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The World Bank

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Report No: PAD1354

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
PROJECT PAPER

ON A

PROPOSED ADDITIONAL LOAN AND RESTRUCTURING

IN THE AMOUNT OF US\$40 MILLION

TO THE

REPUBLIC OF ARMENIA

FOR THE

LIFELINE ROAD NETWORK IMPROVEMENT PROJECT

July 10, 2015

Transport and ICT Global Practice
Europe and Central Asia Region

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CURRENCY EQUIVALENTS
(Exchange Rate Effective May 30, 2015)

Currency Unit = Armenian Dram (AMD)
AMD 480.5 = US\$1
FISCAL YEAR
January 1 – December 31

ABBREVIATIONS AND ACRONYMS

AADT	Annual Average Daily Traffic	LRIP-AF1	Lifeline Roads Improvement Project Additional Financing
ADB	Asian Development Bank		
ADM	Accountability and Decision-Making Framework	LRIP-AF2	Lifeline Roads Improvement Project Second Additional Financing
AF	Additional Financing		
AMD	Armenian Dram	LRN	Lifeline Road Network
ARD	Armenian Roads Directorate	LRNIP	Lifeline Road Network Improvement Project
BP	Bank Policy		
CER	Contingent Emergency Response	LRNIP-AF	Lifeline Road Network Improvement Project Additional Financing
CPS	Country Partnership Strategy		
CQS	Consultants' Qualifications		
CY	Calendar Year	MoF	Ministry of Finance
DA	Designated Account	MoTC	Ministry of Transport and Communication
DC	Direct Contracting		
DLP	Defect Liability Period	N/A	Not Applicable
EBRD	European Bank for Reconstruction and Development	NCB	National Competitive Bidding
EIB	European Investment Bank	NGO	Non-Government Organization
EIRR	Economic Internal Rate of Return	NPV	Net Present Value
EMF	Environmental Management Framework	OP	Operational Policy
EMP	Environmental Management Plan	PBC	Performance Based Contract
ESMF	Environmental and Social Management Framework	PDO	Project Development Objective
FM	Financial Management	POM	Project Operational Manual
FY	Fiscal Year	QCBS	Quality and Cost-Based Selection
GoA	Government of Armenia	RAMS	Road Asset Management System
GRS	Grievance Redress Service	RAP	Resettlement Action Plan
HDM-4	Highway Development and Management Model	RPF	Resettlement Policy Framework
IC	Individual Consultant	SOE	Statement of Expense
IDA	International Development Association	SPN	Specific Procurement Notices
IFR	Interim Financial Report	SSS	Single Source Selection
IP	Implementation Progress	ToR	Terms of Reference
IRI	International Roughness Index	TPIU	Transport Project Implementation Unit
km	Kilometer	TTL	Task Team Leader
LRIP	Lifeline Roads Improvement Project	UNDB	United Nations Development Business
		US\$	United States Dollar
		WB	World Bank

Vice President:	Cyril Muller
Country Director:	Anna Bjerde (Acting)
Country Manager:	Laura Bailey
Senior Global Practice Director:	Pierre Guislain
Practice Manager:	Juan Gaviria
Task Team Leader(s):	Carolina Monsalve/Nargis Ryskulova

ARMENIA
LIFELINE ROAD NETWORK IMPROVEMENT PROJECT
ADDITIONAL FINANCING

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ADDITIONAL FINANCING DATA SHEET

Armenia

Lifeline Road Network Improvement AF (P150505)

EUROPE AND CENTRAL ASIA

GTIDR

Basic Information – Parent									
Parent Project ID:	P126782	Original EA Category:	B - Partial Assessment						
Current Closing Date:	30-Jun-2017								
Basic Information – Additional Financing (AF)									
Project ID:	P150505	Additional Financing Type (from AUS):	Restructuring						
Regional Vice President:	Cyril Muller	Proposed EA Category:	B – Partial Assessment						
Country Director:	Anna Bjerde (Acting)	Expected Effectiveness Date:	01-Dec-2015						
Senior Global Practice Director:	Pierre Guislain	Expected Closing Date:	30-Dec-2019						
Practice Manager/Manager:	Juan Gaviria	Report No:	PAD1354						
Team Leader(s):	Maria Carolina Monsalve, Nargis Ryskulova								
Borrower									
Organization Name	Contact	Title	Telephone	Email					
Ministry of Finance	Gagik Khachatryan	Minister	+37460-700304	press@minfin.am					
Project Financing Data–Parent (LIFELINE ROAD NETWORK IMPROVEMENT PROJECT- P126782)									
Key Dates									
Project	Ln/Cr/TF	Status	Approval Date	Signing Date	Effectiveness Date	Original Closing Date	Revised Closing Date		
P126782	IBRD-82290	Effective	31-Jan-2013	11-Feb-2013	15-Jul-2013	30-Jun-2017	30-Jun-2017		
Disbursements									
Project	Ln/Cr/TF	Status	Currency	Original	Revised	Cancelled	Disbursed	Undisbursed	% Disbursed
P126782	IBRD-82290	Effective	USD	45.00	45.00	0.00	26.19	18.81	58.20

Project Financing Data –Additional Financing Lifeline Road Network Improvement AF (P150505)					
<input checked="" type="checkbox"/>	Loan	<input type="checkbox"/>	Grant	<input type="checkbox"/>	IDA Grant
<input type="checkbox"/>	Credit	<input type="checkbox"/>	Guarantee	<input type="checkbox"/>	Other
Total Project Cost:		50.00		Total Bank Financing: 40.00	
Financing Gap:		0.00			
Financing Source – Additional Financing (AF)				Amount	
Borrower				10.00	
International Bank for Reconstruction and Development				40.00	
Total				50.00	
Policy Waivers					
Does the project depart from the CAS in content or in other significant respects?					No.
Explanation					
Does the project require any policy waiver(s)?					No.
Explanation					
Team Composition					
Bank Staff					
Name	Role	Title	Specialization	Unit	
Maria Carolina Monsalve	Team Leader (ADM Responsible)	Senior Transport Economist		GTIDR	
Nargis Ryskulova	Co-Team Leader	Operations Officer		GTIDR	
Armine Aydinyan	Procurement Specialist	Procurement Specialist		GGODR	
Garik Sergeyan	Senior Financial Management Specialist	Senior Financial Management Specialist		GGODR	
Andres Mac Gaul	Senior Procurement Specialist	Senior Procurement Specialist		GGODR	
Ari Kalliokoski	Transport Specialist	Transport Specialist		GTIDR	
Darejan Kapanadze	Senior Environmental Specialist	Senior Environmental Specialist		GENDR	
Deepal Fernando	Senior Procurement Specialist	Senior Procurement Specialist		GGODR	

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Gabriela Grinsteins	Associate Counsel	Associate Counsel		LEGLE	
Irina Tevosyan	Program Assistant	Program Assistant		ECCAR	
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Jose C. Janeiro	Senior Financial Officer	Senior Financial Officer		WFALA	
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Marinos Skempas	Road Engineer	Road Engineer		GTIDR	
Rocio Malpica	Country Lawyer	Senior Counsel		LEGLE	
Rodrigo Archondo-Callao	Senior Road Engineer	Senior Road Engineer		GTIDR	
Sarah G. Michael	Senior Social Development Specialist	Senior Social Development Specialist		GSURR	
Zaruhi Tokhmakhian	Senior Infrastructure Specialist	Senior Infrastructure Specialist		GSURR	
Extended Team					
Name		Title	Location		
Giorgi Kuprashvili		Consultant, Environment	Georgia		
Locations					
Country	First Administrative Division	Location	Planned	Actual	Comments
Armenia	Syunik'i Marz	Syunik'i Marz	X		
Armenia	Geghark'unik'i Marz	Geghark'unik'i Marz	X		
Armenia	Kotayk'i Marz	Kotayk'i Marz	X		
Armenia	Shirak'i Marz	Shirak'i Marz	X		
Institutional Data					
Parent (LIFELINE ROAD NETWORK IMPROVEMENT PROJECT-P126782)					
Practice Area (Lead)					
Transport & ICT					
Contributing Practice Areas					

Cross Cutting Topics				
<input type="checkbox"/> Climate Change				
<input type="checkbox"/> Fragile, Conflict & Violence				
<input type="checkbox"/> Gender				
<input type="checkbox"/> Jobs				
<input type="checkbox"/> Public Private Partnership				
Sectors / Climate Change				
Sector (Maximum 5 and total % must equal 100)				
Major Sector	Sector	%	Adaptation Co-benefits %	Mitigation Co-benefits %
Transportation	Rural and Inter-Urban Roads and Highways	100		
Total		100		
Themes				
Theme (Maximum 5 and total % must equal 100)				
Major theme	Theme	%		
Rural development	Rural services and infrastructure	97		
Rural development	Rural non-farm income generation	3		
Total		100		
Additional Financing Lifeline Road Network Improvement AF (P150505)				
Practice Area (Lead)				
Transport & ICT				
Contributing Practice Areas				
Cross Cutting Topics				
<input type="checkbox"/> Climate Change				
<input type="checkbox"/> Fragile, Conflict & Violence				
<input type="checkbox"/> Gender				
<input type="checkbox"/> Jobs				
<input type="checkbox"/> Public Private Partnership				
Sectors / Climate Change				
Sector (Maximum 5 and total % must equal 100)				
Major Sector	Sector	%	Adaptation Co-benefits %	Mitigation Co-benefits %

Transportation	Rural and Inter-Urban Roads and Highways	60		
Transportation	General transportation sector	40		
Total		100		
Themes				
Theme (Maximum 5 and total % must equal 100)				
Major theme	Theme	%		
Rural development	Rural services and infrastructure	60		
Financial and private sector development	Infrastructure services for private sector development	20		
Trade and integration	Trade facilitation and market access	20		
Total		100		
Consultants (Will be disclosed in the Monthly Operational Summary)				

I. Introduction

1. This Project Paper seeks the approval of the Executive Directors to provide an additional loan in an amount of US\$40 million to the Republic of Armenia and restructure the Lifeline Road Network Improvement Project (LRNIP; Loan No. 8229-AM) in response to letters received from the Ministry of Finance of Armenia dated February 10, 2015 and May 8, 2015 respectively. The proposed Additional Financing (AF) Loan would finance the scaling up and restructuring of LRNIP project activities through rehabilitating of approximately 155 km of the lifeline road network (LRN). The AF would also finance capacity development of the Ministry of Transport and Communication (MoTC) in road safety and management of the road network, including disaster risk preparedness, LRN network data collection for the road asset management system (RAMS), the development of a strategic development plan for the LRN, the design of project roads and future interventions in the road sector, supervision of works, road safety engineering and black spot improvements, a social monitoring and evaluation study, purchase of road laboratory equipment and road safety signs for the LRN, and project operating costs.

2. The Project Development Objective (PDO) will remain the same as in the original project. The Results Framework and Monitoring Indicators have been revised to: 1) reflect the increased scope of the project; 2) drop one intermediate level indicator related to routine maintenance through the concept of microenterprises; 3) align some of the target values and dates in the Results Framework and Monitoring Indicators with the proposed new closing date. There are no changes to the implementation arrangements. The closing date is proposed to be extended by two years and six months, from June 30, 2017 to December 30, 2019, to allow for all activities to be completed and fully cover the defect liability period.

3. The proposed LRNIP-AF is being requested for scaling up the development effectiveness of an existing project, as described in OP 10.00 and for restructuring of activities to accommodate a revision of the Results Framework and Monitoring Indicators following a request from the Borrower to cancel one sub-component under LRNIP.

