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Report No: PAD2643

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT PAPER

ON A

PROPOSED ADDITIONAL CREDIT

IN THE AMOUNT OF US\$35 MILLION

TO THE

REPUBLIC OF NICARAGUA

FOR A

RURAL AND URBAN ACCESS IMPROVEMENT PROJECT

February 22, 2018

Transport and Digital Development Global Practice  
Latin America and Caribbean Region

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## CURRENCY EQUIVALENTS

*(Exchange Rate Effective as of January 31, 2018)*

Currency Unit = Nicaraguan Cordobas (NIO)

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NIO 31.096 = US\$1

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US\$1.457 = SDR 1

### FISCAL YEAR

January 1 – December 31

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Country Director: Yaye Seynabou Sakho

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Task Team Leader(s): Roger Gorham, Sevara Melibaeva

## ABBREVIATIONS AND ACRONYMS

AF	Additional Financing
CONASEV	<i>Consejo Nacional de Seguridad y Educación Vial</i> (National Council for Road Safety and Education)
CPF	Country Partnership Framework
EIRR	Economic Internal Rate of Return
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FM	Financial Management
FOMAV	<i>Fondo de Mantenimiento Vial</i> (Road Maintenance Fund)
GRS	Grievance Redress Service
INIDE	<i>Instituto Nacional de Información de Desarrollo</i> (National Institute of Development Information)
IRM	Immediate Response Mechanism
IPPF	Indigenous Peoples Planning Framework
MCA	<i>Modulos Comunitarios de Adoquinado</i> (Community Modules for Adoquines)
MTI	<i>Ministerio de Transporte e Infraestructura</i> (Ministry of Transport and Infrastructure)
NPV	Net Present Value
PDO	Project Development Objective
PMARU	<i>Proyecto de Mejoramiento de Acceso Rural y Urbano</i> (Rural and Urban Access Improvement Project)
RAP	Resettlement Action Plan
RPF	Resettlement Policy Framework
UCR-BM	<i>Unidad Coordinadora de Recursos – Banco Mundial</i> (Project Coordinating Unit for World Bank Resources)



**BASIC INFORMATION – PARENT (Rural and Urban Access Improvement Project - P160359)**

Country Nicaragua	Product Line IBRD/IDA	Team Leader(s) Sevara Melibaeva		
Project ID P160359	Financing Instrument Investment Project Financing	Resp CC GTD04 (9383)	Req CC LCC2C (1308)	Practice Area (Lead) Transport & Digital Development

Implementing Agency: Ministerio de Transporte e Infraestructura (Ministry of Transport and Infrastructure), Road Maintenance Fund (FOMAV)

Is this a regionally tagged project?  No				
<input type="checkbox"/> Situations of Urgent Need or Capacity Constraints <input type="checkbox"/> Financial Intermediaries <input type="checkbox"/> Series of Projects	Bank/IFC Collaboration  No			
Approval Date 06-Mar-2017	Closing Date 30-Jun-2022	Original Environmental Assessment Category Partial Assessment (B)	Current EA Category Partial Assessment (B)	

**Development Objective(s)**

The objectives of the Project are to: (a) improve safe and sustainable access to markets and services in targeted rural and urban areas of the Recipient; and (b) in the event of an Eligible Emergency, provide immediate and effective response to said Eligible Emergency.

**Ratings (from Parent ISR)**

	<b>Implementation</b>	<b>Latest ISR</b>
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	07-Jun-2017	08-Dec-2017
Progress towards achievement of PDO	S	S
Overall Implementation Progress (IP)	S	S
Overall Safeguards Rating	S	S
Overall Risk	M	M

**BASIC INFORMATION – ADDITIONAL FINANCING (Rural and Urban Access Improvement Project Additional Financing - P165467)**

Project ID P165467	Project Name Rural and Urban Access Improvement Project Additional Financing	Additional Financing Type Scale Up	Urgent Need or Capacity Constraints No
Financing instrument Investment Project Financing	Product line IBRD/IDA	Approval Date 15-Mar-2018	
Projected Date of Full Disbursement 19-Sep-2022	Bank/IFC Collaboration No		
Is this a regionally tagged project? No			

- Situations of Urgent Need or Capacity Constraints
- Financial Intermediaries
- Series of Projects

**PROJECT FINANCING DATA – PARENT (Rural and Urban Access Improvement Project - P160359)**

**Disbursement Summary (from Parent ISR)**



Source of Funds	Net Commitments	Total Disbursed	Remaining Balance	Disbursed
IBRD				%
IDA	96.80	13.59	83.21	14 %
Grants				%

**PROJECT FINANCING DATA – ADDITIONAL FINANCING (Rural and Urban Access Improvement Project Additional Financing - P165467)**

**FINANCING DATA (US\$, Millions)**

**SUMMARY**

<b>Total Project Cost</b>	35.00
<b>Total Financing</b>	35.00
<b>Financing Gap</b>	0.00

**DETAILS**

International Development Association (IDA)	35.00
IDA Credit	35.00

**COMPLIANCE**

**Policy**

Does the project depart from the CPF in content or in other significant respects?

Yes  No

Does the project require any other Policy waiver(s)?

Yes  No

**INSTITUTIONAL DATA**

**Practice Area (Lead)**

Transport & Digital Development



**Contributing Practice Areas**

**Climate Change and Disaster Screening**

This operation has been screened for short and long-term climate change and disaster risks

**Gender Tag**

Does the project plan to undertake any of the following?

a. Analysis to identify Project-relevant gaps between males and females, especially in light of country gaps identified through SCD and CPF

Yes

b. Specific action(s) to address the gender gaps identified in (a) and/or to improve women or men's empowerment

Yes

c. Include Indicators in results framework to monitor outcomes from actions identified in (b)

Yes

**PROJECT TEAM**

**Bank Staff**

Name	Role	Specialization	Unit
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Sevara Melibaeva	Team Leader	Co-TTL	GTD01
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Pilar Elisa Gonzalez Rodriguez	Counsel	Lawyer	LEGLE
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Susana Toledo Camacho	Environmental Safeguards Specialist		GEN04
Virginia Maria Henriquez Fernandez	Team Member	Transport Specialist	GTD04
<b>Extended Team</b>			
<b>Name</b>	<b>Title</b>	<b>Organization</b>	<b>Location</b>



NICARAGUA

RURAL AND URBAN ACCESS IMPROVEMENT PROJECT ADDITIONAL FINANCING

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## I. BACKGROUND AND RATIONALE FOR ADDITIONAL FINANCING

### A. Overview of Parent Project and Proposed Additional Financing (AF)

1. **The Nicaragua Rural and Urban Access Improvement Project (*Proyecto de Mejoramiento de Acceso Rural y Urbano, PMARU*) was approved on March 6, 2017, and became effective on May 17, 2017.** The total Project Financing is US\$96.8 million through an IDA credit of US\$46.8 million and IDA17 Scale-up Facility credit of US\$50 million.<sup>1</sup> The Project provides resources for critically needed road links in both rural and urban parts of Nicaragua. The achievement of the Project Development Objective (PDO) is supported by the following project components: (a) Road Infrastructure Improvement; (b) Road Safety; (c) Institutional Strengthening and Implementation Support; and (d) Immediate Response Mechanism.

2. **The performance of PMARU to date is satisfactory, though implementation is still in early phases.** Implementation has been progressing rapidly and in a satisfactory manner. The Project has already disbursed US\$13.59 million (14 percent) in the first 11 months of implementation.

3. **The proposed AF will support rehabilitation and improvement works of three additional rural road segments that are contiguous with segments currently financed under the Project.** The AF will enable the addition of over 41 km of cobblestone (*adoquines*) construction activities, extending the impact of those segments already supported under Component 1 (sub-component 1.2: Rehabilitating and Improving Rural Roads), and increasing the total length of project-financed *adoquines* roads by nearly 2.5 times. The new sections would continue the use of labor-intensive methods, using Community Modules for Adoquines (*Modulos Comunitarios de Adoquinado, MCAs*) or cobblestone surfaces, which had been pioneered under previous projects, enabling the completion of key road links begun under those projects.<sup>2</sup> These sections include an additional 13.7 km along the Cárdenas - Colón road, 8.3 km along the Granada - Malacatoya road, and 19.1 km along the Macuelizo - Santa María road. The works will also include drainage improvements.

