration CABEL, DANIDA, Sweden, Japan and the Venezuelan Investment Fund. Transfers from the national budget increased significantly in 1999-2000, partly because emergency needs climbed to an annual average of US\$35 million during that period.
- 1.16 Table I-1 also presents the projected trend of expenditure and financing in the highway sector for 2001-2005. Projections incorporate the targets set in the PNT, along with the government's strategy to implement a five-year maintenance plan to be executed by FOMAV. This aims to provide regular maintenance service to 88% of the maintainable highway network by 2005. The estimated amounts mean that average annual expenditure on the highway network will rise from US\$84 million in 1996-2000 to US\$110 million in 2001-2005. This is similar to the amounts spent over the last two years and includes the level of expenditure needed by the wide-ranging program of refurbishment and improvement, which began in 1998 and is set to peak in 2003, making it possible to channel additional funds into maintenance. This level of investment and funding from the government budget is

consistent with public-expenditure projections, assuming external debt relief is obtained from the Heavily Indebted Poor Countries (HIPC) initiative.

TABLE I-1 Highway sector expenditure and financing US\$million equivalent							
	Total 1996-2000	Period 2001-2005					
		2001	2002	2003	2004	2005	Total
Refurbishment and maintenance	189.9	61.0	53.0	57.0	52.0	42.0	265.0
Construction	41.8	21.8	28.3	33.0	37.0	35.0	155.1
Maintenance	85.1	11.0	14.0	16.0	18.0	21.0	80.0
Restoration of roads	61.4	1.5	1.4	1.4	1.3	1.3	6.9
Studies and other items	39.6	8.0	9.0	10.5	7.5	7.7	42.7
Total outgoings	417.8	103.3	105.7	117.9	115.8	117.0	549.7
IDB	127.3	39.8	34.0	39.0	36.0	33.0	181.8
World Bank	66.6	28.0	29.2	32.0	22.0	19.0	130.2
OTHER	47.0	2.3	7.0	8.5	16.5	10.2	44.5
Subtotal external	240.9	70.1	70.2	79.5	74.5	62.2	356.5
GOVERNMENT	176.9	32.7	31.7	31.9	30.3	30.1	156.7
FOMAV	0.0	0.5	3.8	6.5	11.0	14.7	36.5
Subtotal internal	176.9	33.2	35.5	38.4	41.3	44.8	193.2
Total Sources	417.8	103.3	105.7	117.9	115.8	117.0	549.7

- 1.17 Resources allocated for routine and periodic maintenance have tended to fall short of requirements, except in 1999 and 2000 when the amounts were increased significantly to US\$21 million, in the wake of maintenance and rehabilitation work associated with hurricane Mitch. Given the plan to increase annual funding for maintenance, and the implementation of measures to reduce maintenance costs per km, it may become possible to provide maintenance services on a large part of the highway network. The proposed program will support the modernization of contracting procedures and introduce mechanisms to control costs and monitor the work of subcontractors, to ensure more efficient use of available resources.

C. Sustainable maintenance strategy

- 1.18 Despite the progress of current operations, the executing agency's operating capacity and available resources are insufficient to ensure sustainability in maintaining the approximately 8,000 km of maintainable roads in the total 19,073 km highway network. As much as 70% of the maintainable network is in poor condition, and the situation was made worse by hurricane Mitch. The remainder of the network consists of dry weather roads that generally receive no maintenance at all. In order to provide a definitive solution, the government,

supported by the Bank, has put forward a strategy to guarantee the sustainability of maintenance on the highway network.

1. Components of the sustainable maintenance strategy

- 1.19 The sustainable maintenance strategy has two components: implementation of FOMAV and transformation of COERCO.
- 1.20 ***Implementation of FOMAV.*** The FOMAV implementation process has begun by preparing draft regulations for the law creating FOMAV; preparation of a five-year maintenance plan including physical targets and a calculation of funds required by FOMAV as from 2001; and invitations have been sent to private-sector organizations to nominate members of its directing council, consisting of representatives from highway network users and the State. Private-sector representatives will be appointed by the President of Nicaragua under terms proposed by associations of users and transport firms.
- 1.21 In addition, consultancy studies have been made of the internal organization of FOMAV, also covering its staffing, offices, equipment and system needs. An operating manual has been prepared and model contracts and contracting documents have been produced. FOMAV will be organized with qualified staff; its management expenditure budget may not exceed 4% of its total income. The directing council will draw up operating regulations. Among other things, these will cover the financial regime and deal with issues relating to toll rates aimed at generating ongoing financing to cover the maintenance of highway infrastructure works.
- 1.22 ***Transformation of COERCO.*** Supported by consulting services financed by the Bank, the government has drawn up a plan to reduce COERCO's participation in highway maintenance from 73% of the maintenance budget in 2001 to a target of 30% by 2005, with private participation being increased in matching proportions. This study also puts forward an action plan for the legal, financial, technical and managerial transformation of COERCO firms, aimed at turning the six existing ones into a more efficient entity, with a smaller number of firms and nationwide coverage, limited to dealing with emergencies and carrying out highway conservation activities in the gravel road network in areas where the private sector has neither the capacity nor the organization to perform them efficiently and profitably.
- 1.23 The criteria for highway maintenance and other activities to be carried out by a smaller COERCO include: (i) routine and periodic road maintenance in very remote geographical areas, where the private sector has neither the capacity nor economic incentives to do so, or where there is a safety risk; (ii) activities in accessible areas which the private sector normally does not have economic incentives to take on,

such as signposting tasks and other work requiring intensive use of labor; and (iii) emergency activities in response to natural disasters.

2. Action plan for the sustainable maintenance strategy

- 1.24 To implement the strategy, an action plan has been agreed to ensure that sustainable improvements will have been consolidated in the management and execution of highway maintenance by the end of this operation. The action plan consists of two fundamental components: (i) physical maintenance targets to be executed annually on the national highway network, and rising targets for outsourcing such activities with private firms or microenterprises; and (ii) actions and commitments to promote and implement the legal and institutional changes needed to ensure a stable organization for highway maintenance by the end of the program, including the budgetary allocations needed to meet the physical maintenance targets. The latter are summarized below in table I-2, and by the end of the program FOMAV should be executing at least 70% of highway network maintenance activities via outsourcing to private firms and microenterprises. FOMAV will not be able to contract the firms that are part of COERCO to perform maintenance work on the maintainable highway network.

TABLE I-2					
Maintenance action plan: targets (km)					
Source	2001	2002	2003	2004	2005
FOMAV *	1,100	2,000	3,000	4,000	5,000
COERCO	2,400	2,300	2,200	2,100	2,000
Maintained network	3,500	4,300	5,200	6,100	7,000
Maintainable network	6,000	6,500	7,000	7,500	8,000
%	58	66	74	81	88

* For 2001, the FOMAV figure includes maintenance contracts with private-sector firms carried out by MTI.

- 1.25 The main instrument for increasing the role of the private sector in maintenance contracts, while reducing that of COERCO, is through the distribution of the maintenance budget made by the government. The proposal is to gradually increase the proportion of the budget assigned to private-sector contracts, while at the same time reducing the proportion directed by COERCO. Table I-3 shows the expected pattern of budgetary reallocation, with the amounts being subject to approval of the budget of the Republic of Nicaragua. This scenario assumes that the total assigned budget grows sufficiently to make it possible to fund the amounts assigned to maintenance in 2000.