II. Background and Rationale for Additional Financing and Restructuring

4. **Original Project.** The LRNIP (US\$45 million loan) was approved by the Board on January 31, 2013 and became effective on July 13, 2013.¹ The PDO of LRNIP is to improve access of rural communities to markets and services through upgrading of selected lifeline roads, and to strengthen the capacity of the MoTC to manage the LRN. This objective is being achieved by: (i) improving about 170 km of lifeline roads, including road safety features piloted under the previous project, (ii) providing institutional strengthening of MoTC and the Armenian Road Directorate (ARD) in road asset management related activities, and (iii) implementing two pilots: a pilot on the use of microenterprises for basic routine maintenance, and a pilot on performance-based

¹ The LRNIP was the fourth loan for the LRN and was preceded by the Lifeline Road Investment Project (US\$25 million), approved on February 24, 2009; the First Additional Financing (LRIP-AF1) in the amount of US\$36.6 million, approved in August 2009, and the Second Additional Financing (LRIP-AF2) in the amount of US\$40 million, approved in July 15, 2010.

contract for rehabilitation and maintenance. The project provides a platform for policy dialogue with the MoTC on the sustainability of the road sector through the road financing study financed from the loan.

5. ***The implementation of the original project has progressed well.*** The project had a fast start with regard to road rehabilitation works, including the pilot rehabilitation and maintenance contract, and road safety engineering and black spot improvements, as evidenced by the disbursement rate of almost 40 percent in the 20 months since effectiveness. A total of 205.8 km of lifeline roads will be rehabilitated, as against the original end target value of 170 km. While the project envisaged four Safe Village schemes by end of the project, a total of 13 have been completed to date. The Borrower has requested the cancellation of the Pilot for Routine Maintenance through Microenterprises. The institutional strengthening sub-components under Component 2 have been launched, with the first phase of the road financing study to be completed in June 2015, and social monitoring and evaluation reports for year 2 to be completed in May 2015. The remaining technical assistance sub-components are expected to be launched in 2015. Launching some of the technical assistance was delayed due to the necessity of clearing terms of references (TOR) by the Prime Minister's Office, and the team having to make the case to the new authorities on the importance of the studies and non-civil work activities agreed upon during the project negotiations. The project is on track to achieve its Development Objective, and has been consistently rated Satisfactory for both the Development Objective and the Implementation Progress (IP) ratings since the start of implementation. The overall risk is rated as Moderate.

6. The original project was classified as an environmental category B. The Environmental Management Plans (EMPs) were prepared for all road sections in line with the Environmental and Management Framework (EMF), disclosed countrywide, and discussed with local communities prior to commencement of works in the respective road sections. No land acquisition has occurred under the project.

7. ***Rationale for the Additional Financing.*** Given the project's overall satisfactory performance, and the fact that it has been fully compliant with the legal covenants, including audit and financing management, safeguards, and other provisions of the Loan Agreement, the project team believes this AF to be justified to finance the costs associated with scaled-up activities to augment the impact of this well-performing project.

8. ***Rationale for Project Restructuring.*** The Level II restructuring is required in order to revise the Results Framework and Monitoring Indicators, following the request from the Borrower to cancel sub-component 1.3, Pilot for Routine Maintenance through Microenterprises, which has an Intermediate Results Indicator and change the end target dates for some of the indicators following the proposed extension of the project closing date. Lastly, financing of the purchase of the RAMS under subcomponent 2.2 would remain part of the LRNIP, with financing from the Asian Development Bank (ADB) and continued monitoring by the Bank.

9. ***Consistency with the Country Partnership Strategy and with institutional goals of reducing poverty and boosting shared prosperity.*** The proposed AF supports one of the pillars of the Armenia Development Strategy 2025, i.e. enhancement of human capital through better access to quality services, including healthcare, education, culture, and basic infrastructure. It is also fully

aligned with the World Bank Country Partnership Strategy (CPS) for Armenia for FY14-17. By supporting one of the two Strategic Clusters of the CPS, namely Supporting Competitiveness and Job Creation (Cluster of Outcomes I, (iii) upgrading key economic infrastructure services that are identified as significant to spurring growth), the proposed AF contributes to reducing poverty and boosting shared prosperity in Armenia. The proposed AF is referenced in the CPS, which highlights the importance of continued investments in lifeline road rehabilitation in an effort to promote greater connectivity of rural areas. Connecting rural communities to markets in a more effective way is expected to support employment both at the farm and non-farm rural level of some of the poorest segments of the population, thereby supporting poverty reduction goals.

10. **Sectoral context.** The total length of the Armenia road network is 7,758 km, excluding urban roads, with less than half being in good or fair condition. In 2013 the network consisted of interstate (1,686 km), republican (4,056 km) and local roads (1,962 km), of which republican roads were subdivided into republican main roads (1,814 km) managed by the MoTC and other republican roads (2,242 km) managed by the *Marz*. In February 13, 2014, the Government of Armenia (GoA) issued a Decree No. 265 on road reclassification. This decree revoked an earlier decree from January 10, 2008, and reclassified the road network as follows: 1,759 km of interstate roads, 1,966 km of republican roads and 3,805 km of local roads. Lifeline roads comprise mostly from the local roads and a portion of the republican roads, totaling around 4,000 km. Most of the road network was built in the 1960s and 1970s. The percentage of paved roads, at 93 percent, is high compared to other developing countries, but is in line with most European countries. With support from the lifeline roads program and other efforts of the GoA, the percentage of the republican roads—as defined in 2013, prior to the most recent road reclassification—that are in good or fair condition increased from 32.2 percent in 2008 to 51.1 percent in 2013. Despite this positive improvement record, there still is a large backlog of lifeline roads that need rehabilitation.

11. At present, the World Bank is the only international financial institution that provides financing to support rural roads in Armenia. The ADB is providing support to the North-South Corridor Investment Program through Tranche 1, Tranche 2, and as a co-financing partner of Tranche 3 with the European Investment Bank (EIB). The European Bank for Reconstruction and Development (EBRD) is providing financing for the construction of the new bridge over the Debed river at Bagratashen checkpoint. In April 2015, the GoA and the Eurasian Development Bank agreed on financing the construction of a section of the North-South Road Corridor close to the border with Iran. These projects are part of an ambitious program aimed at improving the 556-kilometer North-South Road Corridor running from the border with Georgia at Bavra to the border with Iran. According to the GoA, the EIB will be a co-financing partner for the M6 interstate road project, from Vanazdor to the border with Georgia. The ADB is also said to have expressed interest in supporting the M6 project.

12. Trade facilitation and connecting local production to markets remain paramount in reducing rural poverty and promoting economic growth. The agricultural sector represents about 20 percent of the country's GDP and involves around 335,000 households. Trade from rural areas is less than optimal due to restricted connectivity to markets as a result of the poor condition of roads. This has hindered trade facilitation for rural farmers, resulting in substantial crop losses for some communities due to the inability to get them to markets on time. It is vital that rural

infrastructure is improved and maintained to promote agricultural trade, thus stimulating economic growth and local employment for the future.

III. Proposed Changes

13. The project would finance the rehabilitation of about additional 155 km of the LRN, institutional capacity building activities, and project management costs. The LRNIP-AF has the same two components as the parent project. A new Contingent Emergency Response (CER) sub-component is being introduced. Sub-component 1.3 on Pilot for Routine Maintenance through Microenterprises is proposed to be removed. The Results Framework and Monitoring Indicators has been updated. The closing date is proposed to be extended by two years and six months, from June 30, 2017 to December 30, 2019, to allow for all activities to be completed and fully cover the defect liability period.

14. **Changes to the Results Framework and Monitoring.** The Results Framework and Monitoring Indicators (Annex 1) have been updated to: 1) reflect the increased scope of the project target values and dates were updated for: PDO indicators “Share of rural population with access to an all-season road” and “Number of rural people with access to an all-season road, disaggregated by gender”; and intermediate results indicators “Roads rehabilitated, Rural”, “Number of Safe Village projects completed”, and “Roads in good and fair condition as a share of total classified roads”; 2) revise intermediate target values and dates for the PDO indicator “Development and use of RAMS within MoTC to support decision making on LRN”; 3) drop the intermediate level indicator “Pilot for Routine Maintenance through Microenterprises designed, implemented, and evaluated”; and 4) align some of the target dates in the Results Framework and Monitoring Indicators with the proposed new closing date.

15. **Component 1: Lifeline Road Improvement** (Total cost: US\$46.71 million; IBRD: US\$37.37 million). This will raise the total number of km of roads to 360 km, increasing the length of roads rehabilitated under the project by an additional 155 km of roads. This component comprises civil works for the rehabilitation of roads (sub-component 1.1), two rehabilitation and maintenance contracts (sub-component 1.2), supervision and technical designs (sub-component 1.4), and includes the construction costs associated with the Safe Village schemes on all road sections rehabilitated under the AF and the purchase and installation of road signs. Additional details can be found in Annex 2.

16. **Removal of Sub-component 1.3: Pilot for Routine Maintenance through Microenterprises** (Total cost: US\$0.17 million; IBRD: US\$0.14 million). The MoTC has requested that this sub-component and the associated intermediate results indicator be removed from the project. This sub-component was to finance the operation of two Microenterprises for Routine Maintenance for at least two years. In November 2014, the World Bank organized and financed through the South-South Knowledge Exchange Trust Fund a study tour to Peru and Bolivia to present to the Armenian delegation practical experience with routine maintenance through microenterprises. Following the study tour, the MoTC informed the Bank that the proposed approach would cause a number of difficulties in Armenia, related to state registration of microenterprises, the organization of their activities, and particularly financial and tax issues. The proposed approach would also require amendments to the existing legal acts concerning road

maintenance in Armenia. In addition, harsh winter climatic conditions in Armenia requires road maintenance organizations to have appropriate equipment for winter maintenance, the provision of which cannot be ensured by microenterprises. For these reasons, the MoTC believed that the benefits of this pilot do not override the costs associated with its design and implementation and therefore requested that the sub-component be removed. The funds available under this component will be used to purchase and install road safety signs on the LRN.

17. Introduction of Sub-component 1.6: Contingent Emergency Response (Total cost: US\$0; IBRD: 100 percent). A new Contingent Emergency Response (CER) sub-component is being introduced, without introducing changes to the PDO or the Results Framework. Having this sub-component is a precautionary measure that would allow the GoA to quickly channel the loan financing for emergency recovery efforts following an adverse natural or man-made disaster. The built-in CER with an associated new disbursement category would allow the GoA to request the Bank to reallocate loan proceeds to this sub-component towards an emergency response for the road sector within the Borrower's territory. The new disbursement category will have a zero dollar allocation, with 100 percent IBRD financing. If the CER were to be triggered, and the Bank is satisfied with the evidence that the withdrawal conditions, as defined in the Loan Agreement, are met, the Borrower will request the reallocation of proceeds to the CER sub-component and can start disbursing. The project may require at a later date the need to revise the PDO and the Results Framework and Monitoring Indicators in order to reflect the revised scope of the project. This sub-component could also be used to channel additional funds should they become available as a result of the emergency. The project will include technical assistance related to this sub-component as described under Component 2 below.