### B. Poverty Context and Rationale of the Additional Financing

4. **Nicaragua remains one of the Latin American and the Caribbean Region's poorest countries, despite notable poverty and inequality reduction of the past decade.** Nicaragua's real gross domestic product (GDP) grew between 1994 and 2016 by an average of 4 percent, with an average of 5.3 percent being recorded from 2010 to 2015 (compared with an average of 2.9 percent in the LAC region as a whole). Extreme poverty decreased from about 17 percent in 2005 to about 8 percent in 2014. Similarly, the

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<sup>1</sup> The total cost of components as shown in Section VII – COMPONENTS of this Project Paper, amounts to US\$96.67 million under the original Project and US\$131.58 million with Additional Financing. Since the Recipient financed the front-end fee of the IDA Scale-up Facility (US\$125,000) for the original Project through the Credit, and intends to finance the front-end fee of the IDA Scale-up Facility for the Additional Finance (US\$87,500) through the Credit as well, the amount of financing under the original Project totals US\$96.8 million, and with the proposed Additional Financing the total is US\$131.67 million, as shown in Section VII – Expected Disbursements of this Project Paper.

<sup>2</sup> Third Road Rehabilitation and Maintenance Project (P068673, closed on June 30, 2007); Fourth Roads Rehabilitation and Maintenance Project (P083952, closed on September 30, 2014); Rural Roads Infrastructure and Improvement Project (P123447, closed on November 30, 2017).



overall official poverty rate decreased from about 48 percent in 2005 to about 30 percent in 2014.<sup>3</sup> While high by international standards, inequality in Nicaragua is lower than in other LAC countries. Using an internationally comparable measure of income, the Gini coefficient decreased from 0.49 to 0.44 between 2005 and 2009, before increasing slightly to 0.47 in 2014, and decreasing slightly thereafter. Despite this progress, about 1.7 million Nicaraguans (one-third of the population) remained below the official poverty line in 2014,<sup>4</sup> with the majority concentrated in rural areas and remote communities, with constrained access to basic services due to limited infrastructure, including rural roads, notwithstanding their economic potential.

5. **Poverty level was considered as one of the key variables in the initial prioritization of the roads proposed for financing in the Project.** Recognizing access and connectivity constraints, the Ministry of Transport and Infrastructure (*Ministerio de Transport e Infraestructura*, MTI) developed a Comprehensive Productive Roads Program for optimizing the country’s limited resources and prioritizing road infrastructure investments in productive zones based on strategic, social, economic, technical, and environmental criteria, particularly poverty alleviation and agricultural production potential. The MTI’s Planning Department is responsible for monitoring and assessing the contribution of road investments to governmental objectives of poverty reduction and economic growth. The roads selected under the Project were among those prioritized using the selection methodology under the Comprehensive Productive Roads Program. Inherent in their selection is the high impact of roads on improved accessibility to markets, resources, and services relative to the predominant level of poverty. Because the AF finances contiguous sections of the same roads, the poverty analysis carried out for the original Project is applicable. The poverty index of the beneficiary municipalities of the Project is presented in Table 1.

**Table 1: Extreme Poverty Levels in the Proposed Project Intervention Areas by Municipality**

Road Section	Road Type	Department	Beneficiary Municipalities	Extreme Poverty Index (%)
Granada - Malacatoya	Rural road	Granada	Granada	32.2
Macuelizo - Santa María	Rural road	Nueva Segovia	Macuelizo	54.0
			Santa María	51.1
Cárdenas - Colón	Rural road	Rivas	Cárdenas	48.6

Source: Projections reported by the National Institute of Development Information (*Instituto Nacional de Información de Desarrollo*, INIDE) for 2016 (based on the 2005 census).

6. **The compelling impact of the proposed road segments on poverty is threefold.** First, they will facilitate household-based production by providing improved access to markets in terms of both travel time and condition. For example, the improved roads may enable farmers to consider commercializing highly perishable crops that were previously commercially unviable. In this respect, the road may have a direct, positive impact on rural households’ potential earnings. Second, poor households in the intervened areas may have improved accessibility to services, which could result in qualitative improvements in health and well-being. For example, impact evaluation of previous rural road programs in Nicaragua suggests that improvement of rural roads was associated with an 8.5 percent decline in respiratory

<sup>3</sup> Source: World Bank estimates based on 2005 and 2014 Living Standards Measurement Studies Surveys (*Encuesta Nacional de Hogares sobre Medición de Nivel de Vida*).

<sup>4</sup> World Bank estimates based on the 2014 Living Standards Measurement surveys.



illnesses among men and 7.3 percent increase in school registration among girls.<sup>5</sup> Finally, the risk of prolonged damage to life and livelihood from natural disasters would be reduced because of improved access for emergency responders. In fact, according to the 2017 Germanwatch Climate Risk Index, between 1996 and 2015, Nicaragua was the world's fourth most-affected country by extreme weather.<sup>6</sup> This potential impact is likely to be realized more quickly and cost-effectively in the Project areas under this AF than if the resources were channeled to other possible works because of economies of scale associated with the original Project. Indeed, the ability to minimize time and cost in delivery of such rural accessibility benefits is one of the key factors underlying not only the choice of activities within the Project but also the choice of this Project as a recipient of the available IDA18 Scale-up Facility resources.

**7. The implementation methodology for the upgrading of rural roads, on the portions financed under the AF as on those included in the original Project, is another way that poverty reduction and enhancement of shared prosperity are being prioritized in rural areas with high levels of poverty.** Both the original Project and the AF will implement the upgrading using MCAs on most of the intervened roads, a labor-intensive method of construction that maximizes involvement of labor drawn from local communities. Around 46 percent of the population in the targeted municipalities (Table 1) live in conditions of extreme poverty, with Macuelizo having the highest incidence of poverty at 54 percent.<sup>7</sup> Investments in rural road infrastructure have proven to generate direct jobs as part of the construction contracts and indirect jobs through expanded employment opportunities because of quicker and more reliable access to markets all year round. Recent research suggests an employment generation effect of between 200 to 500 annualized direct jobs for every US\$1 million spent on infrastructure.<sup>8</sup> Previous World Bank-financed operations have also supported the use of MCAs; an evaluation of the impacts of these previous project investments shows that this method has generated important social benefits, including short-term employment opportunities with over 280 MCAs formed and over 9,500 jobs created to date, technology transfer and technical skills building, and empowerment and creation of a sense of ownership for the roads within communities. In terms of income, the evaluation also shows an increase in the monthly average income for employees in benefitting municipalities by around 26.5 percent. For women, the impact was even greater, increasing their monthly average income by about 77 percent.<sup>9</sup>

**8. The road sections under the Project are located within the Dry Corridor (*Corredor Seco*) region, reinforcing national efforts to ensure the subsistence of small producers and food security.** The Dry Corridor is an elongated and continuous region of more than 18,000 km<sup>2</sup>, from the northwest to the southeast on the Pacific side of Nicaragua, which is seriously threatened by rising temperatures and climate change and has lower water availability conditions than other parts of the country. Most of the population in this region is engaged in small-scale agricultural activities, mainly of basic grains, which are the basis of food security for many families. Overall, lack of maintenance and poor condition of access

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<sup>5</sup> Garz, Seth, and Elizaveta Perova. 2014. *Evidence on the Impacts of Short-term Employment Generation Projects to Improve Road Infrastructure in Rural Nicaragua*. World Bank Paper.

<sup>6</sup> Global Climate Risk Index. 2017. *Who Suffers Most from Extreme Weather Events? Weather-related Loss Events in 2015 and 1996 to 2015*.

<sup>7</sup> Projections reported by *Instituto Nacional de Información de Desarrollo (INIDE)* for 2016 (based on the 2005 census).

<sup>8</sup> Tuck, Laura, Jordan Schwartz, and Luis Andres. 2009. *Crisis in LAC: Infrastructure Investment and the Potential for Employment Generation*.

<sup>9</sup> Jiménez, Bexi Francina Mota. 2013. *Impact Evaluation of Rural Roads Project in Nicaragua. Impacts on Welfare and Education*. September.



roads translate into high post-harvest losses, high cost of transportation, and limited access to local and regional markets. Therefore, the proposed AF will contribute to increasing the resilience of small producers' and rural communities' livelihoods in the face of drought.

9. **An AF to the PMARU is considered an effective way of expanding the impact of the Project.** The proposed additional activities are consistent with existing activities under the Project and will be implemented by fiduciary teams that are already in place. With the AF, an additional 119,000 people have been identified to benefit from the Project, of whom 80,000 will benefit directly and 51 percent will be women. In total, the number of Project beneficiaries will increase to approximately 669,000 people, of whom 450,000 will be direct beneficiaries and 50 percent will be women.<sup>10</sup>

## II. DESCRIPTION OF ADDITIONAL FINANCING

### A. Proposed Changes

10. **PDO.** No change in the PDO is envisaged.