TABLE I-3 Distribution of highway maintenance budget US\$million equivalent								
	FOMAV- PRIVATE			COERCO			TOTAL	
	km	US\$	% total	km	US\$	% total	km	US\$
2001 *	1,100	3,000	27%	2,400	8,000	73%	3,500	11,000
2002	2,000	6,500	47%	2,300	7,500	53%	4,300	14,000
2003	3,000	9,000	56%	2,200	7,000	44%	5,200	16,000
2004	4,000	11,500	64%	2,100	6,500	36%	6,100	18,000
2005	5,000	14,700	70%	2,000	6,300	30%	7,000	21,000

* For 2001, the FOMAV figure includes maintenance contracts with private-sector firms carried out by MTI.

- 1.26 As part of the action plan, the authorities have agreed that FOMAV will be up and running no later than the final quarter of the current year, for which, subject to prior presentation of the operation to the Bank's Executive Board, the government will provide evidence of having set up the FOMAV directing council and that this has counterpart resources available (taxes and operating expenses) to achieve the targets agreed for 2001. The action plan includes the following: (i) appointment of the FOMAV directing council by presidential decree, and approval of the bylaws to the legislation creating FOMAV; (ii) allocation of financial resources to execute the first year of the five-year maintenance plan approved by the FOMAV directing council in conjunction with MTI; (iii) approval by the FOMAV directing council of regulations governing operations, procurement, administration and staffing, and appointment of FOMAV managerial and technical staff; (iv) hiring of consulting services by FOMAV to prepare and install a system of financial information and control of maintenance costs; (v) hiring of consulting services by DGV to support the modernization and consolidation of COERCO firms; and (vi) contracting of consulting services to study the economic, financial, organizational and technological aspects of maintenance subcontractors and the maintenance input industry, in order to identify areas of possible support to enable contracting firms to provide maintenance services more competitively and efficiently.

D. The Bank's strategy in the country and sector

- 1.27 The Bank's strategy is set out in the country paper (GN-1931-1) and aims to achieve sustained economic development and eradicate poverty by means of the following actions: the maintenance of macroeconomic stability and consolidation of reforms aimed at economic restructuring; continuation of external debt rescheduling; human capital development and better management of natural resources. In response to the devastation caused by hurricane Mitch, the Bank reassessed the strategy defined in the country paper, in order to address the increased scale of poverty and the damage caused to infrastructure and natural resources. One of the main areas entails the reform and strengthening of

infrastructure, where efforts will focus on refurbishment of the main highways and feeder roads affected by the hurricane, and provide institutional support to the regulatory body in putting a sustainable highway maintenance mechanism in place.

- 1.28 The program will continue the process that started with operations currently under execution, the aim of which is to improve Nicaragua's highway infrastructure by refurbishing its network of highways and rural roads, together with institutional strengthening of the subsector and implementation of a mechanism to guarantee the sustainability of road maintenance. In accordance with the country's priorities, as set out in the PNT, apart from supporting reconstruction work on roads affected by natural disasters, it is considered a priority to refurbish the trunk road network to facilitate integration both nationally and at the Central American level. The program will also provide continuity to the support needed to consolidate the modernization process that began by redesigning overall sectoral structure and functions and the approval of legislation creating FOMAV.
- 1.29 The proposed program will enhance communication between the Atlantic zone and the interior of the country, thereby helping to integrate its communities with the rest of the country. Part of the hinterland consists of the North Atlantic Autonomous Region (RAAN) and the South Atlantic Autonomous Region (RAAS). The program complements efforts the Bank has been making through other operations, such as the Atlantic Region Development Program (NI-0107) to strengthen the governments of these two regions in their institutional and planning capacities and integrate them into discussion of development plans and policies at the national level.

E. Experience of the Bank and other agencies

- 1.30 Among the operations financed by the Bank, in 1999 MTI satisfactorily completed execution of the Rural Roads Rehabilitation and Improvement Program (REMECAR, 756/OC-NI and 902/SF-NI) for US\$46 million. It is currently executing the Highway Rehabilitation and Improvement Program (REMEVIAL, 957/SF-NI) for US\$75 million and the Pan-American Highway Rehabilitation Program (1036/SF-NI) for US\$50 million, both of which are making satisfactory progress. These two programs have their resources fully committed and REMEVIAL will be concluded by the end of this year. The experience acquired by the Bank in executing these two programs shows that the IDB project coordinating unit (UCP) has functioned properly, making it possible to overcome problems arising from a lack of continuity among technical and leadership staff, thanks to the Bank's continued support.
- 1.31 MTI is satisfactorily executing investment programs financed with its own and external resources. The support of the Bank, together with efforts by other collaborators, will make it possible to refurbish much of the highway system. Several meetings of the Central America Consultative Group have discussed and

coordinated the support that needs to be provided to Nicaragua to achieve this end. Efforts by other collaborators include the World Bank to partially rehabilitate the Natural Corridor; the Government of Sweden to refurbish roads in the Yalaguina-Las Manos sector, which complements the Pan-American Highway link with Honduras; CABEL, DANIDA, the Governments of Venezuela and Italy, and the European Union in the refurbishment of collector roads. In addition, the Governments of Japan and Chile are financing construction of a number of bridges on the main highways; and the United States, Spain and other donor countries are supplying equipment and labor to rehabilitate production roads. Coordination and evaluation of the different support programs in the transport sector is carried out through periodical meetings attended by representatives of the various donors that support investments in the transport sector.

II. THE PROGRAM

A. Objectives and description

- 2.1 The general objective of the proposed program is to reduce transport costs and facilitate the movement of passengers and freight between the Atlantic zone and the interior of the country, in order to contribute to the recovery of agricultural and livestock production in that zone and integrate its communities with the rest of the country. The program's specific objectives are as follows: refurbishment of the San Lorenzo-Muhan stretch of the Managua-Rama highway, which is the main overland communication route to the Atlantic; modernization of institutional organization in the highway sector; and implementation of new strategies for improving highway maintenance.
- 2.2 Annex II-1 contains a preliminary summary of the program's objectives and targets, in accordance with the operation's draft logical framework.

B. Program structure

1. Rehabilitation of the San Lorenzo-Muhan segment: (direct costs, engineering and administration US\$33.1 million)

- 2.3 This component will finance rehabilitation work on the existing 88.1 km stretch of road between San Lorenzo and Muhan, including the reconditioning of six larger bridges located on that stretch. The feasibility studies for refurbishing the Managua-Rama highway were undertaken with financing from DANIDA, as part of the Atlantic Region Development Program. For the San Lorenzo-Muhan segment, which is to be financed by the Bank, definitive engineering studies and the environmental and social impact assessment (EIAS) were performed by the firm Bonifica Spa, with financing from the World Bank; definitive economic and technical documents, including bidding documents, have also been finalized, having been prepared by a consulting firm financed by the Bank. The proposed segment to be refurbished is a two-lane highway, the geometric characteristics of the existing road are very good and it is located on stable terrain. Mean daily traffic on the stretch between San Lorenzo and Muhan varies between 1,200 vehicles in the area of San Lorenzo to about 500 around Muhan. The project is estimated to have an internal rate of return of 17.65%.