18. Component 2. Project Management and Institutional Strengthening (Total cost: US\$3.19 million; IBRD: US\$2.53 million). This component would finance project management and implementation, including financial audits (sub-component 2.1), purchase of road laboratory equipment and LRN data collection for the RAMS (sub-component 2.2), the development of a road safety action plan and the implementation of selected activities from the action plan (sub-component 2.3), and under the technical assistance sub-component 2.4 it would finance: (i) preparation of a social monitoring and evaluation study; (ii) preparation of a strategic development plan for the LRN; and (iii) technical assistance with regard to disaster risk preparedness for the road sector. Additional details can be found in Annex 2.

19. Revision to Sub-component 2.2: Road Asset Management System and Survey Equipment (Total cost: US\$0.5 million; IBRD: US\$0.4 million)². This sub-component was to finance the purchase of the Road Asset Management System (including its installation and training) and road survey equipment to be used by ARD for surveying road condition and traffic. On June 20, 2014, the Prime Minister of Armenia issued Decree N.564-A changing the source of financing (from IBRD to ADB North-South Corridor Investment Project-Tranche 3) and timeline for the purchase of equipment and software for RAMS. The ADB will also finance the installation of the software and training of ARD staff. It was decided that the RAMS sub-component would remain part of the LRNIP, with financing from ADB and continued monitoring by the Bank. The target dates of the PDO indicator "Development and use of RAMS within MoTC to support

² Under the parent project LRNIP.

decision making on LRN” and the intermediate indicator “Number of km of lifeline roads fed into RAMS” were updated accordingly.

20. The LRNIP will support RAMS implementation with the purchase of equipment for road condition and traffic surveys to complement the ADB financing for the purchase of the RAMS and other equipment. Some of the survey equipment (a road portable profiler and a four wheel drive vehicle to mount the roughness measurement equipment) was already purchased. It was agreed that the remaining Bank funds under this sub-component (US\$ 275,000) will be used to purchase traffic counters in 2016.

21. **Reporting.** The Borrower and the Bank agreed that Project Reports specified in the Loan Agreement of the LRNIP and the proposed LRNIP-AF cover implementation progress of both Loans. These reports are expected to monitor and document progress over one calendar semester (January 1 to June 30, and July 1 to December 31). The Mid Term Review of the project is planned to take place before December 2015.

22. **Closing Date.** The closing date of the project is proposed to be extended by two years and six months, from June 30, 2017 to December 30, 2019.

Summary of Proposed Changes	
The Project Development Objective (PDO) will remain the same as in the original project. A new Contingent Emergency Response sub-component is introduced. The Results Framework and Monitoring Indicators have been revised to: 1) reflect the increased scope of the project; 2) drop one intermediate level indicator related to routine maintenance through the concept of microenterprises; 3) align some of the target values and dates in the Results Framework with the proposed new closing date. There are no changes to the implementation arrangements. The closing date is proposed to be extended by two years and six months, from June 30, 2017 to December 30, 2019, to allow for all activities to be completed and fully cover the defect liability period.	
Change in Implementing Agency	Yes [] No [X]
Change in Project's Development Objectives	Yes [] No [X]
Change in Results Framework	Yes [X] No []
Change in Safeguard Policies Triggered	Yes [] No [X]
Change of EA category	Yes [] No [X]
Other Changes to Safeguards	Yes [] No [X]
Change in Legal Covenants	Yes [] No [X]
Change in Loan Closing Date(s)	Yes [X] No []
Cancellations Proposed	Yes [] No [X]
Change in Disbursement Arrangements	Yes [X] No []
Reallocation between Disbursement Categories	Yes [] No [X]

Change in Disbursement Estimates	Yes [X] No []
Change to Components and Cost	Yes [X] No []
Change in Institutional Arrangements	Yes [] No [X]
Change in Financial Management	Yes [] No [X]
Change in Procurement	Yes [X] No []
Change in Implementation Schedule	Yes [X] No []
Other Change(s)	Yes [X] No []

Development Objective/Results

Project's Development Objectives

Original PDO

The Project Development Objective is to improve access of rural communities to markets and services through upgrading of selected lifeline roads, and to strengthen the capacity of the Ministry of Transport and Communication to manage the lifeline road network.

Change in Results Framework

Explanation:

Proposal to delete Intermediate Results Indicator Pilot for Routine Maintenance through Microenterprises designed, implemented, and evaluated.

Compliance

Covenants - Additional Financing (Lifeline Road Network Improvement AF - P150505)

Source of Funds	Finance Agreement Reference	Description of Covenants	Date Due	Recurrent	Frequency	Action
				<input type="checkbox"/>		

Conditions

Source Of Fund	Name	Type
IBRD	Operations Manual	Effectiveness

Description of Condition

The Additional Condition of Effectiveness consists of the following: namely that the Operational Manual is updated and adopted by the Borrower, through MOTC, in a manner acceptable to the Bank.

Source Of Fund	Name	Type
IBRD	Safeguards specialists	Effectiveness

Description of Condition

That the Borrower, through MOTC, hires an environmental safeguard specialist and a social safeguards specialist, with qualifications and on terms and conditions satisfactory to the Bank;

Source Of Fund	Name	Type			
IBRD	CER withdrawal	Disbursement			
Description of Condition					
No withdrawal of loan proceeds can take place until the Borrower has (i) determined that an eligible emergency occurred and is acceptable to the Bank; (ii) has furnished to the Bank a request to finance the eligible expenditures; (iii) has updated and adopted the Operational Manual; and (d) has prepared, disclosed, and consulted safeguards instruments as required, in line with the LA.					
Risk					
Risk Category		Rating (H, S, M, L)			
1. Political and Governance		Moderate			
2. Macroeconomic		Substantial			
3. Sector Strategies and Policies		Low			
4. Technical Design of Project or Program		Low			
5. Institutional Capacity for Implementation and Sustainability		Moderate			
6. Fiduciary		Substantial			
7. Environment and Social		Low			
8. Stakeholders		Low			
9. Other					
OVERALL		Moderate			
Finance					
Loan Closing Date - Additional Financing (Lifeline Road Network Improvement AF - P150505)					
Source of Funds		Proposed Additional Financing Loan Closing Date			
International Bank for Reconstruction and Development		30-Dec-2019			
Loan Closing Date(s) - Parent (LIFELINE ROAD NETWORK IMPROVEMENT PROJECT - P126782)					
Explanation:					
The closing date is proposed to be extended by two years and six months, from June 30, 2017 to December 30, 2019, to allow for all activities to be completed and fully cover the defect liability period.					
Ln/Cr/TF	Status	Original Closing Date	Current Closing Date	Proposed Closing Date	Previous Closing Date(s)
IBRD-82290	Effective	30-Jun-2017	30-Jun-2017	30-Dec-2019	
Change in Disbursement Arrangements					
Explanation:					
A new Contingent Emergency Response (CER) sub-component is being introduced. Having this sub-component is a precautionary measure that would allow the GoA and the Bank to quickly channel the loan financing for emergency recovery efforts following an adverse natural or man-made disaster. The built-in					

CER with an associated new disbursement category would allow the GoA to request the Bank to reallocate loan proceeds to this sub-component towards an emergency response and recovery costs for the road sector. The new disbursement category will have a zero dollar allocation, with 100 percent IBRD financing. This sub-component could also be used to channel additional funds should they become available as a result of the emergency.

Change in Disbursement Estimates (including all sources of Financing)

Explanation:

Change in disbursements due to additional US\$40 million IBRD loan and extension of closing date to December 30 2019.

Expected Disbursements (in USD Million)(including all Sources of Financing)

Fiscal Year	2014	2015	2016	2017	2018	2019	2020
Annual	15.60	23.00	15.00	11.60	11.60	8.20	0.00
Cumulative	15.60	38.60	53.60	65.20	76.80	85.00	85.00

Allocations - Additional Financing (Lifeline Road Network Improvement AF - P150505)

Source of Fund	Currency	Category of Expenditure	Allocation	Disbursement %(Type Total)
			Proposed	Proposed
IBRD	USD	Goods, works, non-consulting services, consultants' services, and Operating Costs under the Project	39,900,000.00	80.00
IBRD	USD	Front-end Fee	100,000.00	100.00
IBRD	USD	Goods, works, non-consulting services, consultants' services, and Operating Costs under Contingent Emergency Response	0.00	100.00
		Total:	40,000,000.00	

Components

Change to Components and Cost

Explanation:

The proposed AF would finance the rehabilitation of about additional 155 km of the lifeline road network, institutional capacity building activities, and project management costs. A new Contingent Emergency Response (CER) sub-component is being introduced under Component 1. Sub-component 1.3 on Pilot for Routine Maintenance through Microenterprises is proposed to be removed.

Current Component Name	Proposed Component Name	Current Cost (US\$M)	Proposed Cost (US\$M)	Action
Lifeline Road Improvement	Lifeline Road Improvement	52.39	99.10	Revised
Project Management and Institutional Strengthening	Project Management and Institutional Strengthening	3.72	6.91	Revised
	Total:	56.11	106.01	
Other Change(s)				
Change in Procurement				
Explanation:				
<p>1. Procurement for the LRNIP would be carried out in accordance with the World Bank's Guidelines Selection and Employment of Consultants under IBRD Loans and IDA Credits & Grants by World Bank Borrowers issued in January 2011, revised as of July 2014 (Consultants Guidelines); and Guidelines Procurement of Goods, Works, and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers issued in January 2011, revised as of July 2014.</p> <p>2. The National Consultant sealing per contract is fixed as less or equivalent to US\$ 300,000.</p> <p>3. Procurement of Goods, and Non-Consultant Services: Contracts for Goods, and Non-Consultant Services estimated to cost less than US\$1,000,000 may be procured following the NCB procedure.</p> <p>4. Procurement of Works: Works contracts estimated to cost less than US\$ 5,000,000 may be procured following the NCB procedure, and contracts estimated to cost less than US\$ 200,000 – following the Shopping procedure.</p> <p>5. All the NCB contracts for procurement of works with a cost estimate above USD 3 million, and the first two NCB contracts, irrespective of the cost, will be subject of the Bank's prior review.</p> <p>6. The frequency of procurement supervision should be at least once a year. Physical inspection of the contracts will be done as per need.</p> <p>7. Operating expenditures are not subject to the Procurement and Consultant Guidelines. The procurement under this category may follow the national procedures. Nevertheless, in case of selection/appointment of managerial and key staff of the Transport Project Implementation Unit (TPIU), the TPIU shall provide the Bank team with the TOR and the qualification assessment report of the selected candidates for review and opinion, prior to offering the contracts to the preferred candidates. Operating cost will not include salaries of civil servants.</p> <p>8. Procurement under Situations of Urgent Need of Assistance or Capacity Constraints. At the request of the borrower/beneficiary in situations when the borrower/beneficiary is deemed by the Bank to: (i) be in urgent need of assistance because of a natural or man-made disaster or conflict; or (ii) experience capacity constraints because of fragility or specific vulnerabilities, along with using of Direct Contracting (DC), Force Account and Single Source Selection (SSS) methods the Bank may agree to specific procurement arrangements such as Simplified Procurement Procedures.</p> <p>9. The procurement section of the POM shall be updated accordingly.</p>				