11. **Project components.** The changes proposed in this AF would only be made under Component 1 and include support for the rehabilitation and improvement works (such as *adoquines* or cobblestone surfacing or any other viable surface replacement option acceptable to the World Bank) on additional sections of the rural roads network. The sections proposed to be financed under the AF are contiguous to three of those already financed by the Project, which represent extensions of the Macuelizo - Santa María (NIC-53), Granada - Malacatoya (NIC-39), and Cárdenas - Colón (NIC-66) road sections. As a result, selected project targets were revised, as shown in Table 2.

Table 2: Revised Physical Targets

Road Section	Length under Parent Project (km)	Additional Length Proposed to be Financed under AF (km)	Revised Total Length (km)
Granada-Malacatoya	10.00	8.30	18.30
Macuelizo-Santa María	10.00	19.05	29.05
Cárdenas-Colón	10.00	13.72	23.72
La Libertad-San Pedro de Lóvago	15.20	0.00	15.20
Corn Island	1.00	0.00	1.00
<b>Total Target Sub-Component 1.2 (km)</b>	<b>46.20</b>	<b>41.07</b>	<b>87.27</b>

12. **Project cost.** The new road sections are planned to be contracted under the same modality as those in the original Project, that is, with one or two earthmoving contracts and several contracts with MCAs. Due to more extensive slope stabilization works required in the Macuelizo - Santa María section, however, tendering with a more conventional construction contract is believed to be the most effective way of completing that segment with the resources available. For this reason, this segment will not extend the use of the MCAs. The estimated costs are presented in Table 3.

<sup>10</sup> The beneficiaries for the rural road sections were estimated using a buffer of 5 km and for the urban access roads it was estimated that the section would benefit 50 percent of the population in the affected urban areas.



**Table 3: Estimated Costs for Proposed Road Sections**

Road Section	Length under AF (km)	Estimated Unit Costs (US\$ per km)	Total (US\$, millions)
Granada - Malacatoya	8.30	645,000	5.35
Macuelizo - Santa María	19.05	1,000,000	19.05
Cárdenas - Colón	13.72	640,000	8.80
Supervision Granada - Malacatoya	--	--	0.30
Supervision Macuelizo - Santa María	--	--	1.00
Supervision Cárdenas - Colón	--	--	0.50
<b>Grand Total</b>	<b>41.07</b>	<b>852,203</b>	<b>35.00</b>

13. **Results Framework.** It is proposed that the Results Framework be modified to be consistent with the increased target of 87.27 km, as well as the increased number of beneficiaries. In addition, three new intermediate results indicators are being added: two to measure the accessibility to various points of interest in the affected municipalities and a third to monitor the effects of the rural road improvements on road safety.

14. **Rural accessibility indicators.** The rural accessibility indicators will be calculated using the data of population distribution in project municipalities; locations of services (hospitals, city centers, and so on); and the road network. The indicators will be presented in terms of percentage of population that can access the nearest hospitals and city centers within 60 and 30 minutes, respectively. To the extent that the available geocoded data allows, an indicator will also be calculated for activities of specific relevance for women, such as women’s health facilities, and markets. The calculation will use the open-source Rural Accessibility Mapping tool developed by the World Bank.

15. **Safeguards.** No changes in the safeguard classification are envisaged. Works and activities proposed under the AF are similar in nature and location to the activities financed under the original Project, and, as such, have been captured by the existing Environmental and Social Management Framework (ESMF), the Indigenous Peoples Planning Framework (IPPF), and the Resettlement Policy Framework (RPF). It should be noted, however, there are no indigenous peoples present in any of the activity areas proposed for the AF. The adequacy of the existing ESMF, IPPF, and RPF for the additional works to be financed was confirmed during preparation of the AF and no adjustments to these frameworks were deemed to be necessary. However, site-specific Environmental and Social Impact Assessments (ESIAs) for all three road segments and full Resettlement Action Plans (RAPs) for two road segments (Macuelizo - Santa María and Granada - Malacatoya) have been prepared. A screening confirmed that no resettlement would be required for Cárdenas - Colón section.

16. **Closing date.** The closing date of the additional Credit will be June 30, 2022, consistent with that of the original Project.

17. **Implementation and fiduciary arrangements.** No changes in fiduciary and implementation arrangements are envisaged. The main implementing agencies continue to be MTI and the Road Maintenance Fund (*Fondo de Mantenimiento Vial*, FOMAV). The MTI will continue to be the main institution responsible for the implementation of the Project. The MTI will assign many of the day-to-day operations to the Project Coordinating Unit for World Bank Resources (*Unidad Coordinadora de Recursos*



– *Banco Mundial*, UCR-BM), which is experienced, having implemented over five IDA-financed operations in the transport sector. The Director of the UCR-BM reports directly to the Minister and the Vice-Minister. The Project Operational Manual is being updated to reflect the inclusion of (a) new resources; (b) new road sections; and (c) additional beneficiaries. The final version of the Operational Manual, acceptable to the World Bank, is a condition of effectiveness and will incorporate all changes made as a result of this AF. Both the Project Procurement Strategy for Development and Procurement Plan have also been updated accordingly.

18. **Immediate Response Mechanism (IRM).** No change to the IRM under Component 4 is associated with the AF. The component has an initial zero-dollar allocation; however, in the event that it is activated, it will be financed through reallocation of IDA funds. This component allows the Government to access resources for eligible expenditures in the event of an eligible crisis or emergency, to provide immediate response to this eligible crisis or emergency. In the event of an eligible crisis or emergency, the implementation of this component will be governed by the IRM Operations Manual, which will be prepared and adopted by the Recipient upon approval by the World Bank, in accordance with provisions referred to in Section I.D.1(a) of Schedule 2 of the original Financing Agreement.

19. **Consistency with the World Bank Group’s Country Partnership Framework (CPF).** The AF remains fully aligned with the World Bank Group’s Country Partnership Strategy for FY2013–2017 for Nicaragua.<sup>11</sup> It contributes to both key strategic areas of the strategy: (a) raising welfare by improving access to quality basic services and (b) raising incomes by enhancing productivity, competitiveness, and diversification. The AF is also aligned with the upcoming World Bank Group’s proposed CPF for FY2018–2022, particularly Objectives 3 (Improved Rural Connectivity and Energy Production Mix) and 6 (Improved Natural Resource Management and Reduced Vulnerability to Natural Hazards). The AF will continue to contribute to increasing road resilience to natural hazards in high-risk areas such as the Dry Corridor, where most of the rural poor are located.

### III. KEY RISKS

20. **The overall risk to the proposed AF continues to be rated as Moderate.** However, risks related to the institutional capacity for implementation and sustainability and environmental and social categories are rated as Substantial, as described below.

21. **Institutional capacity for implementation and sustainability.** There is a substantial sustainability risk for proposed Project-financed roads, as road maintenance expenditures in Nicaragua have tended to be lower than needed. Project design includes suitable, appropriate, and relevant sustainability provisions such as (a) continued provision of support to the implementation and expansion of rural road maintenance with cooperatives, which are former MCAs and (b) promotion of the adoption of FOMAV’s Financial Sustainability Study’s key recommendations to ensure the sustainability of the road improvements carried out under World Bank-financed projects and on the road network as a whole. The Project is building on lessons from the recently closed project in the implementation of pilots for minor routine maintenance of rural *adoquines* roads (under FOMAV) through performance-based contracts with the cooperatives. Hence, it is supporting the application of such contracts on rural roads paved under

<sup>11</sup> Country Partnership Strategy for the Republic of Nicaragua (FY2013–2017), Report No: 69231-NI.



previous World Bank projects and throughout the country. The study on Financial Sustainability of FOMAV, completed in August 2014, recommended measures for improving the revenue stream of the FOMAV in order to reduce its resource gap and meet the growing maintenance needs of the road network.<sup>12</sup> The World Bank will continue the dialogue with the Government to support FOMAV's achievement of its funding needs through project implementation. The adoption of appropriate measures to achieve sustainability will be monitored through the PDO indicator 'adoption of measures as recommended by the FOMAV Sustainability Study and as agreed with the World Bank'.

22. **Environmental and social (climate change and disaster risks).** Considering the Substantial environmental risk and Moderate social risk, the combined environmental and social risk category is increased from Moderate to Substantial. The environmental risk stems from the vulnerability of the country to extreme climate change events, given that Nicaragua is one of the world's most disaster-prone countries. Every year, extreme weather and climate change impacts in the form of floods and droughts lead to serious damages to infrastructure, including roads, and impose high economic costs on the country. The World Bank is working closely with the Government to help reduce the high levels of vulnerability, promote mainstreaming of disaster risk reduction in relevant sectors, and improve local capacity for disaster risk reduction and management. Road works activities under the Project support the inclusion of climate resilience measures in the road works designs. In addition, the Project is supporting the carrying out of works to improve the resilience of vulnerable points of the road network to climate change impacts, selected in accordance with the criteria set forth in the Operational Manual. The progress of such works will be monitored through the intermediate results indicator 'number of vulnerable spots on the road network with implemented countermeasures for climate resilience'.