2. Support for the highway maintenance plan: (direct costs US\$5 million)

- 2.4 This component will support the strategy proposed to implement the action plan agreed with the government, to ensure that sustainable improvements in the management and execution of road maintenance have been consolidated by the end

of this operation. The action plan is intended to consolidate implementation of FOMAV and the transformation of COERCO (see section I.C).

- 2.5 To support implementation of FOMAV, this component includes a sum of US\$3 million to complement the seed capital funds of US\$2 million which were allocated in the Pan-American Highway Rehabilitation Program (NI-0099). These resources, together with those put forward by the World Bank, provide FOMAV with nearly US\$10 million in seed capital to support execution of the five-year maintenance plan, estimated to cost US\$54.7 million. This seed capital will be used to contract periodic maintenance works, pursuant to Bank policy 707, through multiyear contracts, in which Bank funding steadily declines.
- 2.6 To support the plan for the transformation of COERCO firms, to enable them to efficiently fulfill their maintenance functions on gravel roads and respond to emergencies, the proposed operation will support their modernization and consolidation by providing US\$2 million for the repair of equipment, and procurement of spare parts and materials required by these firms to discharge their new functions efficiently.

3. Institutional strengthening: (direct costs US\$1.5 million)

- 2.7 This component will support the MTI institutional reform plans that the government is carrying out, which include rationalizing the institutional structure of MTI, implementation of FOMAV and the transformation of COERCO. The component's targets and objectives will mainly be achieved during the program execution period. The specific actions and activities timetable are set out in the program's logical framework contained in Annex II-1. The proposed operation is expected to support the institutional reform of MTI with US\$0.7 million to improve procurement procedures, introduce new works contracting modalities, cut maintenance costs, strengthen MTI planning functions, training, equipment procurement (non-machinery) and logistic support for MTI dependencies. To support COERCO transformation, US\$0.3 million is earmarked for consulting services to undertake financial, legal and technical analysis and training. Similarly, to support the initial activities to get FOMAV up and running, US\$0.5 million has been earmarked for consulting services to prepare staff and administrative-financial contracting procedures and manuals; updating the maintenance management system for the priority network; a study of unit costs and methodologies for execution; training, equipment procurement and logistic support.
- 2.8 Through execution of this component, the following results will have been achieved by the end of the program: (i) the country will have a mechanism (FOMAV) for performing highway maintenance, including regulations, hiring procedures and manuals, staff, financial, etc.; an up-to-date maintenance management system for the priority network; and a system of financial and unit cost information; (ii) the MTI area will have been reorganized, including transformation of COERCO firms,

which will be responsible for maintaining the unpaved national road network, and a system for evaluating, prioritizing and carrying maintenance on low-traffic rural roads (gravel) will have been prepared; (iii) the planning area will have been modernized and provided with tools for investment programming and project evaluation, including an updated inventory, its re-classification and a review of jurisdictions over the highway network; (iv) the MTI's project execution, administrative and financial dependencies will have been strengthened; and (v) the DCA will have been strengthened and trained.

C. Cost and financing

- 2.9 The total cost of the program will be US\$42 million, including direct costs, engineering and management, financial expenses and contingencies. In this operation the proposal is for the Bank to finance US\$35 million, with the local counterpart set at US\$7 million, representing taxes and the credit fee that are not eligible for Bank financing. The local contribution represents 16.7% of total project costs, which, given that the operation qualifies as a poverty targeted investment, satisfies the financing guidelines for Nicaragua, partially taking into consideration the 10 additional percentage points of financing. Table II-2 shows the total cost of the program and the proposed financing.

TABLE II-2 Costs and financing plan US\$million equivalent			
Category	IDB	Govt. of Nicaragua	Total
1. Engineering and management	3.66	0.72	4.38
1.1 Engineering and studies	1.00	0.20	1.20
1.2 Supervision, audit and evaluation	2.16	0.42	2.58
1.3 UCP support	0.50	0.10	0.60
2. Direct costs	29.41	5.81	35.22
2.1 Rehabilitation San Lorenzo-Muhan highway	24.00	4.72	28.72
2.2 Support for maintenance plan	4.16	0.84	5.00
2.3 Institutional strengthening	1.25	0.25	1.50
3. Non-specific costs	1.12	0.20	1.32
3.1 Contingencies	1.12	0.20	1.32
4. Financial costs	0.81	0.27	1.08
4.1 Interest	0.46	0.00	0.46
4.2 Credit fee	0.00	0.27	0.27
4.3 Inspection and supervision	0.35	0.00	0.35
Program total	35.00	7.00	42.00

III. PROGRAM EXECUTION

A. Borrower, guarantor and executing agency

- 3.1 The borrower will be the Republic of Nicaragua, with MTI acting as executing agency through the project coordinating unit (UCP). In carrying out the program's maintenance activities, the executing agency will act through FOMAV, supported by its respective units.

B. Project execution and management.

- 3.2 The program will be managed by the UCP, taking advantage of the organization that has been set up and the positive experience it has acquired in managing the REMECAR and REMEVIAL programs, and the rehabilitation of the Pan-American highway, funded by the Bank. The UCP will be responsible for management of the proceeds of Bank and local counterpart funding, except for resources corresponding to maintenance activities for which FOMAV is responsible.
- 3.3 The UCP will be in charge of civil works contracting, procurement of goods and ancillary services, and the hiring of consulting services needed for the program, under terms and conditions established in the loan contract. It will be supported by consulting services on specific issues to resolve problems arising during program execution. The terms of reference for such hirings have been agreed between MTI and the Bank and can be found in the program's technical files.
- 3.4 FOMAV will manage the funds assigned to the maintenance activities for which it is responsible, under the terms and conditions established in the contract to be signed with the borrower for transferring funds for the program's maintenance work. As a condition precedent to disbursement of the proceeds of the Bank loan, an agreement will be signed between MTI and FOMAV, establishing among other things: (i) that resources for maintenance are transferred to FOMAV; (ii) such transfers shall be non-reimbursable; (iii) the responsibility of FOMAV to perform maintenance activities under the terms and conditions of the loan contract; (iv) a special bank account will be opened for depositing FOMAV resources; (v) terms and conditions for administering the maintenance of the maintainable highway network; and (vi) the existence of an accounting-financial system for managing the proceeds of Bank financing, which will include a suitable system for filing documentation on the use of the loan proceeds.
- 3.5 The executing agency will be accountable to the Bank for maintaining an accounting-financial management and internal control system making it possible to identify the sources and uses of the program's funds for each component and activity financed with funds from the Bank. This system will make it possible to prepare the financial reports required by the Bank in timely fashion, together with

justifications for each disbursement, including the six-monthly report on the use of the proceeds of the revolving fund and financial statements audited by a firm of independent public accountants acceptable to the Bank. As a condition precedent to disbursement of the proceeds of Bank financing, the executing agency will present evidence of the existence of an accounting-financial system suitable for managing the proceeds of Bank and local counterpart funding. The UCP will also set up and maintain specific and separate bank accounts for managing the proceeds of the loan and local counterpart funding.