Change in Implementation Schedule
<p>Explanation:</p> <p>The closing date is proposed to be extended by two years, from June 30, 2017 to December 30, 2019, to allow for all activities to be completed and fully cover the defect liability period.</p>
Other Change(s)
<p>Explanation:</p> <p>No withdrawal of loan proceeds under the Contingency Emergency Response (CER) sub-component can take place until the Borrower has (i) determined that an eligible emergency has occurred; (ii) has furnished to the Bank a request to finance the eligible expenditures; (iii) has updated and adopted the Operational Manual as needed, defining the scope of activities, implementation arrangements, procurement and disbursement arrangements under the CER sub-component the project; and (iv) has prepared, disclosed and consulted all safeguards instruments required for said activities in line with the safeguards provisions of the Loan Agreement and in a manner satisfactory to the Bank.</p>
Appraisal Summary
Economic and Financial Analysis
<p>Explanation:</p> <p>ARD selected six lifeline roads to be included in the first year program. This selection was based on a prioritization study done in March 2015, which surveyed 463.2 km of the Lifeline roads network (subdivided into 101 roads) that had been identified as being in need of rehabilitation by Armenian decree N30, dated July 17, 2014, which listed the repair priorities for the Armenian local roads under republican, regional, and municipal jurisdiction. In addition, a seventh road section was included in the first year program, which was not part of the prioritization study. This road section is an interstate M11 road section in poor condition and high traffic that needs rehabilitation to connect the lifeline roads in the regions to roads in good condition. A traditional cost benefit analysis was done, using the Highway Development and Management Model (HDM-4), which computes annual road agency and user's costs (vehicle operating plus travel time costs) over the evaluation period, evaluating up to three project-alternatives per road. The economic evaluation considers an evaluation period of 20 years, a discount rate of 12 percent and a conversion factor of 0.83 to identify economic costs. The overall Economic Internal Rate of Return (EIRR) of the first year program is 17.4 percent and the Net Present Value (NPV) is US\$4.48 million. All roads have EIRR above 12 percent, ranging from 14.0 percent to 28.9 percent. If construction costs were 15 percent higher, the overall EIRR would reduce to 15.3 percent and if the annual traffic growth rates were 15 percent lower, the overall EIRR would reduce to 16.0 percent. Switching values analysis shows that construction costs would have to increase by 48 percent for the overall EIRR to reach 12 percent.</p>
Technical Analysis
<p>Explanation:</p> <p>The roads included in the project are roads in fair to very poor condition in need of rehabilitation or reconstruction. Much of the deterioration is related to environmental factors, exacerbated by poor drainage design and maintenance practice. The project will repair pavements on the existing alignment, including the repair and/or upgrade the drainage facilities within the alignments as well as small bridges/culverts if needed. The design will include provision of safety features such as guardrails, pavement markings, sidewalks in urban areas, etc. The design will use International design standards rather than Armenian standards to get solutions appropriate for the actual and forecast traffic volumes and local conditions.</p>

Social Analysis**Explanation:**

No physical relocation is expected under the project, as all civil works are to be carried out on existing sites and structures. However, based on the experience of the ongoing original LRNIP, the road improvements will require a minimum road cross-section of 10 meters. It is possible that some roads may not currently have 10-meter encumbrance free cross-section, and thus, the Project may require some minor land acquisition. OP 4.12 was therefore triggered and a Resettlement Policy Framework (RPF) was prepared. The final draft RPF has been disclosed through the World Bank Infoshop on April 22, 2015, with in-country disclosure (on the website of MoTC and in local newspapers) on May 4, 2015. Public consultations were held with stakeholders on May 15, 2015. The finalized RPF, along with the minutes of the consultations (including agenda, summary of questions and answers, and list of participants), was submitted to the World Bank for final approval on May 18, 2015 and was re-disclosed through the Infoshop on the same day and by the client on May 20, 2015. Once the detailed designs for specific road sections are finalized and if any individual investment requires resettlement, a Resettlement Action Plan (RAP) will be prepared and submitted to the Bank for approval. The Government will be responsible for implementing the RAPs prior to commencement of civil works. Bank approval will be sought if project financing is proposed for land acquisition. TPIU will create and maintain additional capacity to support oversight and monitoring of social safeguards compliance, gender inclusion and citizen engagement activities throughout LRNIP and LRNIP AF implementation.

Environmental Analysis**Explanation:**

The project will invest in rehabilitation of the road infrastructure, and physical works to be undertaken will have certain impact on the natural environment. The OP/BP 4.01 Environmental Assessment is therefore triggered. The project is classified as environmental category B, because the planned interventions will rehabilitate/upgrade the existing roads within the present right-of-way. Therefore, the associated risks of environmental damage are modest. For the purposes of the LRNIP-AF implementation, the Borrower revised an Environmental Management Framework developed earlier during the preparation of the LRNIP and produced an Environmental and Social Management Framework (ESMF) for the purposes of LRNIP-AF. The draft final ESMF was disclosed through the World Bank Infoshop on April 22, 2015 and in country in Armenian and English languages on May 4, 2015, and a stakeholder consultation meeting was held on May 15, 2015. The finalized ESMF, with attached minutes of the consultations (including agenda, summary of questions and answers, and list of participants) was submitted to the World Bank for final approval on May 18, 2015 and was re-disclosed through the Infoshop on the same date and by the client on May 20, 2015. Based on the principles outlined in the ESMF, site-specific EMPs will be prepared for the rehabilitation of all road sections included in the project implementation plan once the detailed designs are prepared for them—these will not be ready for Year 1 roads by Board date. EMPs for all individual investments will be disclosed, discussed with local communities, and finalized to the Bank's satisfaction prior to tendering of works. TPIU will create and maintain additional capacity to support oversight and monitoring of environmental safeguards compliance throughout LRNIP and LRNIP AF implementation.

Risk**Explanation:**

The proposed project is suggested to have an overall moderate risk rating, reflecting the risk rating of the LRNIP. The macroeconomic risk has been rated substantial, given recent macroeconomic developments in the Russian Federation which have knock on effects in the broader region and in Armenia. The fiduciary risk has also been rated substantial reflecting lack of procurement staff experienced in Bank funded projects.

IV. Appraisal Summary

A. Economic Analysis

23. **Selection criteria and first-year program.** ARD selected six lifeline roads to be included on the first year program based on a prioritization study done on March 2015, conducting a survey of a portion of the Lifeline roads network, totaling 463.2 km subdivided into 101 roads, which were identified in need of rehabilitation on the Armenian decree N30, dated July 17, 2014 that lists the repair priorities for the Armenian local roads under republican, regional, and municipal jurisdiction. The prioritization study considered the following multi-criteria indicators: (i) the EIRR of the road work, (ii) the beneficiary population of the road section; (iii) the percent population in poor condition of the *Marz*; and (iv) the percent of lifeline roads in poor condition of the *Marz*. In addition, a seventh road section was included in the first year program, which was not part of the prioritization study. This road section is an interstate M11 road section in poor condition and high traffic that needs rehabilitation to connect the lifeline roads in the regions to roads in good condition. A traditional cost benefit analysis was done, using the Highway Development and Management Model (HDM-4), which computes annual road agency and user's costs (vehicle operating plus travel time costs) over the evaluation period, evaluating up to three project-alternatives per road.

24. The seven roads are bituminous roads in poor to very poor condition. The current Average Annual Daily Traffic (AADT) varies between 263 to 3,030 vehicles per day, comprised, on average, of 12 percent trucks and buses and 88 percent passenger cars. The project roads serve in total 183,446 persons. The beneficiary population varies from 1,085 to 26,384 persons per km with an average of 3,962 persons per km. The total financial capital cost for the first year program is estimated at US\$11.24 million.

25. **Economic evaluation results.** The economic evaluation considers an evaluation period of 20 years, a discount rate of 12 percent and a conversion factor of 0.83 to identify economic costs. The overall Economic Rate of Return (EIRR) of the first year program is 17.4 percent and the Net Present Value (NPV) is US\$4.48 million. All roads have EIRR above 12 percent, ranging from 14.0 percent to 28.9 percent. If construction costs were 15 percent higher, the overall EIRR would reduce to 15.3 percent and if the annual traffic growth rates were 15 percent lower, the overall EIRR would reduce to 16.0 percent. Switching values analysis shows that construction costs would have to increase by 48 percent for the overall EIRR to reach 12 percent. The outcomes of the economic evaluation are summarized below, with more details provided in Annex 4.

Table 1. Economic Evaluation Results

Road Name	NPV (US\$ Million)	NPV/Investment Ratio	EIRR (%)
H1-Hrazdan-H55	0.27	0.51	17.9%
Martuni-Vahashen-Vardenik	0.32	0.12	14.0%
M2-Sisian	0.50	0.62	19.4%
Eranos-Tsakqar	0.31	0.28	16.2%
Maralik-Qaraberd-Dzithankov	0.46	0.27	15.6%
H6-Nor Gehi-Argel-Arzakan-Hrazdan	1.97	0.59	18.1%
M11 km 6.5 to km 10.7	0.65	0.56	28.9%
Total	4.48	0.40	17.4%

26. **Public sector financing and World Bank value added.** Public sector financing is the appropriate vehicle for financing the rehabilitation of proposed roads because the construction costs cannot be recovered through tariffs due to very low levels of traffic along the project roads. Public investment in road infrastructure is desirable because it is a way the government plays a key role in the country's development by handling a range of issues that can only be accomplished or implemented through government actions, such as axle weight controls and road safety regulations. The World Bank's role is justified because of the project's economic and social benefits and because of the value added it brings beyond financing in areas such as: construction quality control, sustainability of road maintenance, transport planning, environmental risk management, safeguards, procurement, and financial management.

B. Technical

27. The roads included in the project are roads in fair to very poor condition in need of rehabilitation or reconstruction. Much of the deterioration is related to environmental factors, exacerbated by poor drainage design and maintenance practice. The project will repair pavements on the existing alignment, including the repair and/or upgrade the drainage facilities within the alignments as well as small bridges/culverts if needed. The design will include provision of safety features such as guardrails, pavement markings, sidewalks in urban areas, etc. The design will use International design standards rather than Armenian standards to get solutions appropriate for the actual and forecast traffic volumes and local conditions.

C. Financial Management

28. The financial management (FM) function of LRNIP-AF will be handled by the TPIU, which will be responsible for planning and budgeting, flow of funds, accounting, financial reporting, internal controls and auditing. There would be no changes in the current FM and disbursement arrangements under the project³.

29. The FM arrangements of the parent project implemented by TPIU have been reviewed periodically as part of project supervision (with the latest conducted in November 2014), and updated in April 2015 and have been found satisfactory to the Bank. The overall FM risk for the project is moderate. In general, there is adequate FM staffing. However, given that with the implementation of the LRNIP-AF the workload of current FM staff will increase, it was agreed that prior to LRNIP-AF implementation, TPIU will hire an additional accountant (not a condition but a capacity building action). In addition, given the frequent staff turnover, the TPIU should ensure that adequate fiduciary staffing capacity is retained during the whole project implementation period. Prior to LRNIP-AF implementation, the TPIU will also update the current Financial Management Manual to reflect the AF's specific activities and controls.

30. There are no pending audits under the on-going project. The auditor issued unmodified (clean) opinion on the parent project's financial statements with no critical recommendations in the management letter. Similar audit arrangements will be adopted for the LRNIP-AF, which will be included in the overall project's audit. TPIU will prepare a single set of consolidated annual

³ No changes are planned concerning the current implementation agency and the FM arrangements under the project, even if disbursements under the contingent emergency response sub-component commence. It is envisaged that under the contingent emergency response sub-component no co-financing would be required, and the Bank will finance 100 percent of the eligible expenditures under the sub-component in case a major disaster occurs.

financial statements for the parent project and the LRNIP-AF. The audit of the parent project and the LRNIP-AF will be conducted by (i) independent private auditors acceptable to the Bank, on TORs acceptable to the Bank, and (ii) according to the International Standards on Auditing issued by the International Auditing and Assurance Standards Board of the International Federation of Accountants. The annual audited project consolidated financial statements will be submitted to the Bank within six months of the end of each fiscal year and also at the closing of the project. The audit will be procured by TPIU, and the cost of the audit will be financed from the proceeds of the project. The project audit reports will be posted on the web-site of the Ministry of Transport and Communications (www.mtc.am).