23. **The social risk is associated with a potential increase in traffic accidents during and after road construction and resettlement induced by some of the proposed project-financed road improvements.** Considering that drivers may increase speed and engage in riskier behavior on improved smoother (paved) roads, proper mitigation measures will be incorporated in construction contracts and in the road designs, including (a) traffic management during construction period enforced by the supervision consultant; (b) appropriate vertical and horizontal road signing and signaling; (c) traffic calming measures in densely populated areas; and (d) widening of the road shoulders to provide appropriate space for pedestrians and non-motorized traffic in trading or city centers. There are also social risks related to resettlement on the Granada - Malacatoya and Macuelizo - Santa María road sections (over 200 affected areas in each section) due to the presence of encroachers within the existing right of way. To mitigate these risks, site-specific RAPs have been prepared for these two road sections and will be implemented before the award of a contract. The contracts for road works and supervision consultants on these roads will also include the Environmental and Social Management Plan (ESMP), prepared by the Government and approved by the World Bank, as well as clauses requiring the oversight of social and environmental specialists on site during implementation and other required resources to implement the RAPs (such as construction of small structural improvements for the encroachers and small vendors).

24. **Another social risk results from the influx of migrant workers during construction works.** However, this influx is expected to be limited due to focus on community-based labor and local hiring. The risk of labor influx is found to be low in the Cárdenas - Colón and Granada - Malacatoya road section improvements given the nature of works executed by community members under the MCA model and

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<sup>12</sup> FOMAV. 2014. *Estudio de sostenibilidad financiera y fortalecimiento institucional del FOMAV*. mc<sup>2</sup>Group, August.



focus on women's employment in constructions works. In the case of the Macuelizo - Santa María road, the risk of labor influx—and associated challenges such as management of gender-based violence—is rated Moderate. This higher rating than for the other sections is due to the closeness of schools in the area and constant circulation of students. To mitigate these risks, the contracts for road works and supervision consultancies will incorporate environmental, social, health, and safety clauses requiring the application of workers' code of conduct, mitigation measures against child labor, compliance with the labor influx guidelines, and the presence of social and environmental specialists on-site during implementation. Mechanisms for reporting complaints on cases of potential gender-based violence and child abuse will be established in MCAs' offices and local municipalities, as well as through the Project's Grievance Redress Mechanism. MCAs will collaborate with the nearest police stations that can respond and provide orientation regarding these issues. Preventive and response measures will also be established, such as inclusion of training on healthy relationships, non-violent conflict resolution, gender relations, and awareness of human immunodeficiency virus and sexually transmitted infections within the training curricula of courses provided by the MTI to the MCAs. Similar training will be provided for the contractors and included in the respective contracts for the Santa María - Macuelizo section.

#### IV. APPRAISAL SUMMARY

##### A. Economic and Financial (if applicable) Analysis

25. **The MTI applied a comprehensive multicriteria approach to prioritizing the roads in most needs of intervention for the Project based on their contribution to the productivity, quality of life of the beneficiaries, and connectivity.** The AF will extend three roads under the original Project prioritized based on the same criteria. The eight sections of roads financed under Component 1 of the original Project (total length of 96.01 km) were among the 6,448 km of prioritized rural roads throughout the country. The Project is currently improving five sections of unpaved rural roads by *adoquines* pavement, where three of them will be extended by the AF for an additional 41.07 km. Similar to the original Project, the extensions in the AF were prioritized by a multicriteria matrix based on a number of variables, including (a) agricultural production; (b) population; (c) poverty level; (d) road quality; (e) connectivity; (f) net present value (NPV); (g) average daily traffic volume; (h) environmental impacts; and (i) vulnerability to disasters.

26. **The economic analysis for the AF enumerates a number of benefits from the investment and means by which the investment is occurring,** including reduction in vehicle operating cost; travel time savings; road maintenance cost savings; improved productivity of the agricultural, livestock, and fishing sectors; reduction in vulnerability of adjacent populations to natural disaster risks associated with isolation; and short- and long-term employment creation through the use of MCAs and subsequent microenterprises for maintenance associated with the construction method. The economic analysis quantifies the benefits from the first four of these enumerated benefits, based on the simulation using the Road Economic Decision model supplemented with exogenous analysis of income improvements in key productive sectors of importance in the zones where the roads are located. The costs of the Project include the construction cost during implementation and the maintenance cost during operation. The quantified and monetized benefits of the Project include: (a) vehicle operating cost savings due to reduced road roughness and engine load; (b) travel time savings for the road users due to increased speed; (c) annual road maintenance cost savings due to improvement of the road condition; and (d) increases to net household revenue because of improvements in agricultural, livestock, and/or fisheries production



(depending on the road). These cost and benefits are quantified using the Road Economic Decision tool to evaluate the economic indicators, that is, NPV and economic internal rate of return (EIRR), to provide decision criteria for various alternatives of road design, construction, and maintenance. The evaluation assumes the life cycle of Project roads is 20 years; thus, the evaluation period is from 2019 to 2038. Net reduction in carbon dioxide (CO<sub>2</sub>) emissions associated with the road improvements was also calculated and monetized but not included in the economic analysis because its impact is negligible.

27. **The results of the economic analysis indicate a sound economic justification with an aggregate discounted NPV of US\$50.7 million at a six percent discount rate and an EIRR of 17.2 percent.** For the three road sections financed under the AF, the cost-benefit analysis indicates a sound economic justification for the Project as a whole and for each of the road sections individually, with the discounted NPV of US\$15.8, US\$12.6, and US\$22.2 million and the EIRR of 20.0 percent, 24.6 percent, and 14.1 percent, respectively. The summary of the economic analysis is presented in Table 4.

**Table 4: Summary of Economic Analysis Results**

Road Section	Length (km)	NPV (US\$, millions at 6% discount rate)	EIRR (%)
Granada - Malacatoya	8.30	15.85	20.0
Cárdenas - Colón	13.72	12.62	24.6
Macuelizo - Santa María	19.05	22.22	14.1
<b>TOTAL</b>	<b>41.07</b>	<b>50.69</b>	<b>17.2</b>

28. **A sensitivity analysis was conducted for scenarios of increased cost of 20 percent, decreased benefits of 20 percent, and both combined.** The results indicate that even for the combined scenario of increased cost and decreased benefit, the NPV for the Project as a whole, at a discount rate of 6 percent, is US\$28.84 million, with an EIRR of 12 percent. All three road sections individually also show robust economic benefits even in this strained scenario.

29. The summary of the sensitivity analysis results is presented in Table 5.

**Table 5: Summary of Sensitivity Analysis Results**

Road Section	20% Increase in Capital Costs		20% Decrease in Benefits		Combined Scenario	
	NPV <sup>a</sup> (US\$, millions)	EIRR (%)	NPV <sup>a</sup> (US\$, millions)	EIRR (%)	NPV <sup>a</sup> (US\$, millions)	EIRR (%)
Granada - Malacatoya (Cont.)	14.38	17.1	11.21	16.5	9.74	14.0
Cárdenas - Colón (Cont.)	11.75	21.2	9.23	20.5	8.36	17.5
Macuelizo - Santa María	18.70	12.1	14.26	11.6	10.74	9.8
<b>TOTAL</b>	<b>44.83</b>	<b>14.7</b>	<b>34.70</b>	<b>14.2</b>	<b>28.84</b>	<b>12.0</b>

Note: a. NPV calculated with six percent discount rate.

30. **An estimation of CO<sub>2</sub> emission was also conducted to measure the impact from the Project on greenhouse gas reduction.** The Project's impact was defined as the difference in emissions between a reference scenario 'without-Project' and the 'with-Project' scenario. The reduction of CO<sub>2</sub> will be achieved through lower vehicle emissions due to the increased fuel efficiency on improved rural road sections. The



assessment estimated that for a time frame of 20 years, the CO<sub>2</sub> emissions without the Project are estimated at 73,119 tons, compared to estimates of 52,809 tons with the Project. Thus, the CO<sub>2</sub> emission is expected to be reduced by 28 percent (20,311 tons) with the project for the years 2017 to 2036. The annual net reduction of CO<sub>2</sub> emissions is estimated at about 1,016 tons. The economic value of this reduction assessed at official shadow prices for CO<sub>2</sub> established by the World Bank ranges from US\$24,725 to US\$49,428 for the 20-year project life, discounted at a rate of 6 percent. The average of these is used in the economic analysis, constituting about 0.04 percent of the Project's NPV. Combined with the CO<sub>2</sub> emissions reduction associated with the original Project, the total CO<sub>2</sub> emission reduction of the Project is estimated at 4,149 tons annually.