- 3.6 On 8 August 2001, by means of Executive Decree 240-2001, the President of the Republic of Nicaragua established the directing council of FOMAV. On 10 September 2001, by means of a note from the Minister of Finance, evidence was presented that the resources needed for FOMAV to begin carrying out its functions and achieve the targets agreed upon with the Bank for this year have been allocated and are available for 2001.

C. Goods and services procurement

- 3.7 Civil works contracting, the procurement of goods and ancillary services, and the hiring of consulting services, will all be carried out in accordance with the corresponding Bank procedures and policies: (i) civil works, including maintenance contracts for US\$3 million or above, will be awarded through international competitive bidding (ICB); contracts worth between US\$3 million and US\$300,000 will be awarded through local competitive bidding (LCB); and those for under US\$300,000 will be awarded on the basis of three quotes submitted by qualified contracting firms. Works contracts will be awarded to the firm that submits the least- cost bid that is technically acceptable; (ii) consulting services for over US\$200,000 will be awarded by ICB, and those for smaller amounts through LCB; (iii) equipment procurement will require an ICB for amounts equal to or greater than US\$300,000, an LCB for amounts between US\$300,000 and US\$100,000, and three quotes for amounts under US\$100,000. Table III-1 summarizes the limits applicable to the different contracting modalities, and Annex III-1 contains the program's bidding and procurement plan.

TABLE III-1 Goods and services procurement (US\$ equivalent)			
	Civil works	Goods	Consulting services
International competitive bidding (ICB)	US\$3,000,000 and up	US\$300,000 and up	Over US\$200,000
Local competitive bidding (LCB)	Between US\$300,000 and \$3,000,000	Between US\$100,000 and US\$300,000	Under US\$200,000
Three quotes	Under US\$300,000	Under US\$100,000	
Figures in US dollar equivalent at the date of each budget.			

D. Execution period and disbursement timetable

- 3.8 Program execution will last four years from the date on which the loan contract comes into force. This includes the time needed to comply with conditions precedent to disbursement and the deadlines for bidding processes, contracting and execution of civil works, plus supervision and other consulting services. Table III-2 shows the estimated disbursement timetable.

TABLE III-2 Disbursement timetable US\$million equivalent						
Source	Year 1	Year 2	Year 3	Year 4	Total	
IDB – FSO	8.16	12.04	9.03	5.77	35.00	83.30%
Local contribution	1.63	2.41	1.81	1.15	7.00	16.70%
Program total	9.79	14.45	10.84	6.92	42.00	100.00%
	23.30%	34.40%	25.80%	16.50%	100.00%	

E. Monitoring and evaluation

1. Execution plan, progress reports and final report

- 3.9 The UCP will submit to the Bank an initial report setting out a detailed action plan for the activities to be carried out, including a timetable, the resources needed, responsibilities assigned and targets to be achieved. This report will be presented as part of the initial report envisaged in the general rules governing Bank contracts.
- 3.10 In addition, six-monthly progress reports will be submitted giving details of the evaluation and fulfillment of the action plan mentioned above. Among other things, these reports will indicate the works and equipment financed, the beneficiaries served and procedures applied in using the loan proceeds. The progress report corresponding to the final semester of the execution period will constitute the program's final report.

2. Supervision and six-monthly meetings

- 3.11 The Bank will supervise execution of the different components of the program, including highway maintenance, during program execution and in the five years following the final disbursement, through the Bank's Nicaragua country office.
- 3.12 No later than one month following presentation of the corresponding six-monthly reports, program monitoring meetings will be held to analyze issues relating to bidding processes, environmental aspects of the projects carried out, disbursements made, problems arising in execution and how to solve them, fulfillment of logical

framework parameters and other aspects relevant to project execution. In addition, these meetings will agree details of the action plan for the following semester.

3. Annual highway maintenance report

- 3.13 MTI, acting through the UCP, and in conjunction with FOMAV, will submit an annual highway maintenance report to the Bank, including the environmental and social component under the terms agreed with the Bank. This report will be presented during the first quarter of each year, corresponding to the previous year, throughout program execution and for five years following the date of final disbursement, in order to evaluate maintenance activities permanently and at an appropriate level. This report will contain the following elements at least: (i) general information on the structure and responsibility of the entity or entities in charge of highway maintenance, the number and type of staff assigned, equipment available and the nature and number of maintenance contracts awarded; (ii) an up-to-date inventory of the state of the network; (iii) evaluation of execution of the previous year's maintenance plan; and (iv) a highway maintenance plan for the following fiscal year, justifying the priorities adopted, and listing activity types, execution timetable and the financial and physical resources required.

4. External audit

- 3.14 An external audit will be contracted to evaluate the use of the program's funds each year, and verify that the executing agency is adopting and keeping to the financial management practices agreed with the Bank. Financial statements will be submitted no later than 120 days following the end of the executing agency's fiscal year throughout program execution, certified by a firm of independent auditors acceptable to the Bank, and in accordance with requirements established by the Bank on this issue. This audit will be contracted using loan proceeds. An audit of FOMAV financial statements will also be required, and will be carried out by the same firm that audits the program's financial statements. The audit will be conducted during program execution, and within two years following the date of the last disbursement of resources from the Bank financing.

5. Ex-post evaluation

- 3.15 In accordance with Bank policy (OP-305), and in consultation with the executing agency, it was decided not to include an ex-post evaluation among the project's activities. The monitoring and evaluation mechanisms, together with progress reports, annual maintenance report and six-monthly meetings, are expected to provide the information needed to evaluate the program's impact and draw lessons from the program.

F. Environmental and social aspects of the program

- 3.16 The program's rehabilitation works do not involve major construction difficulties, nor do they entail population resettlement, or involve changes in the road's location or course, given its excellent original construction and location on stable terrain. The embankments are generally adequate, although there are certain sectors that display subsidence as a result of scant and sporadic maintenance and a lack of underground drainage. For these sectors, the designs contain technical environmental specifications complying with the environmental safeguards needed to ensure their total stability. This project's civil works include rehabilitation and maintenance of an existing road in areas that have already been developed and intervened, in order to restore its previous transport capacity, the deterioration of which has generated major costs and losses to the local economy.
- 3.17 Environmental and social impacts directly and indirectly associated with the program include: (i) direct impacts of civil works, such as the generation of construction debris and rubbish, location and installation of worker camps, location and installation of works sites, location and installation of stone grinding plants, exploitation of material banks, operation of asphalt mixing plants, location of heavy equipment and machinery, etc.; (ii) potential indirect impacts of the program in the affected area, relating to economic activities connected with the road, specifically agriculture, livestock and forestry; and the potential indirect effect on indigenous lands that highway refurbishment could give rise to.
- 3.18 In view of the concerns raised in the Committee on Environment and Social Impact (CESI), the project team and the Nicaraguan authorities reviewed the potential indirect impacts in the area affected by the project. In the country's Atlantic region, the authorities are conducting a wide-ranging program to protect the Atlantic Biological Corridor (ABC), with the aim of ensuring the conservation and sustainable use of the region's biological resources. The project team met with those responsible for the PROTIERRA and ABC programs being run by the Ministry of Environment and Natural Resources (MARENA). The main components of the ABC program include planning and monitoring the biological corridor and protection of areas that are priorities for biodiversity. The studies undertaken show that there has been no expansion of the agricultural frontier in the hinterland of the Managua-Rama corridor in recent years; on the contrary, the agricultural frontier has developed to the south of the South Atlantic Autonomous Region (RAAS). The ABC program has recently contracted studies for planning and monitoring the biological corridor, which will make it possible to define mechanisms for monitoring and taking appropriate measures, should refurbishment of the road to Rama generate unforeseen indirect impacts.
- 3.19 As regards indigenous communities, the nearest ethnic group, the Rama, have their lands on the Caribbean coast (Bluefields and San Juan del Norte), located some 200 km from the road to be refurbished. Access to Rama territories requires