31. Project management-oriented Interim un-audited Financial Reports (IFRs) will be used for monitoring and supervision. The existing formats of the IFRs will be used and TPIU will produce full separate sets of IFRs for the parent project and the LRNIP-AF every semester throughout the life of the project and will submit them to the Bank no later than 45 days after the semester ends.

32. The TPIU will establish and manage a separate Designated Account (DA) specifically for LRNIP-AF in the Single Treasury Account (the Treasury) of the Ministry of Finance (the MOF) at the Central Bank of Armenia. The Treasury system is being used to maintain designated accounts of Bank-financed projects, including this Project. In addition, the country budget system will be used for the Project. For all the other FM elements the TPIU's respective systems are going to be used for this particular Project.

D. Procurement

33. **Procurement.** Procurement will be carried out by the TPIU under the MoTC. The assessment of the TPIU's procurement capacity to conduct procurement for the proposed LRNIP-AF was carried out on April 20, 2015. The procurement risk is assessed as Substantial. While the TPIU has gained experience with the Bank's financed projects in Armenia since 2001, the current procurement capacity is weak and needs to be strengthened significantly. Though two out of three specialists currently responsible for the implementation of the Bank's funded project have been employed by the TPIU since 2012 and 2014, their involvement was limited until the recent resignation of the experienced procurement specialist. A third procurement specialist was hired since February 2015. She has some experience in public procurement, but is not familiar with the Bank's procurement rules and procedures yet. The TPIU needs to further strengthen its procurement capacity. It is recommended that current staff participate in procurement training organized by the Bank locally, regionally or internationally.

34. Most procurement arrangements from LRNIP will remain in force for the LRNIP-AF. Some threshold for procurement of goods/works and selection of consultant services will be revised (increased), and the number of contracts that will be subject to the Bank's prior review will be increased. The Procurement plan will provide appropriate information on such contracts. The contingent emergency works envisaged shall be procured following the Project Operational Manual. Procurement for the LRNIP would be carried out in accordance with the World Bank's Guidelines Selection and Employment of Consultants under IBRD Loans and IDA Credits & Grants by World Bank Borrowers issued in January 2011, revised as of July 2014 (Consultants Guidelines); and Guidelines Procurement of Goods, Works, and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by World Bank Borrowers issued in January 2011, revised as of July 2014. The World Bank Guidelines on Preventing and Combating Fraud and Corruption

in Projects Financed by IBRD Loans and IDA Credit and Grants dated October 15, 2006 and revised on January 2011, would also apply.

35. A preliminary draft of the Procurement Plan covering the first 18 months of the project implementation has been prepared by the TPIU and submitted to the Bank for consideration (Annex 3). The final version of the Procurement Plan will be disclosed (without cost estimates) and posted on the Bank's website and www.procurement.am.

36. A General Procurement Notice has been published on May 29, 2015 in UNDB on-line and in its printed version. Specific Procurement Notices (SPN) and Request on Expression of Interests will be published for Procurement and Consulting contracts as per applicable Guidelines, as the corresponding documents become ready and available. To increase the participation of local companies in bidding for the civil works contracts, the SPN of such contracts will be sent directly to the Builder's Union of Armenia.

E. Social (including Safeguards)

37. Armenia poverty rate is about 36 percent of the total population and its rural areas are particularly vulnerable, lacking basic social amenities like access roads, potable water, health care facilities, with associated social issues including high unemployment, structural and gender concerns. The improvement and maintenance of the LRN in rural and other areas have been an important Government and Bank's strategy in addressing the challenges of rural poverty. The proposed Project will facilitate the provision of social services and livelihood opportunities, create temporary jobs in construction, reduce transport costs and support economic activities in rural Armenia.

38. **Social safeguards.** No physical relocation is expected under the project, as all civil works are to be carried out on existing sites and structures. However, based on the experience of the ongoing original LRNIP, the planned road improvements will require a minimum road cross-section of 10 meters. It is possible that some roads may not currently have 10-meter encumbrance free cross-section, and thus, the Project may require some minor land acquisition. OP 4.12 was therefore triggered and a Resettlement Policy Framework (RPF) was prepared. The final draft RPF has been disclosed through the World Bank Infoshop on April 22, 2015 and were disclosed in-country (on the website of MoTC and in local newspapers on May 4, 2015. Public consultations with stakeholders were held in Yerevan on May 15, 2015. These consultations included a targeted focus group with women's NGOs to assess women's needs and priorities related to local roads use and the planned Project activities. A finalized RPF, along with the minutes of the consultations (including agenda, summary of questions and answers, and list of participants), was submitted to the World Bank for final approval on May 18, 2015 and was re-disclosed on the Bank's Infoshop on May 18, 2015 and by the client on May 20, 2015.

39. Once the detailed designs for specific road sections are finalized and if any individual investment requires resettlement and adversely affects beneficiary communities, a Resettlement Action Plan (RAP) will be prepared and submitted to the Bank for approval. The Government will be responsible for implementing the RAPs prior to commencement of civil works. Bank approval will be sought if project financing is proposed for land acquisition. Additional staff capacity for

safeguards will be retained by the TPIU for the duration of LRNIP and the LRNIP AF to ensure robust oversight and monitoring of project social and environmental safeguards, as well as for gender inclusion and citizen engagement under the Project. Close supervision and support on safeguards will be provided by the Bank team.

40. **Citizen engagement.** The project preparation included consultation with community representatives, Non-Government Organizations (NGOs), Government and other stakeholders on the project design. Social accountability will be enhanced through transparent information disclosure of all procurement/bidding documents, contracts awards, and other relevant project documents. The Project has also incorporated lessons learned from other similar projects on citizen engagement. Specifically, the *Social Monitoring and Evaluation Survey* will be carried out before and after subprojects interventions to assess beneficiaries' needs, priorities, and perceptions of the construction, maintenance and management of the road network and to provide data that go beyond outputs. Social outcomes such as how road improvement is changing women's lives, particularly in access to schools, health facilities, markets, and enhancing social capital will be monitored. The outcomes of this Survey will be monitored through a PDO indicator in the Results Framework. Existing LRNIP grievance redress mechanisms will continue under the AF. The percentage of registered complaints that are resolved will be regularly reported and monitored by the project. As part of the consultations mandated by Armenian law prior to the finalization of EMPs, the TPIU will organize focus groups for the poor, as identified by the heads of their respective communities, and carry out focus groups that address possible differences in the impact of the project on men and women. Further, bi-annual gender-balanced meetings with beneficiary communities will be carried out by the TPIU to discuss their views and priorities with regard to Project activities.

41. **Gender.** During consultations concerning the ESMF and the RPF, a targeted focus group was organized for women and women NGO representatives to inform them about planned project activities and to incorporate their concerns, if any, in finalizing the design of the project. It was also agreed that a communication event or road safety campaign related to the Safe Villages program would be developed and tailored for the specific needs of male and female roads users. The consultant responsible for the *Social Monitoring and Evaluation Survey* will also carry out a gender analysis that will aim to identify any differences between men and women in road usage and safety and suggest how project activities could be tailored to respond to different needs and concerns that men and women may have (e.g., young men and drunk driving, women and road safety, etc.). This analysis will then inform the form and contents of project activities that will be offered to project beneficiaries. The AF has two gender disaggregated RF PDO indicators: (a) number of rural people access to an all-season road; and (b) users perception of improved access to markets and services.

F. Environment

42. The project will invest in rehabilitation of the road infrastructure, and physical works to be undertaken will have certain impact on the natural environment. The OP/BP 4.01 Environmental Assessment is therefore triggered. The project is classified as environmental category B, because the planned interventions will rehabilitate/upgrade the existing roads within the present right-of-way. Therefore, the associated risks of environmental damage are modest. For the purposes of the LRNIP-AF implementation, the Borrower revised an Environmental Management Framework developed earlier during the preparation of the LRNIP and produced an Environmental and Social

Management Framework (ESMF) for the purposes of LRNIP-AF. The draft final ESMF was disclosed through the World Bank Infoshop on April 22, 2015. It was disclosed in country in Armenian and English languages on May 4, 2015 and a stakeholder consultation meeting was held on May 15, 2015. The finalized ESMF, with attached minutes of the consultations (including agenda, summary of questions and answers, and list of participants) was submitted to the World Bank for final approval on May 18, 2015 and was re-disclosed through the Infoshop on the same date and by the client on May 20, 2015.

43. Based on the principles outlined in the ESMF, site-specific EMPs will be prepared for the rehabilitation of all road sections included in the project implementation plan once the detailed designs are prepared for them. EMPs for all individual investments will be disclosed, discussed with local communities, and finalized to the Bank's satisfaction prior to tendering of works. Additional staff capacity of oversight of environmental safeguards will be retained and maintained by the TPIU for the duration of both LRNIP and LRNIP AF.

V. World Bank Grievance Redress

44. Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB'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 WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB 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/GRS>. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

**Annex 1: Revised Results Framework and Monitoring Indicators
ARMENIA Lifeline Road Network Improvement Project Additional Financing**

Project Name:	Lifeline Road Network Improvement AF (P150505)	Project Stage:	Additional Financing	Status:	DRAFT
Team Leader(s):	Maria Carolina Monsalve	Requesting Unit:	ECCU3	Created by:	Nargis Ryskulova on 05-Feb-2015
Product Line:	IBRD/IDA	Responsible Unit:	GTIDR	Modified by:	Maria Carolina Monsalve on 18-May-2015
Country:	Armenia	Approval FY:	2016		
Region:	EUROPE AND CENTRAL ASIA	Lending Instrument:	Investment Project Financing		
Parent Project ID:	P126782	Parent Project Name:	LIFELINE ROAD NETWORK IMPROVEMENT PROJECT (P126782)		

Project Development Objectives

Original Project Development Objective - Parent:

The Project Development Objective is to improve access of rural communities to markets and services through upgrading of selected lifeline roads, and to strengthen the capacity of the Ministry of Transport and Communication to manage the lifeline road network.