## B. Technical

31. **Technical design of the AF follows the same standards and construction methodology as the original Project**, which considers experience in the execution of past projects, as well as best practices and adaptation of solutions to the country context. Technical considerations include: (a) use of *adoquines* as the main surfacing solution for rural road improvements, and asphalt overlays for periodic maintenance; (b) inclusion of local communities in the construction delivery process using MCAs; (c) subcontracting of earthworks and *adoquines* supply to the private sector; (d) adaptation with the integration of differentiated design approaches to include more hazard-resilient measures for more climate vulnerable roads; (e) employing of existing right of way design approaches with minimal changes to vertical and horizontal alignments; and (f) integration of road safety measures in the design, with special attention to nonmotorized traffic. Road designs are in line with the country's geometric and pavement design norms, while asphalt resurfacing conforms to standard country technical specifications which are compliant with international standards. Special considerations are integrated for road safety and drainage provisions.

32. **Pavement of rural roads (41.07 km)**. The intervention for the improvement of rural roads currently consisting of dirt gravel roads, includes the use of paving stones with the cross-section type that has been executed in previous projects. The thicknesses of the layers of the pavement structure was checked against levels of traffic and the load conditions of each section. The structure of the sections is similar and includes the construction of paved surface 10 cm thick, a granular base, stabilized with cement of specific thickness based on calculations of what is needed to form a structure that is adequate to support prevailing traffic loads, use of granular materials selected for the sub-base, and filler materials suitable as the lower layers or subgrade, properly compacted. The design also includes the use of a quality sand layer for the support of the cobblestones and a mixture of mortar, sand, and cement for the joints. Special characteristics of drainage, drainage design, and erosion control (for example, bags of cement-sand mortar, use of gabion boxes, claddings of masonry of lateral drainage, construction of drains for water capture, use of concrete chords, and revegetation for stabilization of slopes) will be incorporated into the designs as mitigation measures against adverse climatic events, as deemed necessary. Road safety elements have also been incorporated into the designs (signs of traffic, road signs, barriers, and so on). The cost per km was increased to improve the design of drains and sewers, considering the effects of climate change and stabilization of slopes.

33. **Technical studies for the works are at an advanced stage of preparation**, given that the proposed sections to be financed had previously been under consideration for financing. Technical design documents have been prepared; two of the three sections for financing are ready for final preparation of



bidding documents. The third (Macuelizo - Santa María) requires additional study for slope stabilization at key points, with updated costs, before preparation of bidding documents.

34. **Climate change adaptation.** As discussed above, Nicaragua is among the world's most affected countries to extreme weather. Both the prioritization and design of the specific interventions under the AF as well as original Project reflect this vulnerability. The multicriteria prioritization of the roads for selection for financing during preparation of the original Project included disaster vulnerability as one of the variables. As with the original Project, the designs of road sections under the AF incorporate climate-informed standards to ensure proper drainage and resilience to heavy rainfall, flooding, and landslides as well as other climate-related hazards. About 13 percent, 24 percent, and 47 percent of the costs of these road sections, respectively, are associated with resilience building measures such as slope management; major drainage works (culverts and bridges); and minor drainage works (ditches, culverts, sub-drainage, and pipes). Taken together, about 30 percent of the resources associated with activities under the AF are for resilience to extreme weather events.<sup>13</sup>

### C. Financial Management

35. **Financial Management (FM) arrangements will remain the same as under the original Project.** An FM assessment was carried out to evaluate the adequacy of FM arrangements and concluded that the MTI continues to have adequate capacity to carry out the FM functions. FM performance by the MTI for the original Project is rated Moderately Satisfactory, with financial reports presented on time and with no outstanding audits. However, there is the need to strengthen the grant procedures to the MCAs by improving the costing of the works to be executed under such grants and monitoring of the actual expenditures incurred by the MCAs. The MTI will continue to carry out the FM for the AF and be responsible for preparing and monitoring the annual operating plan and budget.

### D. Procurement

36. **Procurement arrangements will remain the same as under the original Project.** Procurement will continue to be carried out by (a) the MTI; (b) FOMAV; and (c) MCAs. The Project will be executed in accordance with the World Bank's Procurement Regulations for Borrowers under Investment Policy Financing (July 2016) (Procurement Regulations) and the provisions stipulated in the updated Procurement Plan (January 26, 2018) and the Operational Manual. The procurement capacity assessment was updated in October 2017 and both the MTI and FOMAV were found to have the necessary capacity. The UCR-BM will continue to be responsible for all procurement- and contract-related queries and processing, including management and compliance with fiduciary requirements. The Operational Manual is being updated to include activities proposed under the AF and will provide detailed procurement information for the Project's implementation. The Recipient has prepared the Procurement Plan to be made available through the Systematic Tracking of Exchanges in Procurement. In addition, the Project Procurement Strategy for Development was revised and updated accordingly, including the appropriate selection methods, market approach, and type of review by the World Bank. Most activities under the Project will continue to be carried out through national or international competition. In case of international competition, the MTI and FOMAV will use the World Bank's standard bidding documents.

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<sup>13</sup> The share of resources for resilience to extreme weather events under the original Project was 26 percent.



## E. Social (including Safeguards)

37. **Indigenous Peoples (OP/BP 4.10).** The Social Assessment concluded that there are no indigenous peoples in the Project areas to be financed under the proposed AF. This policy remains triggered because of the presence of indigenous peoples in the Project area on Corn Island in the original Project.

38. **Involuntary Resettlement (OP/BP 4.12).** This policy remains triggered. The original RPF was disclosed in-country and on the World Bank external website on December 23 and 28, 2016, respectively. The civil works for the new road sections (Macuelizo - Santa María and Granada - Malacatoya) will affect 80 households that are currently occupying the right-of-way, requiring full or partial resettlement of 74 households. RAPs have been prepared and consulted upon in-country on September 19 and October 23, 2017 for Granada – Malacatoya, and October 31 and November 1, 2017 for Macuelizo – Santa María, and both were approved by the World Bank and disclosed in-country on January 17, 2018, and on the World Bank's external website on January 19, 2018.

39. **Gender.** Nicaragua has made major progress toward gender equality in the past two decades, including the adoption of a legislation that prohibits any form of discrimination. However, some gender gaps remain in labor force participation, with 47.4 percent of women 15 years and older compared to 80.3 percent of men of the same age group employed in 2013. Moreover, women's participation in civil works in rural areas was reported at 8.2 percent compared to men at 15.2 percent in 2005.<sup>14</sup> The Project built on the findings of the Roads to Agency study<sup>15</sup> funded under the World Bank's Gender Umbrella Trust Fund and incorporated several the study's recommendations—which had been previously shared with the MTI and the Ministry of the Family. The Project will continue supporting women's empowerment and employment opportunities through rural road construction works under the MCA model. These activities are also being strengthened through a capacity development activity under Component 3, which includes enhanced outreach and opportunities to women, piloting childcare and child service models for work sites, and gender sensitization training.

40. **Citizen engagement.** The existing mechanisms established in the Project will be utilized to involve beneficiary communities in all project stages and promote transparency and accountability. The MTI will also carry out beneficiary satisfaction surveys, already supported under Component 3 of the Project, at the initiation, during implementation and upon completion of the road works to ensure citizen participation in decision-making activities and to measure their satisfaction with project activities and progress.

## F. Environment (including Safeguards)

41. **The Project is classified as Category B based on OP/BP 4.01, unchanged from the original Project.** The potential environmental and social negative impacts are moderate to low and the prevention, mitigation, and compensation measures are known and implementable. Civil works (paved with *adoquines*) will be undertaken on existing roads. The subprojects will have positive impacts on the economy, health, and quality of life of the communities such as reduction of dust from unpaved roads, travel time, greenhouse gas emissions, and improved air quality. The special environmental measures to

<sup>14</sup> Based on the 2005 census.

<sup>15</sup> Casabonne, Ursula, Bexi Jiménez, and Miriam Müller. 2015. *Roads to Agency. Effects of Enhancing Women's Participation in Rural Roads Projects on Agency a Comparative Assessment of Rural Transport Projects in Argentina, Nicaragua and Peru.*



protect the fauna in the case of the Km 10-Colón subproject will be an excellent experience to promote green roads in Nicaragua at the rural level.