waterborne transport, and the refurbishment of the highway corridor does not fall within its area of influence, nor will it affect landholding among those populations. Moreover, the authorities have confirmed that the legislative assembly is currently studying a bill for an organic law regulating the communal ownership regime for the indigenous communities of the Atlantic coast and the BOSWANAS. The government has sent this bill for debate, having been the subject of wide-ranging consultation with the RAAN and RAAS communities. The Bank considers the progress made towards passing this legislation to be highly positive, as it will make it possible to define an institutional framework for the process of titling lands owned by indigenous communities, and for the rules and procedures for legalizing property rights among them.

- 3.20 To ensure this program's environmental feasibility, a strategy has been adopted including the following elements: (a) executing an environmental and social management action plan (PAMAS) with protection measures against direct negative impacts, including those arising from maintenance works, and protection measures against indirect negative impacts; (b) consolidation of environmental management within the executing agency; and (c) support in dealing with the environmental aspects of these civil works.
- 3.21 Preparation measures adopted to protect against direct negative environmental and social impacts are: (a) review and definition of the general environmental technical specifications (ETAG) for the project, and the corresponding particular specifications (ETAP), which are annexed to the civil works and works supervision contracts; and (b) preparation of an environmental and social impact study (EIAS) for the entire road segment, and execution of the consequent PAMAS with specific protection measures; and (c) hiring of short-term consulting services to carry out independent audits to verify the efficiency of environmental protection measures during the construction phase. For indirect negative environmental and social impacts, measures include: (a) preparation of the EIAS for the road segment and execution of the resulting PAMAS with specific protection measures; and (b) hiring of short-term consulting services to carry out independent audits to verify the efficiency of the environmental protection measures during the construction phase.
- 3.22 The environmental and social impact study for the San Lorenzo-Muhan road rehabilitation project, and the corresponding PAMAS, were prepared and made available for public consultation on 10 March this year. Consultations were held, and a record made, with people living in the project's area of influence, together with local authorities and road users; the results showed that the proposed project does not entail significant negative environmental and social impacts that remain unaddressed, no population resettlement is envisaged and no environmental hazards were detected in the project's area of influence. The EIAS has identified the necessary environmental safeguards and adequate budgets to mitigate environmental and social impacts. The MTI's environmental control directorate (DCA) has started proceedings to obtain the environmental permits needed for this

project, and has made sure the environmental specifications are incorporated in the bidding documents and draft contracts. In addition, to guarantee labor safety, the project specifies that workers should use the appropriate protection equipment, as set out in the labor safety and hygiene regulation published by the Ministry of Labor. These measures will be implemented through a series of training workshops included in the program. During the EIAS, potential negative environmental impacts on indigenous lands were also studied in the project zone, but no indigenous communities affected by the program have been identified.

- 3.23 As regards the legal framework for environmental management, the General Environment Act (LGA), which took effect in 1996, established the legal and regulatory framework for dealing with environmental issues in Nicaragua. The Ministry of the Environment and Natural Resources (MARENA) is the governing body on environmental issues, and its main responsibilities and attributions include policy making, supervision, inspection and granting of environmental permits. The DCA has been coordinating with MARENA to ensure the integration and fulfillment of national environmental regulations. Among other things, the LGA establishes the following: (i) the need to incorporate recommendations made in the PAMAS arising from the EIAS, in project design, execution and supervision; (ii) the need to submit projects to a public consultation process; (iii) the need for an environmental permit to carry out a project with any kind of environmental impact; and (iv) authority to request and conduct environmental audits of the projects.
- 3.24 For the refurbishment works on the San Lorenzo-Muhan highway, an environmental quality control procedure based on sustainability principles has been set up, including: (i) a preliminary environmental evaluation by the DCA; (ii) preparation of the EIAS and PAMAS by the DCA, supported by a consulting firm; (iii) environmental viability certification granted by MARENA; and (iv) DCA supervision of the mitigation measures carried out in the project, to be verified by the firm responsible for supervising the road segment to be refurbished.
- 3.25 During project preparation, consulting services were contracted for activities that included evaluation of the environmental aspects of previous operations, and preparation of a diagnostic study of the DCA's situation. This evaluation was used to define the scope of the DCA strengthening component. In terms of environmental management and supervision, and in the context of the provisions of the LGA, the program established financial support for improving and internalizing environmental management in the executing agency and in the project cycle. The DCA will receive funding from the program to consolidate the following specific functions: (i) ensuring the establishment of a national environment policy and environmental procedures in the highway project cycle; (ii) strengthening existing guidelines or manuals to ensure adequate realization of EIAS and PAMAS; (iii) verifying and developing general ETAGs and terms of reference for particular ETAPs, and ensuring these are incorporated into studies, bidding documents and

contracts (including those relating to supervision); and (iv) supervising the construction and operation of civil works for the ETAPs to be implemented.

IV. VIABILITY AND RISKS

- 4.1 This program will continue the process that began with operations currently underway, with the aim of improving Nicaragua's highway infrastructure. The program will help refurbish one of the country's main highway corridors, which for a long time has not been properly maintained. It will also give continuity to the highway maintenance improvement program and institutional modernization. Rehabilitation of the Managua-Rama highway will facilitate access to markets for agricultural production from surrounding areas, with lower vehicle operating costs resulting from the improved state of the road.
 - 4.2 The technical, institutional, financial, economic, environmental and social viability of this operation has been established, bearing in mind the executive capacity of the MTI's UCP, and considering experience gained in carrying out current highway operations financed by the Bank.
- A. Technical viability**
- 4.3 The refurbishment and improvement works to be carried out in the program do not involve major technical difficulties, as there is sufficient capacity and experience available to adequately carry them out, both in the MTI and UCP and among private firms. The UCP will be supported by specialized consulting services for civil works supervision.
 - 4.4 The San Lorenzo-Muhan segment of the Managua-Rama highway was built about 30 years ago, and has been maintained very sporadically. A considerable length of this road segment passes through flat terrain and the rest is on undulating land and has very good horizontal and vertical geometric conditions. The road is stable and its surface condition acceptable, with very few deformed zones. The road is coming to the end of its useful life, so refurbishing and improving it is a priority. The embankments are adequate, although there are certain localized zones of subsidence, resulting from scant and sporadic maintenance and a lack of underground drainage.
 - 4.5 During program preparation, MTI, with support from a consulting firm, analyzed four alternatives to reduce the budget proposed by the firm Bonifica Spa, while maintaining the required level of service. It was confirmed that in the present case, the alternative of laying an asphalt coating as a road surface is preferable to a double surface treatment, among other reasons, because the costs of the project with asphalt coating—including rehabilitation costs financed by the program and routine and periodic maintenance costs to be incurred during the useful life of the pavement (15 years)—are lower than those involved with double surface treatment; and in addition because the adjoining road segments financed by DANIDA and the World Bank are being refurbished with an asphalt overlay. The chosen alternative involves

recycling the existing asphalt road surface and base to serve as an underlay; together with a granular base; an asphalt road surface 5cm thick; drainage work; horizontal and vertical signposting; and highway safety elements to be placed where necessary especially in urban zones. As a preventive measure, embankments will be treated and special steps will be taken in areas of subsidence. Environmental mitigation activities will also be carried out, such as restoration of material banks, leveling and tree planting.