Proposed Project Development Objective - Additional Financing (AF):

Results

Core sector indicators are considered: Yes

Results reporting level: Project Level

Project Development Objective Indicators

Status	Indicator Name	Core	Unit of Measure		Baseline	Actual(Current)	End Target
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Revised	Average speed on lifeline roads in project areas	<input type="checkbox"/>	Kilometers	Value	20.00	31.60	40.00
				Date	20-Nov-2012	31-Mar-2015	30-Dec-2019
				Comment			
Revised	Development and use of RAMS within MOTC to support decision making on LRN	<input type="checkbox"/>	Text	Value	Need for RAMS	RAMS in process of procurement	RAMS used by MOTC
				Date	20-Nov-2012	31-Mar-2015	30-Dec-2019
				Comment			
Revised	Share of rural population with access to an all-season road	<input checked="" type="checkbox"/>	Percentage	Value	51.00	57.40	71.80
				Date	20-Nov-2012	31-Mar-2015	30-Dec-2019
				Comment			
Revised	Number of rural people with access to an all-season road (disaggregated by gender)	<input checked="" type="checkbox"/>	Number Sub Type Supplemental	Value	600000.00	675285.00	850000.00
Revised	Users' perception of improved access to markets and services (disaggregated by gender)	<input type="checkbox"/>	Number	Value		4.73	4.5
				Date	01-Jul-2013	31-Mar-2015	30-Dec-2019
				Comment		Men: 4.724 Women: 4.726	

Intermediate Results Indicators

Status	Indicator Name	Core	Unit of Measure		Baseline	Actual(Current)	End Target
Revised	Roads rehabilitated, Rural	<input checked="" type="checkbox"/>	Kilometers	Value	0.00	73.00	360.00
				Date	20-Nov-2012	31-Mar-2015	30-Dec-2019
				Comment			
Revised	Number of km of lifeline roads fed into RAMS	<input type="checkbox"/>	Kilometers	Value	0.00	0.00	4000.00
				Date	20-Nov-2012	31-Mar-2015	30-Dec-2019

				Comment			
Revised	Number of "Safe Village" projects completed	<input type="checkbox"/>	Number	Value	0.00	13.00	30.00
				Date	20-Nov-2012	31-Mar-2015	30-Dec-2019
				Comment			
No Change	PBC pilot designed and endorsed by MoTC	<input type="checkbox"/>	Yes/No	Value	No	No	Yes
				Date	20-Nov-2012	31-Mar-2015	30-Jun-2017
				Comment			
No Change	Road Financing Study completed and endorsed by GoA	<input type="checkbox"/>	Yes/No	Value	No	No	Yes
				Date	20-Nov-2012	31-Mar-2015	30-Jun-2017
				Comment			
Revised	Roads in good and fair condition as a share of total classified roads	<input checked="" type="checkbox"/>	Percentage	Value	50.00	52.80	59.00
				Date	20-Nov-2012	31-Mar-2015	30-Dec-2019
				Comment			
No Change	Size of the total classified network	<input checked="" type="checkbox"/>	Kilometers Sub Type Supplemental	Value	4000.00	4000.00	4000.00
Marked for Deletion	Pilot for Routine Maintenance through Microenterprises designed, implemented, and evaluated	<input type="checkbox"/>	Text	Value	Need to test the concept		Concept tested and decision taken
				Date	20-Nov-2012	31-Mar-2015	30-Jun-2017
				Comment		This indicator will be dropped as part of the restructuring.	
No Change	Pilot on Rehabilitation and		Text	Value	Need to test	Ongoing	Concept tested

	Maintenance Contract designed, implemented, and evaluated	<input type="checkbox"/>			the concept		and decision taken	
					Date	19-Nov-2012	31-Mar-2015	30-Jun-2017
					Comment			
Revised	Percentage of project related grievances addressed by TPIU	<input type="checkbox"/>	Percentage		Value	100.00	100.00	
					Date	31-Mar-2015	30-Dec-2019	
					Comment			

Annex 2: Detailed Project Description

1. **Component 1: Lifeline Road Improvement** (Total cost: US\$46.71 million; IBRD: US\$37.37 million). This will raise the total number of km of roads to 360 km, increasing the length of roads rehabilitated under the project by an additional 155 km of roads. This component comprises civil works for the rehabilitation of roads, two rehabilitation and maintenance contracts, supervision and technical designs, as well as road safety engineering, including the construction costs associated with the Safe Village schemes on all road sections rehabilitated under the AF and the purchase and installation of road safety signs.⁴

(a) **Sub-component 1.1: Road Rehabilitation Works** (Total cost US\$37.42 million; IBRD: US\$29.94 million). This sub-component covers the improvement of lifeline roads, including civil works associated with Safe Village schemes. The first package of works includes 27.5 km of roads, with remaining road sections will be identified during project implementation. The investments, including road safety measures for each road segment, must have an EIRR of at least 12 percent. It will also finance the purchase and installation of road safety signs for the LRN.

(b) **Sub-component 1.2: Rehabilitation and Maintenance Contracts** (Total cost US\$5.09 million; IBRD US\$4.07 million). This sub-component will finance two rehabilitation and maintenance contracts for a total period of three years after the rehabilitation is completed. The road sections for these contracts have been identified, covering around 23 km. The rehabilitation will be undertaken as part of the first year program.

(c) **Sub-component 1.4: Supervision and Technical Designs** (Total cost US\$4.2 million; IBRD US\$3.36 million). This sub-component will finance detailed design studies and related supervision activities for Year 2, 3, and 4 rehabilitation works under the Project, including the design of Safe Village schemes on project road sections. This sub-component will also finance independent technical audits of civil works.

2. **Component 2. Project Management and Institutional Strengthening** (Total cost: US\$3.19 million; IBRD: US\$2.53 million). This component would finance project management and implementation, including financial audits (sub-component 2.1). In terms of institutional strengthening, it would finance: (i) preparation of a social monitoring and evaluation study; (ii) preparation of a strategic development plan for the LRN; (iii) LRN data collection for the RAMS; (iv) development of a road safety action plan and the implementation of selected activities from the action plan; (v) technical assistance with regard to disaster risk preparedness for the road sector; and (vi) purchase of road laboratory equipment.. Further details can be found below:

(a) **Sub-component 2.1: Project Management and Implementation, including audits** (Total cost US\$1.04 million; IBRD US\$0.83 million). This sub-component will finance operational costs associated with implementation of the Project. It also includes yearly audits of the project accounts, to be submitted to the Bank.

⁴ The numbering of the sub-components follows that of the parent project LRNIP. For this reason, there is no sub-component 1.3.

(b) **Sub-component 2.2: Road Asset Management System and Survey Equipment** (Total cost: US\$0.44 million; IBRD: US\$0.35 million). This sub-component would finance a road laboratory equipment for determining the chemical composition of bitumen. The determination of bitumen and concrete properties would allow ARD to independently test the quality of the work carried out by contractors and to improve the technical specifications of bidding documents. This sub-component will also finance the collection on road inventory data for the LRN in 2016 and the collection of traffic and condition data for lifeline roads in 2016 and in 2018, which ARD will then incorporate into the RAMS. The network data to be collected in 2016 will be used to define the five year rolling program under the Strategic Development Plan for Lifeline Roads study.

(c) **Sub-component 2.3: Road Safety Technical Assistance** (Total cost US\$0.23 million; IBRD US\$0.18 million). This will finance the development of a new Road Safety Action Plan, the last one having expired in 2014. It will also finance selected activities from the Road Safety Action Plan, including the incremental costs associated with road safety education and public awareness campaigns in “Safe Village” schools to reflect the increased number of “Safe Villages”. These activities will be tailored to respond to the specific needs, concerns, and priorities of different sub-groups of road users—men, women, youth, elderly, business people, etc.

(d) **Sub-component 2.4: Technical Assistance** (Total cost US\$1.48 million; IBRD US\$1.18 million). This sub-component will provide a comprehensive technical assistance package that includes training and study tours, design of future project, as well as the following activities:

- **Social Monitoring and Evaluation Study** (Total cost: US\$0.05 million; IBRD: US\$0.04 million). This study will assess the impact of the project on beneficiaries. The consultant responsible for this study will also carry out a gender analysis that will aim to identify any differences between men and women in road usage and safety and suggest how project activities could be tailored to respond to different needs and concerns that men and women may have (e.g., young men and drunk driving, women and road safety, etc.). This analysis will then inform the form and content of project activities that will be offered to project beneficiaries.
- **Strategic Development Plan for the Lifeline Road Network** (Total cost: US\$0.10 million; IBRD: US\$0.08 million). The strategic study for the LRN would define the LRN—with the aim of the government officially defining the network through a decree or regulation—and develop an action plan and financing plan to rehabilitate and maintain lifeline roads, and define data required for input into the RAMS. The study will estimate lifeline road rehabilitation and annual maintenance needs, will prioritize the roads as a function of economic and social criteria in order to prepare a five year rolling plan of rehabilitation works, based on the estimated budget to be available for this purpose from 2016 to 2020, and will present an overall strategy for the rehabilitation and maintenance of lifeline roads over the next five years. The main audience of the report will be Armenian government agencies who should finance part of the proposed program and international agencies that could finance the rest of the program.

- **Disaster Risk Preparedness Technical Assistance** (Total cost: US\$0.20 million; IBRD: US\$0.16 million). This would finance the preparation of a geological/geotechnical design study along high risk areas. This need was identified by the Japan International Cooperation Agency three-year technical assistance on landslide disaster risk management in Armenia, which was launched in February 2014. The proposed study would initially draw on available information and work already prepared and follow up with walk-over surveys and detailed geological mapping of all actual or potential landslide and rock fall hazards along the selected roads. The study will also suggest appropriate remedial and retaining measures for each location, which could then be used as an input for the preparation of the detailed design of those roads.

Annex 3: Procurement Plan

June 22, 2015

I. General

1. **Project information:**

Borrower: Ministry of Finance of Republic of Armenia.

Project Name: LIFELINE ROAD NETWORK IMPROVEMENT PROJECT-Additional Financing.

Project ID: P150505

Project Implementation Agency: TPIU of the Ministry of Transport and Communication of Republic of Armenia.

Project Development Objectives: The Project Development Objective is to improve access of rural communities to markets and services through upgrading of selected lifeline roads, and to strengthen the capacity of the Ministry of Transport and Communication of Republic of Armenia to manage the lifeline network.

2. **Bank's approval Date of the procurement Plan:** June 22, 2015

3. **Date of General Procurement Notice:** May 29, 2015

4. **Period covered by this procurement plan:** 2016-2019

The TOR of consulting assignments (individual and firm) and technical specifications of packages are subject of prior agreement with the TTL. All cancellation of selection process and/or re-invitation shall be subject to Bank's prior review. All the contracts whose cost estimation was below the Bank's prior review threshold are subject to prior review if the financial offer of the selected firm exceeds such threshold at the proposals evaluation stage. Irrespective of the thresholds the selection of all consultants (firm and individuals) hired for legal work or for procurement activities as well as the individual hired for long-term technical assistance or advisory services for duration of the project (or most of it) are subject to prior review. In case of a slice and package arrangement, the prior review threshold is determined based on the aggregate value of individual contracts to be awarded under such arrangement.

II. Goods and Works and non-consulting services.

1. **Prior Review Threshold:** Procurement Decisions subject to Prior Review by the Bank as stated in Appendix 1 to the Guidelines for Procurement:

	Procurement Method	Prior Review Threshold	Procurement Method Threshold	Comment
1.	ICB (Works)	All contracts	≥US\$5.0 mil	
2.	ICB (Goods)	All contracts	≥US\$ 1.0 mil	
3.	NCB (Works)	First two contracts and all the contracts with estimation above US\$ 3.0 mil.	<US\$5.0 mil.	
4.	NCB (Goods)	First contract	<US\$ 1.0 mil.	
5.	Shopping (Works)	First contract	<US\$200,000	
6.	Shopping (Goods)	First contract	<US\$100,000	
7.	Direct Contracts (Goods and Works)	All contracts.		