42. **Natural Habitats (OP/BP 4.04) remains triggered on a precautionary basis.** None of the proposed road sections traverse critical ecological habitat, but in the case of Km 10-Colón, the subproject crosses some forest areas with specific fauna (mainly monkeys), which requires special environmental measures to avoid damages to the fauna and promote the conservation in the surrounding areas. The updated ESMF includes appropriate screening criteria to identify potential negative impacts on critical or sensitive areas, and measures to prevent, mitigate, and/or compensate potential negative impacts on critical or sensitive areas.

43. **Physical Cultural Resources (OP/BP 4.11) remains triggered on a precautionary basis.** Nearly all civil works will take place within the right of way of existing roads, and thus no impact to any physical or cultural resource is expected. Because of the type of paving (*adoquines*), earthworks and quarrying are minimal. The ESIA's of the subprojects will include specific measures in case of chance finds and corresponding protocols of action, in line with the specific guidelines of the ESMF.

44. **The existing ESMF prepared for the original Project governed the development of the ESIA, including the ESMPs, for the three sections proposed in the AF.** The ESMF was prepared by the Government, approved by the World Bank, and disclosed in Nicaragua and the World Bank's external website on December 27 and December 29, 2016, respectively. The ESIA's for all three road sections under the AF (Macuelizo-Santa María, Granada-Malacatoya, and Cárdenas-Colón) were consulted upon, approved by the World Bank, and disclosed in-country and on the World Bank's external website on January 17, 2018.

#### G. Other Safeguard Policies (if applicable)

#### V. WORLD BANK GRIEVANCE REDRESS

45. Communities and individuals who believe that they are adversely affected by a World Bank-supported Project may submit complaints to existing Project-level grievance redress mechanisms or the World Bank's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address Project-related concerns. Project affected communities and individuals may submit their complaint to the World Bank's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of World Bank non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit <http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service>. For information on how to submit complaints to the World Bank Inspection Panel, please visit [www.inspectionpanel.org](http://www.inspectionpanel.org)



**VI. SUMMARY TABLE OF CHANGES**

	Changed	Not Changed
Change in Results Framework	✓	
Change in Components and Cost	✓	
Change in Implementing Agency		✓
Change in Project's Development Objectives		✓
Change in Loan Closing Date(s)		✓
Cancellations Proposed		✓
Reallocation between Disbursement Categories		✓
Change in Disbursements Arrangements		✓
Change in Safeguard Policies Triggered		✓
Change of EA category		✓
Change in Legal Covenants		✓
Change in Institutional Arrangements		✓
Change in Financial Management		✓
Change in Procurement		✓
Change in Implementation Schedule		✓
Other Change(s)		✓

**VII. DETAILED CHANGE(S)**

**RESULTS FRAMEWORK**

**Project Development Objective Indicators**



**Intermediate Indicators**

Roads constructed, Rural Unit of Measure: Kilometers Indicator Type: Custom				
	Baseline	Actual (Current)	End Target	Action
Value	0.00		87.27	Revised
Date	01-Jun-2017		30-Jun-2022	
Rural roads paved with adoquines under performance-based routine maintenance Unit of Measure: Kilometers Indicator Type: Custom				
	Baseline	Actual (Current)	End Target	Action
Value	0.00		200.00	Revised
Date	01-Jun-2017		30-Jun-2022	
Short-term employment through participation in rural road construction works, disaggregated by gender Unit of Measure: Number Indicator Type: Custom				
	Baseline	Actual (Current)	End Target	Action
Value	0.00		850.00	Revised
Date	01-Jun-2017		30-Jun-2022	
Share of women employed in short-term MCA rural road construction works Unit of Measure: Percentage Indicator Type: Custom Supplement				
	Baseline	Actual (Current)	End Target	Action
Value	0.00		30.00	No Change
Direct Project beneficiaries Unit of Measure: Number Indicator Type: Custom				
	Baseline	Actual (Current)	End Target	Action
Value	0.00		450,000.00	Revised



Date	01-Jun-2017		30-Jun-2022	
<b>Female beneficiaries</b>				
Unit of Measure: Percentage				
Indicator Type: Custom Supplement				
	Baseline	Actual (Current)	End Target	Action
Value	0.00		51.00	No Change
<b>Carbon emissions avoided annually</b>				
Unit of Measure: Metric ton				
Indicator Type: Custom				
	Baseline	Actual (Current)	End Target	Action
Value	0.00		4,149.00	Revised
Date	01-Jun-2017		30-Jun-2022	
<b>Percentage of population in Project areas who can access the nearest city of 30,000 population within 60 minutes</b>				
Unit of Measure: Percentage				
Indicator Type: Custom				
	Baseline	Actual (Current)	End Target	Action
Value	92.00	92.00	94.00	New
Date	30-Jun-2017	30-Jun-2017	30-Jun-2022	
<b>Percentage of population in Project areas who can access to nearest major hospital within 30 minutes</b>				
Unit of Measure: Percentage				
Indicator Type: Custom				
	Baseline	Actual (Current)	End Target	Action
Value	66.00	66.00	69.00	New
Date	30-Jun-2017	30-Jun-2017	30-Jun-2020	
<b>Net change in road related fatalities along intervened rural roads (Component 1.2) per year</b>				
Unit of Measure: Number				
Indicator Type: Custom				
	Baseline	Actual (Current)	End Target	Action
Value	0.00		0.00	New



Date	31-Jan-2017	30-Jun-2022
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**COMPONENTS**

Current Component Name	Current Cost (US\$, millions)	Action	Proposed Component Name	Proposed Cost (US\$, millions)
Component 1: Road Infrastructure Improvement	85.20	Revised	Component 1: Road Infrastructure Improvement	120.11
Component 2: Road Safety	8.10		Component 2: Road Safety	8.10
Component 3: Institutional Strengthening and Implementation Support	3.37		Component 3: Institutional Strengthening and Implementation Support	3.37
Component 4: Immediate Response Mechanism	0.00		Component 4: Immediate Response Mechanism	0.00
<b>TOTAL</b>	<b>96.67</b>			<b>131.58</b>

**Expected Disbursements (in US\$, millions)**

Fiscal Year	2017	2018	2019	2020	2021	2022	2023
Annual	0.00	13.47	15.95	51.12	34.28	16.85	0.00
Cumulative	0.00	13.47	29.42	80.54	114.82	131.67	131.67

**SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)**

Risk Category	Latest ISR Rating	Current Rating
Political and Governance	● Moderate	● Moderate
Macroeconomic	● Moderate	● Moderate
Sector Strategies and Policies	● Low	● Low
Technical Design of Project or Program	● Moderate	● Moderate
Institutional Capacity for Implementation and Sustainability	● Substantial	● Substantial
Fiduciary	● Moderate	● Moderate



Environment and Social	● Moderate	● Substantial
Stakeholders	● Moderate	● Moderate
Other		
Overall	● Moderate	● Moderate

**LEGAL COVENANTS – Rural and Urban Access Improvement Project Additional Financing (P165467)**

**Sections and Description**

The Recipient, through MTI, shall:

(a) maintain a Project coordination unit within MTI (the UCR-BM) with functions and responsibilities satisfactory to the Association, including, inter alia: (i) overall planning, coordination and monitoring of Project activities; (ii) managing of the procurement process for the hiring of MCAs and other contractors with respect to Part 1.2 of the Project; (iii) managing the procurement processes for the selection of consultants under the Project; (iv) periodic updating of the Procurement Plan, the preparation of financial reports and the hiring of external auditors; and (v) coordination with FOMAV with respect to Parts 1.3 and 3.6 (b) of the Project;

(b) staff the UCR-BM with personnel in numbers and with experience and qualifications, all satisfactory to the Association; and

(c) ensure that the MCAs carry out their respective procurement activities under Part 1.2 of the Project in accordance with the relevant provisions of the Operational Manual (Section I.A.1 of Schedule 2 of the Financing Agreement).

The Recipient shall:

(a) not later than November 30 of each year during Project implementation, furnish FOMAV’s annual work plans to the Association, each of which shall be in form and substance satisfactory to the Association and in conformity with the relevant provisions of the Operational Manual; and

(b) cause FOMAV to be staffed at all times during Project implementation with personnel in numbers and with experience and qualifications, all acceptable to the Association (Section I.A.2 of Schedule 2 of the Financing Agreement).

The Recipient shall cause FOMAV to carry out Parts 1.3 and 3.6(b) of the Project in accordance with the Subsidiary Agreement and the Recipient shall exercise its rights and carry out its obligations under the Subsidiary Agreement in such manner as to protect the interests of the Recipient and the Association and to accomplish the purposes of the Financing. Except as the Association shall otherwise agree, the Recipient shall not assign, amend, abrogate, waive, terminate or fail to enforce the Subsidiary Agreement or any of its provisions. In case of any inconsistency between any provision of the Subsidiary Agreement and the Financing Agreement, the provisions of the Financing Agreement shall prevail (Section I.B of Schedule 2 of the Financing Agreement).