- 4.6 Refurbishment of the road between San Lorenzo and Muhan is scheduled to be carried out over 24 months, subdivided into the following subsegments: (i) San Lorenzo-Puente la Tonga, 27 km long with a 9.00 m road width. At the junction with the village of Juigalpa, work will be done on the existing road width; (ii) Puente la Tonga-Santo Tomás: 38.1 km long and road width 8.00 m; and (iii) Santo Tomás-Muhan: 23 km long and 8.00 m wide. The engineering, economic and environmental studies for the refurbishment of this road have been completed.

B. Socioeconomic viability

- 4.7 Analysis of the economic benefits and costs for the country, arising from rehabilitation and improvement of the San Lorenzo-Muhan segment, are calculated by considering the likely savings in vehicle operating costs and journey times as a result of the road being in better condition, together with adjusted costs for works, studies, supervision and maintenance programmed for the selected useful life of 15 years. The analysis of economic benefits and costs of the San Lorenzo-Muhan segment are presented in the following table.

TABLE IV-1 Estimates of EIRR, NPVB and sensitivity analysis San Lorenzo-Muhan segment					
Length (Km)	Costs (\$thousand)	EIRR (%)	NPVB (\$thousand)	Sensitivity	
				+20% cost -20% benefits	+0% costs +20% benefits
88.1	19,010	17.6 %	6,715	12.8 %	21.1 %

- 4.8 The estimation of vehicle operating costs, took account of current road conditions and the technical specifications of the work to be undertaken. The technical characteristics of the road segment were fed into a vehicle operating cost submodel, which forms part of the highway design model (HDM-III). Based on traffic counts at several points on the highway and on different days, traffic flows were estimated by vehicle type for 1999, resulting in an average of 895 vehicles per day. This average comprises 66% freight vehicles, of which 57% are light goods vehicles. Buses account for 50% of all passenger traffic. Taking traffic growth over the last

five years as a reference, 5.5% growth per year was projected over the useful life of the project.

- 4.9 Based on the civil works budgets, including expenses relating to technical and environmental studies and supervision, adjustments were made to market prices to eliminate purely financial costs represented by taxes (15%), the cost of unskilled labor to be used in the project (57%), and the effect of taxes on wholly imported inputs. The economic cost of carrying out the agreed maintenance plan was also added in.
- 4.10 The project's economic internal rate of return (EIRR) was estimated at 17.65% and the net present value of benefits (NPVB) was estimated at US\$6.6 million. Should costs turn out to be 10% higher than expected and benefits 20% lower, the EIRR would fall to 12.82%. Projected traffic flows do not include traffic that might be generated on other roads in the area, as a result of the improvement and refurbishment work done in this project. Should this occur and the benefits increase by 20%, the EIRR would rise to 21.14% without any increase in costs.

C. Institutional viability

- 4.11 The capacity of MTI to manage and execute highway rehabilitation programs has been satisfactory demonstrated with the timely conclusion of the REMECAR and REMEVIAL programs jointly worth US\$121 million, and the normal progress being made in the more recent Pan-American Highway Rehabilitation Program for US\$50 million. Since 1998, MTI has been embarked on a successful restructuring process to turn it into an organization focusing on sectoral regulation and policy functions, with strengthened management and supervision capacities. The Bank programs mentioned above have supported this process of change in MTI, and the proposed program includes an action plan with resources to consolidate and complete it.

D. Financial viability

- 4.12 Works on the San Lorenzo-Muhan road segment, to be financed with program resources, are part of the Managua-Rama highway program, the remainder of which is being financed by loans from the World Bank and DANIDA. The costs of these rehabilitation works have been included in the financial projections presented in table I-1, which are consistent with the national transport plan and the five-year maintenance plan to be executed by FOMAV. Financial projections reflect a strategy for completing, by 2003, most of the wide-ranging rehabilitation plan started in 1998, in order to provide maintenance services to a longer extension of the highway network. From 2003 onward, maintenance services are expected to be provided on a major part of the national network, possibly with lower costs per km, as a result of the better state of the now-refurbished network and greater efficiency in work carried out.

- 4.13 In 2001-2005, 60% of PNT financing is expected to come from external resources. This compares favorably with 58% external financing received by the highway sector in 1996-2000, although the latter includes funds required by the hurricane Mitch emergency. The government will need to make a major financial effort especially after 2003. In 1999-2000, however, the government has proven capable of contributing similar amounts to those required in 2001-2003, and it is expected to be in a position to make counterpart contributions for normal execution of the proposed program.

E. Environmental and social viability

- 4.14 The activities envisaged in the present program are intended to mitigate the adverse effects of a lack of highway maintenance, so their environmental impact ought to be positive and of high social benefit. Nonetheless, in order to minimize any chance of environmental damage, the program has established general sustainability criteria; environmental quality control procedures including verification that the country's environmental legislation and regulations are being complied with, protection of parks and protected areas, cultural heritage, and environmentally fragile zones of high ecological wealth, and participation by the affected population. The monitoring of environmental impact will be done by the DCA.

F. Benefits

- 4.15 Both the rehabilitation works component and those relating to institutional support and maintenance sustainability, will generate significant benefits for users of the road network and contribute to more efficient use of the financial resources channeled to the highway sector. Refurbishment of the San Lorenzo-Muhan road segment will produce savings in vehicle operating costs and shorter journey times. In addition, setting up FOMAV to administer maintenance contracts, together with COERCO restructuring and a strengthening of MTI contract management capacity, will make it possible to streamline procedures and control the costs of civil works more effectively.
- 4.16 The beneficiary population, who are mostly engaged in agricultural work and are major users of bus services and light goods vehicles, will perceive a significant improvement in carrying out their activities. They will also enjoy better access to health and education services, as well as to markets and centers of employment.

G. Social equity and poverty reduction (PTI) classification

- 4.17 The program qualifies as a social equity enhancing project, as described in the indicative targets mandated by the Bank's Eighth Replenishment (Document AB-1704). The operation also qualifies as a poverty-targeted investment (PTI) on geographical grounds, since about 61% of the population in the hinterland of the San Lorenzo-Muhan road segment have incomes below the poverty line. According

to indicators presented in the Nicaraguan government's strengthened poverty reduction strategy (August 2000), poverty percentages in municipios located in the hinterland of the segment to be refurbished are as follows: Juigalpa 50.1%, Acoyapa 67.3%. Santo Tomás 56.9%. San Pedro de Lovago 60.9%, Villa Sandino 65.7%. Muelle de los Bueyes 62.8% and Rama 67.6%.

- 4.18 The borrower has applied to make partial use of the 10 percentage points in additional financing corresponding to the PTI classification.