2. **Prequalification** : N/A
3. **Proposed Procedures for CDD Components (as per paragraph. 3.17 of the Guidelines)** : N/A
4. **Reference to (if any) Project Operational/Procurement Manual:** Operational Manual for the project to be developed by TPIU and be approved by the Bank.
5. **Any Other Special Procurement Arrangements:** N/A

6. Procurement Packages with Methods and Time Schedule

Ref No.	Description	Length (km)	Procurement Method	Domestic Preference (yes/no)	Review by Bank (Prior/Post)	Type	Expected Bid Opening Date	Expected Contract signing date	Expected Completion Date
LRNIP AF Road Rehabilitation Works (2016-2019), including:									
1	First Year (2016) Road Rehabilitation Works	27.5				W			
1.1	H1-Hrazdan-H55	3.0	ICB	No	Prior	W	15.04.2016	5.05.2016	15.12.2017*
1.2	Martuni-Vahashen-Vardenik	11.0							
1.3	M2-Sisian	4.6							
1.4	Eranos-Tsakqar	4.7							
1.5	M11 km 6.5 to km 10.7	4.2							
2	Second Year (2017) Road Rehabilitation Works	52.0	TBD	No	Post	W	TBD	TBD	TBD
3	Third Year (2018) Road Rehabilitation Works	52.5	TBD	No	Post	W	TBD	TBD	TBD
4	Road Rehabilitation and Maintenance Contract (Year 1-2016)	23.0	NCB			W			
4.1	Maralik-Qaraberd-Dzithankov	10.0	ICB	No	Prior	W	03.04.2016	30.04.2016	01.10.2019**
4.2	H6-Nor Gehi-Argel-Arzakan-Hrazdan	13.0							
	Total Works (2016-2019)	155.0							
5	Road Laboratory Equipment		ICB	No	Prior	G	15.06.2017	30.06.2017	15.12.2017
6	Furniture and IT equipment for PIU		SH	No	Post	G	TBD	TBD	TBD
7	Vehicle for supervision for PIU		SH	No	Prior	G	01.02.2016	15.02.2016	15.03.2016
8	Road Signs		NCB	No	Prior	G	01.03.2017	30.03.2017	30.10.2017
	Total Goods								
	Total Operating Costs								
9	Project Management		SOE				From 2016 to 2019		
10	Training and Study Tours		SOE				From 2016 up to 2019 (periodically)		
	Total Consultancy Services								
	Front End Fee (0.25%)								
	TOTAL PROJECT COST								

* Including defect liability period (DLP).

** Including DLP and maintenance period.

III. Selection of Consultants

1. **Prior Review Threshold:** Selection decisions subject to Prior Review by Bank as stated in Appendix 1 to the Guidelines Selection and Employment of Consultants:

	Selection Method	Prior Review Threshold	Comments
1.	Contracts with Firms	All QCBS and SS contracts; as well as the first CQS	
2.	Contracts with Individual Consultants	>US\$ 50,000 and all SS contracts	

2. **Short list comprising entirely of national consultants:** Short list of consultants for services estimated to cost US\$300,000 or less per contract, may comprise entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines.
3. **Any Other Special Selection Arrangements:** N/A
4. **Consultancy Assignments with Selection Methods and Time Schedule**

4.1 Consultancy Services

Ref No.	Description	Selection Method	Review by Bank (Prior/Post)	Expected Proposal Submission Date	Expected Contract signing date	Expected Completion Date
11	Technical Supervision of LRNIP AF Y1	QCBS	Prior	4.15.2016	4/30/2016	10.30.2017
12	Technical Supervision of LRNIP AF Y2 and Y3	QCBS	Prior	TBD	TBD	TBD
13	Design of LRNIP AF Y2 and Y3	QCBS	Prior	5.15.2016	5.30.2016	4.15.2017
14	Audit of Project Accounts	LCS	Post	15.04.2016	30.04.2016	01.10.2019
15	Project Social Monitoring and Evaluation Study	CQS	Prior	01.02.2016	10.02.2016	01.10.2019
16	Lifeline Road Network Data Collection for Road Asset Management System	QCBS	Prior	01.03.2017	30.03.2017	15.12.2017
17	Strategic Development Plan for the Lifeline Road Network	QCBS	Prior	01.05.2016	30.05.2016	30.09.2016
18	Preparation of Road Safety Action Plan	IC	Post	01.07.2016	10.07.2016	30.10.2016
19	Implementation of Selected Road Safety Actions	QCBS	Prior	01.04.2017	30.04.2017	01.10.2019
20	Disaster risk preparedness technical assistance	QCBS	Prior	20.05.2016	15.06.2016	30.06.2017
21	Independent Technical Audit	CQS	Post	20.11.2017	30.11.2017	01.10.2019
22	Design of Future Project	QSBS	Prior	TBD	TBD	TBD
	<i>Total Services</i>					

Annex 4: Economic Analysis
ARMENIA Lifeline Road Network Improvement Project Additional Financing

A. Selection Criteria for First Year Program

1 ARD selected the six of the seven lifeline roads to be included on the first year program based on a prioritization study done on March 2015, conducting a survey of a portion of the Lifeline roads network, totaling 463.2 km subdivided into 101 road sections, which were identified in need of rehabilitation on the Armenian Decree N30, dated July 17, 2014 that lists the repair priorities for the Armenian local roads under republican, regional, and municipal jurisdiction. ARD collected road inventory, condition and traffic data as well as the population served by each road section and computed the Economic Internal Rate of Return (EIRR) of the proposed rehabilitation works. The road sections were sorted by a priority index that included the following multi-criteria indicators: (i) the EIRR of the road work, (ii) the beneficiary population of the road section; (iii) the percent population in poor condition of the *Marz*; and (iv) the percent of Lifeline roads in poor condition of the *Marz*. Each normalized indicator received the following weights: 30% for EIRR, 25% for population, 25% for poverty, and 20% for poor condition network. The priority index follows the principles of the Armenian Decree No. 26, dated June 19, 2014, which defines the principles of a multi-criteria analysis to be used to sort roads works by priority. The Decree states that a priority index should be build including the following indicators: (i) number of beneficiary population; (ii) EIRR; and (iii) the present weight of roads, estimated to be in poor condition in the regional road network. The priority index used to select the first year program roads added a poverty indicator to the indicators given on the Decree. The six road sections included on the first year program are the ones with highest priority index (see Table 1). In addition, a seventh road section was included in the first year program, which was not part of the prioritization study. This road section is an interstate M11 road section in poor condition and high traffic that needs rehabilitation to connect the lifeline roads in the regions to roads in good condition.

Table 1. Priority Index

Road No	Road Name	<i>Marz</i>	Rayon	EIRR (%)	Beneficiary Population (#)	Poor Population per <i>Marz</i> (%)	Lifeline Network in Poor Condition per <i>Marz</i> (%)	Priority Index
1	H1-Hrazdan-H55	Kotayk	Hrazdan	17.9	79,152	42.5	27.5	7.4
2	Martuni-Vahashen-Vardenik	Gegharkunik	Martuni	14.0	42,521	35.8	48.7	4.8
3	M2-Sisian	Syunik	Sisian	19.4	20,504	25.2	74.8	3.7
4	Eranos-Tsakqar	Gegharkunik	Martuni	16.2	16,719	35.8	48.7	3.1
5	Maralik-Qaraberd-Dzithankov	Shirak	Ani	15.6	10,441	45.9	62.2	3.0
6	H6-Nor Gehi-Argel-Arzakan-Hrazdan	Kotayk	Hrazdan	18.1	14,109	42.5	27.5	2.9
7*	M11 km 6.5 to km 10.7	Gegharkunik	Martuni	28.9				

* Road section not included on the prioritization study

B. First Year Program Roads

2. The first year program of road works is comprised of seven road sections located in five *Marzs*. The seven road sections total 50.5 km and all roads are bituminous roads in poor to very poor condition with roughness higher than 7.3 IRI, m/km. The current AADT varies between 263 to 3,030 vehicles per day, comprised, on average, of 12 percent trucks and buses and 88 percent passenger cars. The table below presents the basic roads characteristics.

Table 2. First Year Program Roads Characteristics

Road Number	Length (km)	Width (m)	Roughness (IRI)	Traffic (vpd)	Trucks & Buses (%)
1	3.0	11.0	9.5	365	17%
2	11.0	6.0	14.0	268	10%
3	4.6	6.0	10.3	368	13%
4	4.7	6.0	14.2	361	3%
5	10.0	6.0	10.9	263	14%
6	13.0	8.8	8.5	701	14%
7	4.2	7.6	7.3	3,030	14%
Total	50.5	7.2	10.8	632	12%

3. The project roads serve in total 183,446 persons. The beneficiary population varies from 1,085 to 26,384 persons per km with an average of 3,962 persons per km. The average investment cost per beneficiary is US\$55 per person. The project roads connect rural communities to the main road network or nearby located significant populated areas, which is vitally important for the economic development of the rural communities.

Table 3. Beneficiary Population

Road Number	Beneficiary Population (persons)	Beneficiary Population per km (person/km)	Investment per Beneficiary Population (US\$/person)
1	79,152	26,384	7
2	42,521	3,866	60
3	20,504	4,457	39
4	16,719	3,557	66
5	10,441	1,044	168
6	14,109	1,085	237
Total	183,446	3,962	55

C. Economic Evaluation Assumptions

4. In order to ensure that all project roads generate sufficient economic benefits that warrant investments, a cost-benefit analysis was conducted for the first year program using the Highway Development and Management Model (HDM-4) that computes annual road agency and user's costs for each project alternative over the evaluation period. The quantities of resources consumed and vehicle speeds are calculated first and then multiplied by unit costs to obtain total vehicle operating costs and travel time costs and CO2 emissions. The resources consumed and vehicle speeds are related to traffic volume and composition, and road surface type, geometric characteristics and roughness.

5. The quantified benefits computed by HDM-4 comprise savings in vehicle operating costs, travel time costs and road maintenance costs due to the road improvements. For the HDM-4 calculations the following assumptions were applied.

- The discount rate is 12 percent and the evaluation period is 20 years;
- A conversion factor of 0.83 is applied to identify economic costs;
- The road works will commence in 2016 and construction will be carried out in one year;
- The average daily traffic annual increase rate without the project is 5.0 percent;
- The “without project” scenario assumes that routine maintenance, pothole patching and reconstruction, when the road reaches very poor condition, will be conducted over the evaluation period.

6. The table below presents the vehicle fleet economic unit, basic characteristics and the typical traffic composition on the project roads.

Table 4. Vehicle Fleet Economic Unit Costs, Characteristics and Composition

	Car	2-Axle Truck	3-Axle Truck	Small Bus	Large Bus
	New Vehicle Cost (US\$)	11,221	24,168	30,211	17,263
New Tire Cost (US\$)	74	190	190	85	138
Fuel Cost (US\$/liter)	1.1	1.0	1.0	1.1	1.0
Lubricant Cost (US\$/liter)	7.0	4.8	4.8	6.0	6.0
Crew Cost (US\$/hour)	12.6	16.0	16.0	14.1	14.9
Maintenance Cost (US\$/hour)	2.9	3.0	3.0	2.5	2.7
Overhead Cost (US\$/year)	783	1,044	1,044	392	1,501
Interest Rate (%)	12	12	12	12	12
Passenger Work Time (US\$/hour)	1.9	0.0	0.0	1.9	1.9
Passenger Non Work Time (US\$/hour)	1.0	0.0	0.0	1.0	1.0
Cargo Time (US\$/hour)	0.0	1.0	5.0	1.0	0.0
Number of Wheels (#)	4	4	10	6	6
Operating Weight (tons)	1.2	5.0	15.0	1.5	11.0
Standard Axle Load Equivalent (#)	0.00	1.50	2.50	0.01	1.50
Annual Utilization (km)	25,000	40,000	86,000	30,000	70,000
Annual Utilization (hours)	550	1,200	2,050	750	1,750
Service Life (years)	10	12	14	8	12
Number Passengers (#)	1	0	0	10	40
Private Trips (%)	75	0	0	0	0
Work Trips (%)	75	0	0	75	75
Typical Traffic Composition (%)	87.0%	3.0%	3.0%	5.0%	2.0%

7. The total financial capital cost for the first year program is estimated at US\$11.24 million. The table below summarizes the financial construction costs and unit cost per km per road.