The Recipient shall: (a) carry out Parts 1.1, 1.2, 1.4, 2 and 3 (except 3.6 (b)) of the Project; and (b) cause FOMAV to carry out Parts 1.3 and 3.6 (b) of the Project, in accordance with the terms of the Operational Manual, acceptable to the Association, as set forth in Section I.C.1 of Schedule 2 of the Financing Agreement. Except as the Recipient and the Association may otherwise agree in writing, the Recipient shall not abrogate, amend, suspend, terminate, waive or otherwise fail to enforce the Operational Manual or any provision thereof. In case of any conflict between the terms of the Operational Manual and those of the Financing Agreement, the terms of the Financing Agreement



shall prevail (Section I.C of Schedule 2 of the Financing Agreement).

The Recipient shall carry out Part 1.1 of the Project in accordance with the relevant ESMPs for Improvement Works and the relevant ARAPs for Improvement Works as set forth in Section I.E of Schedule 2 of the Financing Agreement.

**EFFECTIVENESS CONDITIONS**

The Operational Manual has been updated by the Recipient and FOMAV in a manner acceptable to the Association.



**VIII. RESULTS FRAMEWORK AND MONITORING**

**Results Framework**

COUNTRY : Nicaragua

Rural and Urban Access Improvement Project Additional Financing ( P165467 )

**Project Development Objectives**

The objectives of the Project are to: (a) improve safe and sustainable access to markets and services in targeted rural and urban areas of the Recipient; and (b) in the event of an Eligible Emergency, provide immediate and effective response to said Eligible Emergency.

**Project Development Objective Indicators**

Action	Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source / Methodology	Responsibility for Data Collection
No Change	<b>Name:</b> Total travel time to access markets and services in targeted urban and rural Project areas (% reduction)		Percentage	0.00	30.00	Annual	Project progress reports by implementing agency UCR BM-MTI	UCR-BM, MTI
No Change	Total travel time to access markets and		Percentage	0.00	44.00	Annual	Project progress reports by implementing	UCR BM-MTI



	services in targeted rural Project areas during rainy season (% reduction)						agency UCR BM-MTI	
<p>Description: Measurement of the access to markets and services portion of the PDO. Percentage of travel time saved by the users to reach markets as well as education and health services, in line with progress in improving non-rural and rural roads (components 1.1, 1.2 and 1.3). Travel time is determined through the average travel speeds obtained from the Highway Development and Maintenance Model 4 (non-rural roads) and Roads Economic Decision Model (rural roads), for both the with and without project scenarios. In the case of the rural roads, a 50% speed reduction is considered to represent the impact of heavy rains during the rainy season. Time savings is the difference between the travel time in the without-project scenario and the travel time in the with-project scenario, measured in percentage. Please note that this indicator requires supplemental information.</p>								
No Change	<b>Name:</b> Share of rural population with access to an all-season road		Percentage	40.00	45.00	Annual	Commissioned Surveys, Reports of INIDE (based on 2005 census), Geographic Information System maps	UCR BM-MTI, Planning Department of MTI
No Change	Number of rural people with access to an all-season road		Number	1,077,108.00	1,561,806.00	Annual	Commissioned Surveys, Reports of INIDE (based on 2005 census), Geographic Information System maps	UCR BM-MTI, Planning Department of MTI



Description: Percentage of rural people in the project area who live within 2 kilometers (typically equivalent to a 20-minute walk) of an all-season road. This indicator is also known as Rural Access Index (RAI).

An all-season road is motorable all year by the prevailing means of rural transport (often a pick-up or a truck which does not have four-wheel-drive). Predictable interruptions of short duration during inclement weather (e.g. heavy rainfall) are acceptable, particularly on low volume roads. Please note that this indicator requires supplemental information Supplemental Value: Number of rural people with access to an all-season road The Supplemental Value is the total number of rural people with access to an all-season road. An all-season road is a road that is motorable all year by the prevailing means of rural transport (often a pick-up or a truck which does not have four-wheel-drive).

No Change	<b>Name:</b> Road traffic fatalities on selected non-rural road sections (% reduction)		Percentage	0.00	45.00	Annually from 3rd year of the proposed Project	Reports from Road Safety Department of MTI	UCR-BM, Road Safety Department, MTI
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Description: Measurement of the safety portion of the PDO. Percentage of reduction in the total number of annual fatalities on the three (3) selected non-rural roads: La Garita-Tipitapa; Ciudad Sandino-Mateare; and San Lorenzo – Muhan. The baseline for the reduction has been calculated based on the average number of fatalities from 2010 to 2014 on each non-rural road section: La Garita-Tipitapa: 23 fatalities; Ciudad Sandino-Mateare: 21 fatalities; and San Lorenzo – Muhan: 9 fatalities.

No Change	<b>Name:</b> Adoption of measures as recommended by the FOMAV Sustainability Study and as agreed with the WB		Yes/No	No	Yes	Yearly from 3rd year of the proposed Project	Reports from FOMAV, project progress reports	UCR BM-MTI, FOMAV
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Description: Measurement of the "sustainability" portion of the PDO. Progress in the adoption of the key recommendations proposed in the FOMAV Financial Sustainability Study, which aims to reduce resource deficits and meet maintenance needs of the road network (component 1.3). To achieve the goal of this indicator, the specific measures to be adopted will be proposed by the Government of Nicaragua and agreed with the World Bank before the end of the third year, and will be implemented before the proposed Project's closure.





Intermediate Results Indicators

Action	Indicator Name	Core	Unit of Measure	Baseline	End Target	Frequency	Data Source / Methodology	Responsibility for Data Collection
Revised	<b>Name:</b> Roads constructed, Rural		Kilometers	0.00	87.27	Annual	Project progress reports by implementing agency UCR BM-MTI	UCR BM-MTI
<p><b>Description:</b> Kilometers of rural roads constructed under the project. Rural roads are roads functionally classified in various countries below Trunk or Primary, Secondary or Link roads, or sometimes Tertiary roads. Such roads are often described as rural access, feeder, market, agricultural, irrigation, forestry or community roads. Typically, rural roads connect small urban centers/towns/settlements of less than 2,000 to 5,000 inhabitants to each other or to higher classes of road, market towns and urban centers.</p>								
No Change	<b>Name:</b> Roads rehabilitated, Non-rural		Kilometers	0.00	49.81	Annual	Project progress reports by implementing agency UCR BM-MTI	UCR BM-MTI
<p><b>Description:</b> Kilometers of all non-rural roads reopened to motorized traffic, rehabilitated, or upgraded under the project. Non-rural roads are roads functionally classified in various countries as Trunk or Primary, Secondary or Link roads, or sometimes Tertiary roads. Typically, non-rural roads connect urban centers/towns/settlements of more than 5,000 inhabitants to each other or to higher classes of road, market towns and urban centers. Urban roads are included in non-rural roads.</p>								
Revised	<b>Name:</b> Rural roads paved with adoquines under		Kilometers	0.00	200.00	Annual	Reports from FOMAV, project progress reports	UCR BM-MTI, FOMAV



	performance-based routine maintenance							
Description: Measurement of progress towards provision of routine maintenance on 100 km of rural roads paved with adoquines, carried out by small cooperatives, created based on the former MCAs in an effort to provide sustainability of the MCA model and consequently, of the rural road network.								
Revised	<b>Name:</b> Short-term employment through participation in rural road construction works, disaggregated by gender		Number	0.00	850.00	Annual	Reports from MTI supervisors	UCR BM-MTI
No Change	Share of women employed in short-term MCA rural road construction works		Percentage	0.00	30.00	Annual	Reports from MTI supervisors	UCR BM-MTI
Description: Short term employment monitoring by participating in MCAs, and women empowerment monitoring. Cumulative number of short-term jobs created through MCAs for construction works in all project-finance roads, of which percentage filled by women.								
No Change	<b>Name:</b> Medium and long-term employment through participation in cooperatives for performance-based maintenance, disaggregated by gender		Number	0.00	50.00	Annual	Reports from FOMAV supervisors	UCR BM-MTI, FOMAV