H. Risks

- 4.19 The MTI has accumulated experience in executing programs and projects for a variety of multilateral development agencies. It has also been strengthened institutionally through technical assistance from IDB and the World Bank, which will enable it to manage the new program effectively. The project management process will be aided by consulting services on specific issues to resolve problems that arise in carrying out the operation.
- 4.20 Lessons learned in previous transport sector projects indicate that highway sector sustainability requires a maintenance policy with stable financing mechanisms, together with encouragement for the private sector to participate in construction and maintenance activities on the highway network. The law creating FOMAV, together with the action plan for its implementation and to restructure COERCO, are aimed at guaranteeing sustainability and encouraging private-sector participation in highway maintenance. To minimize the risk of FOMAV implementation being delayed, it was agreed that prior to presentation of the project report to the Bank's Board of Directors, the executing agency will provide evidence that the FOMAV directing council has been set up and is functioning, and that it has the counterpart resources (taxes and operating expenses) needed to meet the targets agreed for 2001. In addition, prior to disbursement of the proposed operation, the borrower will present evidence that FOMAV is up and running; that the necessary resources to execute the maintenance activities envisaged in the targets agreed for the first year of program execution have been allocated in the national budget; and that a contract between MTI and FOMAV has been signed for the transfer of Bank resources to FOMAV to cover the highway maintenance activities including the commitments set out in paragraph 3.4.
- 4.21 The fact that the government has opened up to the private sector, together with experience gained in executing ongoing highway programs, has generated considerable revival and an increase in the number of national engineering and construction firms. Given these developments, no difficulty is foreseen in the capacity of local firms to respond to the larger number and scale of the rehabilitation and maintenance works envisaged in the program, and implementation of FOMAV.

NICARAGUA
REHABILITATION OF THE ROAD BETWEEN SAN LORENZO AND MUHAN (MANAGUA-RAMA HIGHWAY (NI-0146)
LOGICAL FRAMEWORK

OBJECTIVES	VERIFIABLE INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
AIM			
Reduce transport costs and facilitate movement of passengers and freight in the Atlantic zone and the interior of the country, to contribute to the revival of agricultural and livestock production in the zone and integrate communities with the rest of the country.	<ul style="list-style-type: none"> Improved access to agricultural output markets, reduction in vehicle operating costs as a result of improved transitability of refurbished road, using indicators such as: journey times, public transport fares, freight costs, diversification and increase of supply, based on projections determined in the feasibility study for the improvement project. 	<ul style="list-style-type: none"> National transport statistics Annual maintenance report User surveys Study on indicators of transitability and social and economic benefits of the road's service area, by an independent consultant. 	<ul style="list-style-type: none"> Global stability in the region, politically and economically.
PURPOSE			
Refurbish a road in the trunk network of the Atlantic zone with the interior of the country, with satisfactory quality of work, ensuring permanent transitability, safety and appropriate environmental management measures.	<ul style="list-style-type: none"> By the end of the program approximately 88 km of the paved highway network will have been refurbished, and a modernized institutional framework set up, together with suitable mechanisms for maintaining the national highway network. 	<ul style="list-style-type: none"> Periodic evaluations of the state of the road network 	<ul style="list-style-type: none"> Government maintenance for MTI modernization Existence of suitable sustainable sources for maintenance.
COMPONENTS			
Refurbishment of segment between San Lorenzo and Muhan of the Managua-Rama highway.	<ul style="list-style-type: none"> By the end of the program, refurbishment of asphalt-paved highway network increased by 88 km, including six larger bridges located in that section. 	<ul style="list-style-type: none"> Annual monitoring meetings Program progress reports Annual maintenance report. 	<ul style="list-style-type: none"> Counterpart funds available Agreed maintenance complied with. Continuing political commitment to highway maintenance

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or highway maintenance	<ul style="list-style-type: none"> By the end of the program, FOMAV to be dealing with at least 70% of the maintainable priority highway network (approximately 5,000 km), via outsourcing with private firms and microenterprises. MTI continues to deal with 2,000 km of gravel roads in the network through administration with COERCO. 		
nal strengthening	<p>The following to have been achieved by the end of the program:</p> <ul style="list-style-type: none"> FOMAV structured and implemented. Country equipped with a mechanism to carry out highway maintenance. DCA strengthened and trained. Planning area modernized and highway network inventory updated, including reclassification and review of network jurisdiction. MTI project execution and administrative and financial dependencies strengthened. 		
ACTIVITIES			
tracting and execution of d consulting services for the ponents of the program.	<ul style="list-style-type: none"> Targets in accordance with the procurement and bidding plan (Annex A-III-1) and timetable for bidding and execution processes (program technical files). 	<ul style="list-style-type: none"> Program progress report Audit report. Supervision reports. 	<ul style="list-style-type: none"> Acceptable bids receive
PROJECT TO REFURBISH THE SAN LORENZO-MUHAN SEGMENT			
PURPOSE			
approximately 88 km of road in one trunk road network with of service, ensuring nsitability, highway safety ental mitigation measures.	<p>Program to have refurbished and improved approximately 88 km of the paved road network, including rehabilitation of six larger bridges located in that section.</p>	<ul style="list-style-type: none"> Visual inspection Periodic reports on indicators of transitability and social and economic benefits in the road's area of influence prepared by an independent consultant 	<ul style="list-style-type: none"> Availability of financing, maintenance plans in tir fashion. Existence of effective c maximum loads allowed highway network.

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COMPONENTS			
ent of the San Lorenzo- ment of the MANAGUA- hway.	Approximately 88 km of the paved road network to have been refurbished and improved by the end of the program, including rehabilitation of six larger bridges located in that section.	<ul style="list-style-type: none"> • Final supervision report • Act of final acceptance of the civil works 	<ul style="list-style-type: none"> • Counterpart funds ava • Works and supervision fulfilled as agreed
ACTIVITIES			
g, contracting and execution of works and consulting services.	<ul style="list-style-type: none"> • Call for pre-qualification and bidding (by November 2001) • Award and contracting (by June 2002) • Execution and supervision (by June 2004) 	<ul style="list-style-type: none"> • Project progress report • Audit report. • Supervision reports. 	<ul style="list-style-type: none"> • UCP strengthened for management and execu • The market for subco consulting firms displ acceptable conditions bidding processes as and receiving accepta
PROJECT FOR A SUSTAINABLE HIGHWAY MAINTENANCE STRATEGY			
PURPOSE			
the sustainable highway e strategy, including the at of new highway execution nance mechanisms, and new to ensure access to stable and resources.	<ul style="list-style-type: none"> • Execution and maintenance mechanism established for the maintainable highway network, through implementation of FOMAV. • MTI reorganized and strengthened to take charge, through COERCOS, of maintenance on the maintainable highway network and emergency activities not covered by FOMAV. 	<ul style="list-style-type: none"> • Annual highway maintenance report • Periodic evaluations of the state of the road network 	<ul style="list-style-type: none"> • Government continue supporting mainten activity for social and infrastructure develop country. • Existence of suitable sustainable sources fo