Table 5. Project Costs

Road Number	Cost (US\$ million)	Cost (US\$/km)
1	0.53	175,333
2	2.57	233,364
3	0.81	175,217
4	1.10	233,404
5	1.75	175,200
6	3.34	256,923
7	1.15	273,810
Total	11.24	222,535

D. Economic Evaluation Results

8. The overall Economic Internal Rate of Return (EIRR) of the first year program is 17.4 percent and the Net Present Value (NPV) is US\$4.48 million. All roads have EIRR above 12 percent, ranging from 14.0 percent to 28.9 percent. The following table summarizes the economic evaluation results.

Table 6. Economic Evaluation Results

Road Number	NPV (US\$ Million)	NPV/Investment Ratio	EIRR (%)
1	0.27	0.51	17.9%
2	0.32	0.12	14.0%
3	0.50	0.62	19.4%
4	0.31	0.28	16.2%
5	0.46	0.27	15.6%
6	1.97	0.59	18.1%
7	0.65	0.56	28.9%
Total	4.48	0.40	17.4%

9. Sensitivity analysis shows that all project roads would be economically justified even if construction cost were 15 percent higher or if the annual traffic growth rates were 15 percent lower. The table below shows the results of the sensitivity analysis considering: (i) increasing construction costs by 15 percent (ii) decreasing annual traffic growth rates by 15 percent; and (iii) increasing construction costs by 15 percent and decreasing annual traffic growth rates by 15 percent. If construction costs were 15 percent higher, the overall EIRR would reduce to 15.3 percent and if the annual traffic growth rates were 15 percent lower, the overall EIRR would reduce to 16.0 percent. Switching values analysis shows that construction costs would have to increase by 48 percent for the overall EIRR reach 12 percent.

Table 7. EIRR Sensitivity Analysis (%)

Road Number	Base EIRR	A: Costs +15%	B:Traffic Growth -15%	C: A & B
1	17.9%	16.1%	16.7%	14.9%
2	14.0%	12.0%	12.6%	10.8%
3	19.4%	17.4%	18.0%	16.1%
4	16.2%	14.1%	14.8%	12.8%
5	15.6%	13.7%	14.3%	12.5%
6	18.1%	16.4%	16.9%	15.3%
7	28.9%	24.0%	25.5%	20.8%
Total	17.4%	15.3%	16.0%	14.0%

10. The HDM-4 model was used to estimate the CO2 emissions of the vehicle fleet before and after the rehabilitation works, showing that there will a reduction in CO2 emissions after the rehabilitation works ranging from 1 to 8 percent per road section according to the current condition of the road section. In total, for the seven road sections, there will be a reduction in the order of 58 tons of CO2 emissions per year or 2.2 percent of the current emissions (2,683 tons per year). Due to the very low traffic of the project roads, the inclusion of the social cost of CO2 emissions, at 30 US\$ per ton, on the economic evaluation does not alter the economic evaluation results.

11. Six of the seven first year program roads are located on three of the four poorest *Marzs* of Armenia (Shirak, Kotayk, Lori, Gegharkunik,) according to a measurement of the percent poor population per *Marz*⁵ based on the results of the 2013 Integrated Living Conditions Survey of Households. In addition, all project roads are located on Rayons with high headcount rural poverty (higher than 35 percent) according to the 2007 Armenia Geographic Distribution of Poverty and Inequality study.

E. Public Sector Financing and World Bank Value Added

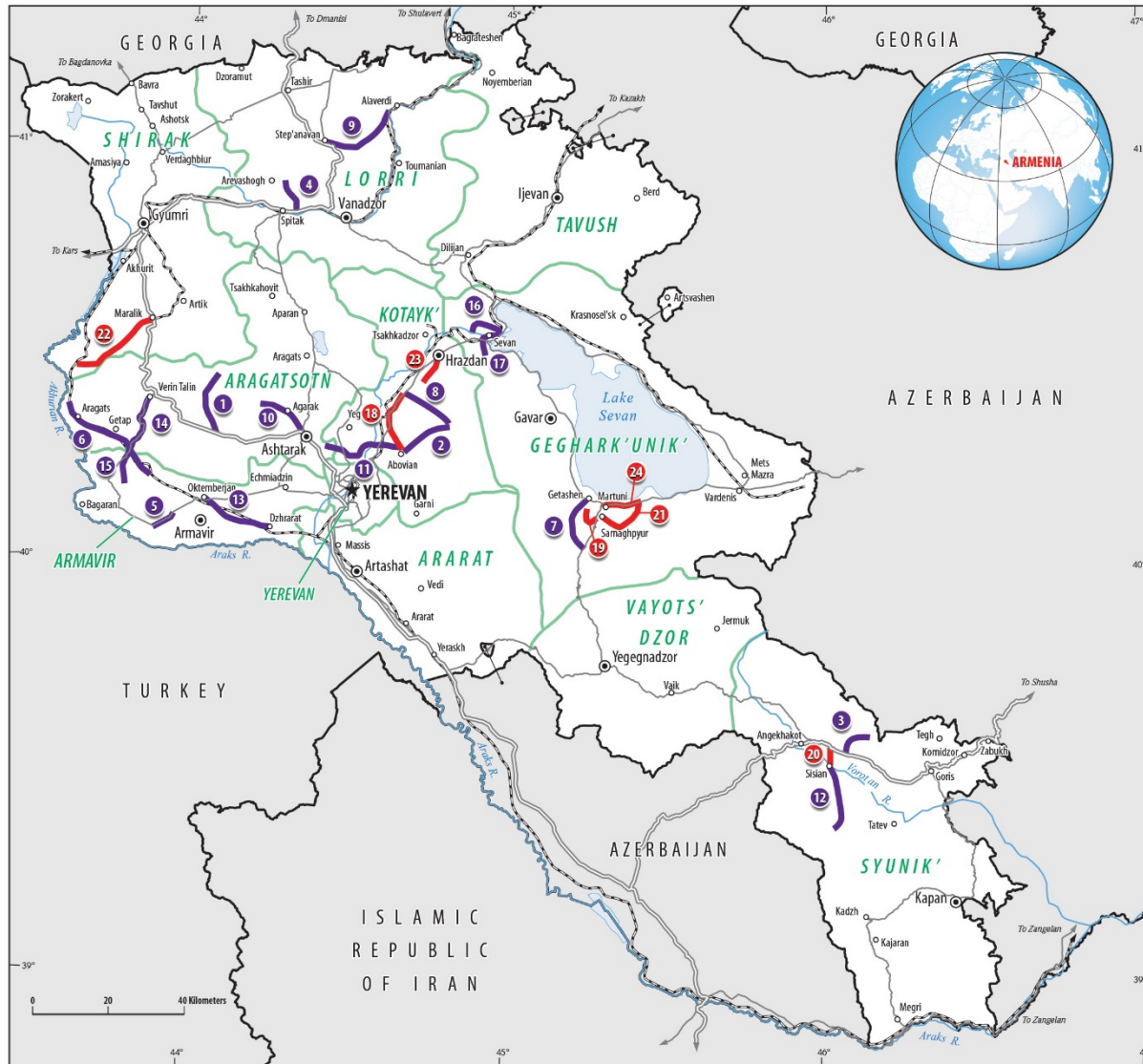
12. Public sector financing is the appropriate vehicle for financing the rehabilitation of proposed roads because the construction costs cannot be recovered through tariffs due to very low levels of traffic along the project roads. Public investment in road infrastructure is desirable because it is a way the government plays a key role in the country's development by handling a range of issues that can only be accomplished or implemented through government actions, such as axle weight controls and road safety regulations. The World Bank's role is justified because of the project's economic and social benefits and because of the value added it brings beyond financing in areas such as: construction quality control, sustainability of road maintenance, transport planning, environmental risk management, safeguards, procurement, and financial management.

⁵ Social Snapshot and Poverty in Armenia 2014, National Statistical Service of the Republic of Armenia.

Annex 5: Map

ARMENIA Lifeline Road Network Improvement Project Additional Financing

IBRD 41640



ARMENIA LIFELINE ROAD NETWORK IMPROVEMENT PROJECT (LRNIP) ADDITIONAL FINANCING

ROAD SECTIONS FOR LRNIP 2013 – 2014			
No.	MARZ	ROAD SECTION	LENGTH (KM)
1	ARAGATSOTN	Agarak-Antarast	8.7
2	KOTAYK'	Mayakovski-Nor-Gyuh-Kotayk-Zovashen	17.4
3	SYONIK'	Tegh - Komidzor	4.5
4	LORRI	Arevashogh - /M-7/	2.5
5	ARMAYIR	/M-5/ Getashen	5.3
6	ARAGATSOTN	/M-9/ Aragats-Getap	23.35
7	GEGHARKUNIK	/M-10/ Nerkin Getashen-Madina-Samaghyuyr	10.7
TOTAL: LRNIP 2013 – 2014			72.45

ROAD SECTIONS FOR LRNIP 2015 – 2016			
No.	MARZ	ROAD SECTION	LENGTH (KM)
8	KOTAYK'	H5-Angel-Kareriis-Charentsavan	5.4
9	LORRI	Agarak-Vahdun-Koghnes-Mghart-Arevatsag-Karmelkhyegh-Tatser-Aygek-Arsh-Ustun	39.5
10	KOTAYK'	Ashatarak-Oshakan-Dashit-M3	8.8
11	KOTAYK'	Abovyan-Nor Geghi-Yeghvard-M1	12
12	SYONIK'	M2-Shaki-Siagan-Tolers-Brumis-Torunik-Dastakert	29.1
13	ARMAYIR	Armani-Horapat-Megashat-Avevik-Yeghnut-Yeraskhahan	18.8
14	ARAGATSOTN	Dashadem-H75	11.3
15	ARAGATSOTN	H17-Karakert	3.8
16	GEGHARKUNIK	Sevan-Yanser	2.5
17	GEGHARKUNIK	M4-Sevan-M4	1.5
TOTAL: LRNIP 2015 – 2016			132.7

ROAD SECTIONS FOR LRNIP ADDITIONAL FINANCING 1 ST YEAR			
No.	MARZ	ROAD SECTION	LENGTH (KM)
18	KOTAYK'	H1-Hrazdan-H55	3
19	GEGHARKUNIK	Martuni-Vahashesh-Vardenik	11
20	SYONIK'	M2-Sisian	4.6
21	GEGHARKUNIK	Eranos-Tsahgar	4.7
22	SHIRAK	Maralik-Oraberd-Dzhanavor	10
23	KOTAYK'	H6-Nor Geghi-Angel-Artzakan-Hrazdan	13
24	GEGHARKUNIK	M11 km 6.5 to km 10.1	3.6
TOTAL: LRNIP AF 1ST YEAR ROADS			49.9

- PRIMARY ROADS (DUAL CARRIAGEWAYS)
- PRIMARY ROADS (OTHER)
- RAILROADS
- RIVERS
- RESERVOIRS
- MAIN TOWNS/VILLAGES
- MARZ (PROVINCE) CAPITALS
- NATIONAL CAPITAL
- MARZ (PROVINCE) BOUNDARIES
- INTERNATIONAL BOUNDARIES

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