No Change	Share of women employed in long-term cooperatives for performance-based maintenance.		Percentage	0.00	30.00	Annual	Reports from FOMAV supervisors	UCR BM-MTI, FOMAV
<p><b>Description:</b> Medium and long-term term employment monitoring through the participation in performance-based cooperatives for minor routine maintenance of adoquines rural roads, and women empowerment monitoring. Cumulative number of medium and long-term jobs created through performance-based cooperatives for minor routine maintenance, of which percentage filled by women.</p>								
Revised	<b>Name:</b> Direct Project beneficiaries		Number	0.00	450,000.00	Annually from 3rd year of the proposed Project	Projections made by INIDE (based on 2005 Census)	UCR BM-MTI
No Change	Female beneficiaries		Percentage	0.00	51.00	Annually from 3rd year of the proposed Project	Project progress reports by implementing agency UCR BM-MTI	UCR BM-MTI
<p><b>Description:</b> Direct beneficiaries are people or groups who directly derive benefits from an intervention (i.e., children who benefit from an immunization program; families that have a new piped water connection). Please note that this indicator requires supplemental information. <b>Supplemental Value:</b> Female beneficiaries (percentage). Based on the assessment and definition of direct project beneficiaries, specify what proportion of the direct project beneficiaries are female. This indicator is calculated as a percentage.</p>								
No Change	<b>Name:</b> Number of vulnerable spots on the road network with implemented		Number	0.00	7.00	Once	Project progress reports by implementing agency UCR BM-MTI	UCR BM-MTI



	countermeasures for climate resilience							
Description: Measurement of the progress of the works carried out to improve the resilience of highly vulnerable points of the road network to climate change impacts. These points have been identified through the ongoing climate vulnerability assessment of the road network, financed by the Nordic Development Fund.								
Revised	<b>Name:</b> Carbon emissions avoided annually		Metric ton	0.00	4,149.00	Annually from 3rd year of the proposed Project	Reports from MTI-PMS unit	UCR BM-MTI, Planning Department, MTI
Description: Measurement of the avoidance of CO2 vehicle emissions per year on all the targeted improved roads due to reduced traffic idling time and increased fuel efficiency. Vehicle emissions are assessed by using the Highway Development and Maintenance Model 4 simulations.								
No Change	<b>Name:</b> Accident black spots removed on most vulnerable sections of the road network		Number	0.00	12.00	Yearly and at works completion	Reports from Road Safety Department of MTI	UCR-BM, Road Safety Department, MTI
Description: The proposed Project will execute physical road safety measures on top critical spots with highest road fatality risks identified by the Road Safety Assessment of Nicaragua’s Paved Road Network financed by the Inter American Development Bank in 2013.								
No Change	<b>Name:</b> Number of road safety professionals members of CONASEV trained		Number	0.00	20.00	Annual	Reports from Road Safety Department of MTI	UCR BM-MTI, Road Safety Department, MTI
Description: Progress on the provision of training to staff working on road safety activities in governmental institution that are members of the								



Technical Committee of the National Road Safety and Education Council (Consejo Nacional de Seguridad y Educación Vial – CONASEV), charged with implementation of the National Road Safety Strategy.

No Change	<b>Name:</b> Number of MTI and FOMAV staff receiving training under the capacity building initiatives		Number	0.00	25.00	Annual	Project progress reports by implementing agency UCR BM-MTI	UCR BM-MTI, FOMAV
No Change	Number of MTI and FOMAV staff trained, which are female		Number	0.00	10.00	Annual	Project progress reports by implementing agency UCR-MTI	UCR-BM, MTI, FOMAV

**Description:** Progress on human resource capacity building within MTI and FOMAV.

No Change	<b>Name:</b> Share of project beneficiaries surveyed and satisfied		Percentage	0.00	75.00	Once	Project progress reports by implementing agency UCR BM-MTI	UCR BM-MTI
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**Description:** Measurement of citizen's participation in decision-making activities and their satisfaction with Project activities and progress. The survey will be carried out at the initiation, during implementation and upon completion of the road works to measure the improvement of accessibility for the beneficiary population, their needs and whether their needs have been taken into account during implementation, their perceptions and expectations with respect to the quality of roads, and, indirectly, the benefit that the interventions in these roads provide in terms of access to health, education, and markets disaggregated by gender perspective, with emphasis on issues of road safety, personal safety, affordability, and accessibility.

No Change	<b>Name:</b> Time taken to disburse funds requested by the		Weeks	0.00	4.00	Once	Operational Manual	UCR BM-MTI
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	Government for an eligible emergency							
Description: Measurement of implementation progress if activated.								
New	<b>Name:</b> Percentage of population in Project areas who can access the nearest city of 30,000 population within 60 minutes		Percentage	92.00	94.00	Anually	MTI	MTI with support from the Bank
<p>Description: This accessibility indicator measures the percentage of population who can access the nearest city above a population of 30,000 within 60 minutes by road.</p> <p>The analysis boundary for this indicator will be the area within 2 km of the roads targeted in the Project, thus the accessibility will be calculated on the bases of all the population in this boundary. The calculation of accessibility is supported by open-source software - Rural Accessibility Map - developed by the World Bank Transport and Information and Communications Technologies Global Practice. The Rural Accessibility Map simulates routing based on a road network, finds the shortest paths from population centers to points of interest, and outputs accessibility indicators for a selected area of interest (within 2 km of the Project roads in this case).</p>								
New	<b>Name:</b> Percentage of population in Project areas who can access to nearest major hospital within 30 minutes		Percentage	66.00	69.00	Anually	MTI	MTI with support from the Bank
<p>Description: This accessibility indicator measures the percentage of population who can access the nearest hospital within 30 minutes by road.</p> <p>The analysis boundary for this indicator will be the area within 2 km of the roads targeted in the Project, thus the accessibility will be calculated on the bases of all the population in this boundary. The calculation of accessibility is supported by open-source software - Rural Accessibility Map - developed</p>								



by the World Bank Transport and Information and Communications Technologies Global Practice. The Rural Accessibility Map simulates routing based on a road network, finds the shortest paths from population centers to points of interest, and outputs accessibility indicators for a selected area of interest (within 2 km of the Project roads in this case).

New	<b>Name:</b> Net change in road related fatalities along intervened rural roads (Component 1.2) per year		Number	0.00	0.00	Annually	Reports from Road Safety Department of MTI	MTI
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**Description:** Indicator to monitor and ensure that potential for increased speeds through improvements in rural roads through adoquinization do not compromise safety performance



**Target Values**

**Project Development Objective Indicators**

Action	Indicator Name	Baseline	End Target
No Change	Total travel time to access markets and services in targeted urban and rural Project areas (% reduction)	0.00	30.00
No Change	Total travel time to access markets and services in targeted rural Project areas during rainy season (% reduction)	0.00	44.00
No Change	Share of rural population with access to an all-season road	40.00	45.00
No Change	Number of rural people with access to an all-season road	1,077,108.00	1,561,806.00
No Change	Road traffic fatalities on selected non-rural road sections (% reduction)	0.00	45.00
No Change	Adoption of measures as recommended by the FOMAV Sustainability Study and as agreed with the WB	No	Y

**Intermediate Results Indicators**

Action	Indicator Name	Baseline	End Target
Revised	Roads constructed, Rural	0.00	87.27
No Change	Roads rehabilitated, Non-rural	0.00	49.81
Revised	Rural roads paved with adoquines under performance-based routine maintenance	0.00	200.00



Revised	Short-term employment through participation in rural road construction works, disaggregated by gender	0.00	850.00
No Change	Share of women employed in short-term MCA rural road construction works	0.00	30.00
No Change	Medium and long-term employment through participation in cooperatives for performance-based maintenance, disaggregated by gender	0.00	50.00
No Change	Share of women employed in long-term cooperatives for performance-based maintenance.	0.00	30.00
Revised	Direct Project beneficiaries	0.00	450,000.00
No Change	Female beneficiaries	0.00	51.00
No Change	Number of vulnerable spots on the road network with implemented countermeasures for climate resilience	0.00	7.00
Revised	Carbon emissions avoided annually	0.00	4,149.00
No Change	Accident black spots removed on most vulnerable sections of the road network	0.00	12.00
No Change	Number of road safety professionals members of CONASEV trained	0.00	20.00
No Change	Number of MTI and FOMAV staff receiving training under the capacity building initiatives	0.00	25.00
No Change	Number of MTI and FOMAV staff trained, which are female	0.00	10.00
No Change	Share of project beneficiaries surveyed and satisfied	0.00	75.00
No Change	Time taken to disburse funds requested by the Government for an eligible emergency	0.00	4.00
New	Percentage of population in Project areas who can	92.00	94.00



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	access the nearest city of 30,000 population within 60 minutes		
New	Percentage of population in Project areas who can access to nearest major hospital within 30 minutes	66.00	69.00
New	Net change in road related fatalities along intervened rural roads (Component 1.2) per year	0.00	0.00

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