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COMPONENTS								
Existence of maintainable road (asphalt and gravel).	By the end of the program, a highway maintenance mechanism (FOMAV) to be executing at least 70% of highway network maintenance activities by outsourcing with private firms and microenterprises. FOMAV will not be able to hire enterprises that are part of COERCO to perform maintenance activities on the maintainable highway network.						<ul style="list-style-type: none">Annual highway maintenance reportProgram progress report	<ul style="list-style-type: none">Existence of suitable sustainable sources maintenance of highway by FOMAV.
		Total network maintained (km)	Maintenance by COERCO		Maintenance by FOMAV			
			Km	%	Km	%		
	2001	3,500	2,400	69%	1,100	31%		
	2002	4,300	2,300	53%	2,000	47%		
	2003	5,200	2,200	42%	3,000	58%		
	2004	6,100	2,100	34%	4,000	66%		
	2005	7,000	2,000	29%	5,000	71%		
Inventory of network to maintain Management system Annual maintenance plans Bidding documents for contract maintenance Call for bids Award and contracting. Execution and supervision of contract Budgetary allocation	<p>Annual administration of maintenance:</p> <ul style="list-style-type: none">Update inventory of network to be maintained and resources (by December)Prepare budget and annual maintenance plan (by December) <p>Maintenance by contract:</p> <ul style="list-style-type: none">preparation of bidding documents (by Feb. 2002)call for bids (by Mar. 2002)award and contracting. (by April 2002)execution and supervision of contract (annually) <p>Maintenance by administration:</p> <ul style="list-style-type: none">work program (by December)						<ul style="list-style-type: none">Program progress report.Audit report.Supervision reports.	

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INSTITUTIONAL STRENGTHENING PROJECT			
PURPOSE			
of MTI institutional order to increase its efficacy, and eliminate deficiencies, helping to increase the level of service on a proportion of the maintainable	By the end of program execution, MTI to have been reorganized and strengthened, FOMAV to have been created and consolidated, and DCA trained, with procedures and manuals updated in accordance with the provisions of the Environment Act.	<ul style="list-style-type: none"> Annual monitoring meetings 	<ul style="list-style-type: none"> Government continues to MTI modernization strategy Existence of suitable and sustainable sources for maintenance.
COMPONENTS			
dependencies in charge of the national road network.	Execution and maintenance mechanism established for the maintainable priority road network, through creation and consolidation of FOMAV.	<ul style="list-style-type: none"> Program progress report Monitoring of activities. 	<ul style="list-style-type: none"> Government continues to MTI modernization strategy Continuity of trained and managerial staff in MTI dependencies.
	Reorganization of MTI area responsible for maintaining the nonpaved national highway network.		
stitutional strengthening increase sectoral efficiency in way, from the socio-economic, technical, managerial and points.	DCA strengthened and trained		
	Planning area modernized and road inventory updated, including reclassification and review of jurisdiction over the network.		
	MTI project execution and managerial and financial dependencies strengthened.		

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ACTIVITIES				
Contracting and execution of works and consulting services for the components of the program.	MTI RESTRUCTURING <ul style="list-style-type: none"> Consulting services for implementing MTI modernization. 	(by June 2002)	<ul style="list-style-type: none"> Program progress report. Audit report. Supervision reports. 	
	FOMAV <ul style="list-style-type: none"> Consulting services to prepare contracting rules, procedures and manuals, staff, financial, etc.. Updating of maintenance administration system for priority network. Study of unit costs and execution methodologies. Training, formation of microenterprises, procurement of equipment and logistical support. 	(by June 2002) (by June 2002) (by June 2002) (by December 2004)		
	COERCO <ul style="list-style-type: none"> Consulting services for financial, legal and technical analyses for COERCO transformation. Training program. 	(by June 2002) (by June 2004)		

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INSTITUTIONAL STRENGTHENING PROJECT				
ACTIVITIES				
Contracting and execution of studies and consulting services for the different components of the program	GENERAL HIGHWAY DIRECTORATE (DGV) <ul style="list-style-type: none"> • System of evaluation, prioritization and execution of maintenance on the maintainable highway network. • Training, equipment procurement and logistical support. 	(by December 2002) (by December 2003)	<ul style="list-style-type: none"> • Program progress report. • Audit report. • Supervision reports. 	
	ENVIRONMENTAL CONTROL DIRECTORATE (DCA) <ul style="list-style-type: none"> • Complementation of manuals, guides and guidelines for applying environmental and social norms. • Training, equipment procurement and logistics support. 	(by December 2001) (by December 2003)		
	GENERAL PLANNING DIRECTORATE (DGP) <ul style="list-style-type: none"> • Updating and organization of highway infrastructure standards and manuals • Updating of highway inventory and review of network classification. • Training and project evaluation, equipment procurement and logistical support. 	(by October 2002) (by December 2001) (by December 2003)		

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	PROJECT COORDINATING UNIT (UCP) <ul style="list-style-type: none"> • Consulting services to update regulations, procedures and manuals for contracting highway works. • Training in project management, equipment procurement and logistical support. 	 (by June 2002) (by December 2003)		
	FINANCIAL-MANAGERIAL OFFICE <ul style="list-style-type: none"> • Technical assistance and consulting services in financial, managerial and accounting aspects. • Training in project management, equipment procurement and logistical support. 	 (by December 2003) (by December 2003)		

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BIDDING AND PROCUREMENT PLAN

	Amount US\$ thousands	IDB %	LOCAL %	Method	Pre- qualification	Date of publication of SPN
CIVIL WORKS:						
San Lorenzo-Puente La Tonga	8,900	84	16	ICB	Yes	2001
Puente La Tonga-Santo Tomás	12,000	84	16	ICB	Yes	2001
Santo Tomás-Muhan	7,800	84	16	ICB	Yes	2001
Road maintenance	3,000	84	16	3/	N/A	2002
CONSULTING SERVICES:						
Works supervision	2,100	84	16	1/	Yes	2001
External audit	500	84	16	1/	Yes	2002
Technical assistance for MTI - UCP strengthening; engineering and studies	1,700	84	16	2/	NA	NA
Consulting, technical assistance and support for COERCO transformation	1,500	84	16	2/	NA	NA
Technical assistance for FOMAV strengthening	350	84	16	2/	NA	NA
GOODS PROCUREMENT:						
Support team for MTI	800	84	16	1/	NA	NA
Support team for COERCO	800	84	16	1/	NA	NA
Support team for FOMAV	150	84	16	1/	NA	NA

ICB = International competitive bidding

LCB = Local competitive bidding

- 1/ ICB, LCB or quotes will be used, depending on the size of each individual contract.
2/ Bank procedures will be applied according to the amount of each individual contract.
3/ Procedures agreed between the Bank and the executing agency will be applied.

PROPOSED RESOLUTION

**NICARAGUA. LOAN ____/SF-NI TO THE REPUBLICA DE NICARAGUA
Program for the Rehabilitation of the San Lorenzo-Muhan Section
(Managua-Rama Highway)**

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 República de Nicaragua, as Borrower, for the purpose of granting it a financing to cooperate in the execution of a program for the Rehabilitation of the San Lorenzo-Muhan Section (Managua-Rama Highway). Such financing will be for the amount of up to US\$35,000,000, or its equivalent in other currencies, except that of Nicaragua, which are part of the resources of the Bank's Fund for Special Operations, and will be subject to the "Financial Terms and Conditions" and the "Special Contractual Conditions" of the Executive Summary of the Loan Proposal.